

# Chapter Five: Operations and Maintenance





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*A management and operations plan will lay the foundation for the Flyway trail to endure as a valued regional asset for generations.*

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# Operations and Maintenance

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## Introduction

Operations and maintenance refer to specific day-to-day tasks and programs performed to keep trail facilities and resources in safe, usable condition. This begins with sound design, durable components, and a comprehensive management plan. In order to develop and maintain the Flyway Trail, an inclusive administrative structure should be established and a management plan should be embraced by the entities responsible for maintaining the trail. In addition, community groups, residents, business owners, developers, and other stakeholders should be engaged in the long-term stewardship of the Flyway Trail. Their support and participation is integral to the success of the trail.

## Guiding Principles for Effective Operations and Maintenance

The Flyway Trail should be regarded and maintained as a public resource that will serve Buffalo County communities and area visitors for generations to come. The following guiding principles will help assure the preservation of a first class trail facility:

- Good maintenance begins with sound planning and design
- Foremost, protect life, property, and the environment
- Promote and maintain a quality outdoor recreation and transportation experience
- Develop a management plan that is reviewed and updated annually with tasks, operational policies, standards, and routine and remedial maintenance goals

- Maintain quality control, and conduct regular inspections
- Include field crews, police, and fire/rescue personnel in both the design review and ongoing management process
- Maintain an effective, responsive public feedback system, and promote public participation
- Be a good neighbor to adjacent properties
- Operate a cost-effective program with sustainable funding sources

## Resource Stewardship and Enhancement

Sound management is critical to the long-term success of the Flyway Trail. This involves stewardship, the oversight of resources, and operations and maintenance. Stewardship can range from cleaning up litter to installation of landscaping, interpretive signage, and design features that connect the trail to the surrounding landscape. The stewardship process must consider both private sector activities, such as land subdivision and development, and public sector activities, such as the construction of roads and utilities. Coordination among agencies at the local, regional, state, and federal levels is vital to oversee that these activities are supportive of the plan and complementary to each other. Long-term stewardship also calls for the enduring commitment of agency staff, elected officials, and concerned citizens all working together. This suggests the need for a shared community vision and value system centered on the protection of trail, bicycle, pedestrian, and outdoor recreational resources. This study and similar documents can help coordinate and guide the actions of all .

## Trail Facility Safety and Security

Safety is a duty and obligation of all public facility managers. Therefore, as the construction documents for the Flyway Trail are completed, appropriate local, state, and federal agencies should review these plans and specifications to check that they meet all existing regulations.

In order to provide reasonable and ordinary safety measures, the Buffalo County Land & Trails Trust should develop and implement a Safety and Security Program in coordination with applicable local, state, and federal agencies. This program should consist of well-defined safety and security policies; the identification of trail management, law enforcement, emergency, and fire protection policies; and a system that offers timely responses to the public for issues or problems related to safety and security.

Important components of the Safety and Security Program should include:

- Establishment of a safety committee or coordinator
- Preparation of a trail safety manual for employees and agencies
- Establishment of user rules and regulations
- Development of trails emergency procedures
- Preparation of a safety checklist for the trail
- Preparation of a trail user response form
- A system for accident reporting and analysis
- A regular maintenance and inspection program
- Site and facility development and review
- A public information program
- Employee training program for safety and emergency response
- Ongoing research and evaluation of program objectives

## Risk Management and Liability

The design, development, management, and operation of the Flyway Trail must be carefully and accurately executed in order to provide a resource that protects the health, welfare, and safety of the public.

Liability most often occurs when a facility has been under-designed for the intended volume of use, when management of the facility is poor, or when unexpected accidents occur because the trail manager failed to recognize the possibilities of a potentially hazardous situation. To reduce the exposure to liability, the following measures should be in place prior to opening the first phase of the trail:

- A complete maintenance program that provides the appropriate duty or level of care to trail users
- A risk management plan that appropriately covers all aspects of the trail
- A comprehensive working knowledge of public use laws and recent case history applicable in Wisconsin

Public use of the Flyway Trail should be covered under existing municipal, county, and state policies for the use of parkland and public spaces. The Flyway Trail is available for public use as defined by the Hours of Operation Policy (described later in this chapter); therefore, any individual found using the trail outside the normal hours of operation would be treated as a trespasser and would not be covered by the municipal insurance policies for public use.

The local agency should exercise reasonable care in the construction of all trail facilities to reduce hazardous, public nuisance, and life threatening situations.

Once the trail is open for use, liability can be further reduced by adopting the following practices:

- Posting and enforcement of trail regulations
- Regular inspection of the trail by a person qualified to identify hazardous conditions and maintenance problems
- Timely correction and documentation (e.g., notes, photographs) of maintenance problems
- When a problem cannot be promptly corrected, warnings to trail users should be erected
- Maintenance of inspection records, including findings and responses
- Development of procedures for handling medical emergencies and documentation of their occurrence

These risk management techniques will not only help to ensure that hazardous conditions are identified and corrected in a timely manner, thereby averting injury to trail users, but will also serve to protect the responsible agencies from liability. Showing that the agencies have been acting in a responsible manner can serve as an excellent defense in the event that a lawsuit develops.

For more information on trail-related liability laws, risk management techniques, and special risk situations, refer to the Rails-to-Trails Conservancy report “Rails-with-Trails: Design, Management, and Operating Characteristics of 61 Trails Along Active Rail Lines” (2000).

### Hours of Operation

It is recommended that the Flyway Trail be operated like all other non-lighted public parks and recreation facilities open for public use from dawn to dusk, 365 days a year, except as specifically designated by the responsible agencies. Individuals who are found using these facilities after dusk and before dawn should be deemed in violation of this policy and subject to fines or prosecution.

Additionally, trail segments should not be considered officially opened for public use until a formal dedication ceremony and authorized agents of the local agency have completed an official opening. Individuals who use trail segments that are under construction, without written permission from an authorized agent, should also be deemed in violation of the Flyway Trail Hours of Operation policy.

### Trail User Rules and Regulations

One of the emerging safety issues in trail planning, design, and development is multi-user conflict. Typically, these conflicts are caused by overuse of a trail. However, other factors may lead to user conflicts and problems, including poorly designed and engineered trail alignments, inappropriate user behavior, or inadequate facility capacity. The most effective trail use management plan is a well-conceived safety program that provides the individual user with a Code of Conduct for the trail, sometimes called a Trail Ordinance. Several multi-use trail systems across the United States have adopted progressive ordinances for public use.

The following Rules and Regulations should be considered for the Flyway Trail. These rules can be displayed in both brochures and on information signs throughout the trail. They should be

reviewed by the appropriate authorities and legally adopted by the appropriate project partners.

1. **Be Courteous:** All trail users - including bicyclists, joggers, walkers, equestrians, wheelchairs, skateboarders, and skaters - should be respectful of other users regardless of their mode of travel, speed, or level of skill. Never spook animals like dogs or horses. Talk to them in a calm voice as you approach. Respect the privacy of adjacent landowners.



*The Flyway Trail's directory signage or kiosks can also include clear direction regarding regulations for trail users.*

2. **Keep Right:** Always stay to the right as you use the trail, or stay in the lane that has been designated for your user group. The exception to this rule occurs when you need to pass another user.
3. **Pass on the Left:** Pass others going in your direction on their left. Look ahead and behind to make sure that your lane is clear before you pull out and around the other user. Pass with ample separation. Do not move back to the right until you have safely gained distance and speed on the other user. Faster traffic should always yield to slower and oncoming traffic.
4. **Give Audible Signal when Passing:** All users should give a clear warning signal before passing. This signal may be produced by voice, bell, or soft horn. Voice signals might include "Passing on the Left!" or "Cyclist on the left!" Always be courteous when providing the audible signal - profanity is unacceptable.
5. **Be Predictable:** Travel in a consistent and predictable manner. Always look behind before changing position on the trail, regardless of your mode of travel.
6. **Control Your Bicycle:** Inattention, even for a second can cause disaster - always stay alert! Maintain a safe and legal speed at all times.
7. **Don't Block the Trail:** When in a group, including your pets, use no more than half the trailway so as not to block the flow of other users. If users approach your group from both directions, form a single line or stop and move to the far right edge of the trail to allow safe passage by these users.

8. Yield when Entering or Crossing Trails: When entering or crossing a trail at uncontrolled intersections, yield to traffic already using the other trail.
9. The Use of Lights: When using a trail during periods of low visibility, each cyclist should be equipped with proper lights. Cyclists should have a white light that is visible from five hundred feet to the front, and a red or amber light that is visible from five hundred feet to the rear. Other trail users should use white lights (bright flashlights) visible two hundred fifty feet to the front, and wear light or reflective clothing.
10. Don't Use this Trail Under the Influence of Alcohol or Drugs: It is illegal to use this trail if you have consumed alcohol in excess of the statutory limits or if you have consumed illegal drugs. Persons who use a prescribed medication should check with their doctor or pharmacist to ensure that it will not impair their ability to safely operate a bicycle or other wheeled vehicle.
11. Clean up Your Litter: Please keep this trail clean and neat for other users to enjoy. Do not leave glass, paper, cans, or other debris on or near the trail. Please clean up after your pets and horses. Pack out what you bring in, and remember to always recycle your trash.
12. Keep Pets on Leashes: All pets must be kept on a secure and tethered leash.
13. Use the Buddy System: Use the trail system with a friend!
14. Trail Subject to Flash Flooding: Please be aware that the Flyway Trail is officially closed during times when floodwaters overflow the river banks and cover the trail surface. For your personal safety, please be prepared

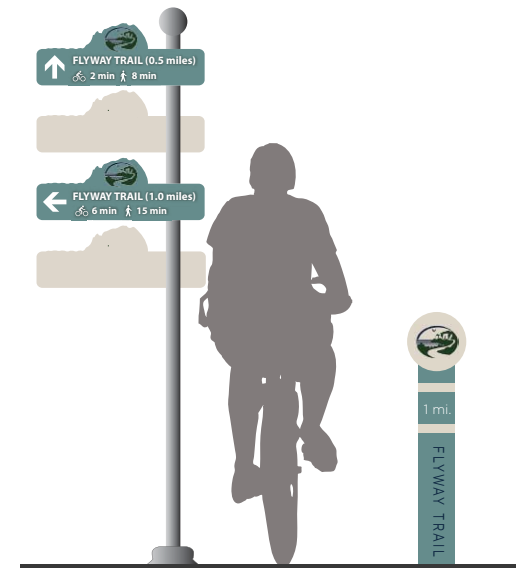
to leave the trail immediately during periods of heavy rainfall.

15. Swimming Prohibited: Swimming is prohibited in the Mississippi River and tributary streams.
16. Vegetation Removal: It is illegal to remove vegetation of any type, size, or species from the trail. Please contact the Buffalo County Land and Trails Trust should you have concerns about noxious weeds, poisonous vegetation, dying or dead vegetation, or other concerns about vegetation growth in the trail.
17. Share the Trail: Always exercise due care and caution when using the trail!

### Police/Park Ranger Patrol and Emergency Response System

In order to provide effective patrol and emergency response to the needs of trail users and adjacent property owners, local police, park rangers, and emergency responders should work together to develop a specific patrol and emergency response plan for the Flyway Trail. This plan should define a cooperative law enforcement strategy for the trail based on the capabilities of different agencies and services typically required for the facility. There will be several phases of design and construction for each segment of the trail until completion.

As consultants are hired for each phase of design and construction, they should be required to work with the designated departments to deliver a site plan that illustrates points of access to the trail; approved design details for making these access points safe, secure, and accessible to law enforcement officials; and potential locations for a system of cellular-type emergency phones. The consultant will also work with appropriate officials to locate other



*Mile markers assist trail users and emergency responders alike.*

mechanisms or project elements that will aid local agencies in managing the trail in a safe and secure manner.

Project partners should also define an emergency response system in conjunction with appropriate local fire stations and paramedic units that defines which agencies should respond to 911 calls. They should provide easy-to-understand routing plans and access points for emergency vehicles. Local hospitals should be notified of these routes so that they may also be familiar with the size and scope of the project. The entire trail system should be designed and developed to support a minimum gross vehicle weight of 6.5 tons to allow emergency vehicle access.

At all public entrances to the Flyway Trail, appropriate signage should be installed to notify trail users of the potential for flash flooding and the need to quickly exit the trail during periods of heavy rainfall.

### Routine and Remedial Operations

Routine operations refer to the daily activities required to oversee a trail system. Remedial operations refer to activities required to sustain the quality of the trail network. The following task lists describe the general routine and remedial operations responsibilities for all network facilities.

#### Task: Inter-agency design review

Coordination between and commitment of agencies responsible for trail facilities is crucial to complete the following routine maintenance tasks. Department managers; planners, designers and engineers; police and fire rescue workers; and field maintenance personnel should be consulted in the design and review process. A trail committee should carry out the following:

- Establish a coordinating committee with representatives from each of the participating agencies and stakeholders
- Identify an entity to provide on-going oversight, coordination, and leadership for the overall network
- Review critical public and private sector projects that might impact the trail, bicycle, and pedestrian projects as they come on line
- Pursue grants and cooperative agreements
- Monitor operations and maintenance and other advocacy functions now and over the years to come
- Review accident and crime reports, and take the necessary up-front actions on a case-by-case basis to limit or mitigate safety concerns, crime, or fear of criminal activity among area residents and trail users.

#### Task: Accurate and Organized Record Keeping

Sound record-keeping techniques are essential to a comprehensive operations and maintenance program. This information can be used to eliminate overlap or gaps in maintenance services provided, identify levels of use, and prioritize management needs. Records should be kept for the following activities and actions:

- Daily activities
- Schedule of routine (and remedial) maintenance tasks
- Hazards, incidents, safety issues observed, and action taken
- Inspection reports
- Annual maintenance budget, pursuing various funding sources
- Projected costs for subsequent years (short-, medium-, and long-term) to reflect on project phasing as shown in the Recommendations section



- Internal working database for existing, planned, or proposed projects for trail system

#### Task: Program Development

- Update informational signage (rules and regulations) to communicate proper usage of all network facility types.
- Update directional signage to integrate trail, bicycle, and pedestrian systems and as new projects are implemented.
- Update user maps to reflect any additions or changes to the systems or overall network, and also reference the connections between trail, bicycle, and pedestrian facilities.

#### Task: General Operations

- Provide contact information and institute an agency response for facility users to report questions, comments, concerns, or complaints regarding the network and a feedback phone number and Web address.
- Continue to provide and establish new public education and citizen participation programs for network users.
- Pursue development of an easy to use management manual and training program and incorporate it into existing and new maintenance programs and procedures within the participating agencies.

### Routine and Remedial Maintenance

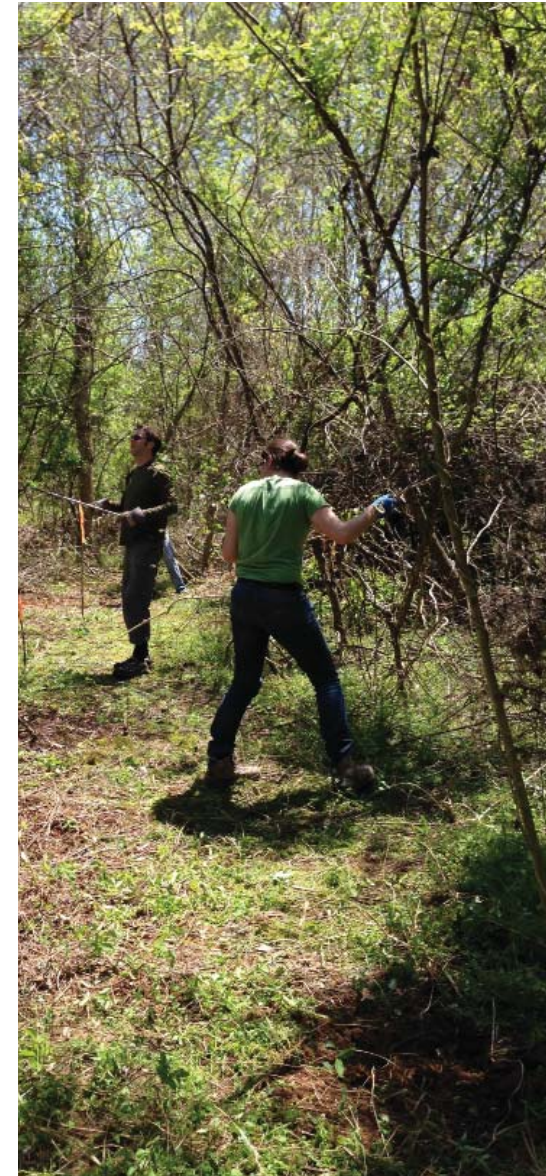
The following task lists describe the general routine and remedial maintenance responsibilities for all trail facilities. A government staff member should be designated as the main contact for the maintenance of trail facilities near any roadway right-of-way. This staff member should coordinate with the appropriate departments to conduct maintenance activities in the field. Funding for an ongoing maintenance program should be

included in the managing agency's operating budget or capital improvements program.

Note that the schedule is intended to provide general guidance for routine and remedial maintenance activities. The frequency of trail facility maintenance within the roadway right-of-way will vary. Maintenance needs will depend upon many factors, including trail surface type, the use of paint or thermoplastic for markings, and traffic volumes. Partnering agencies tasked with maintenance responsibilities should make immediate repairs to any trail facilities that are damaged or have hazardous conditions. A free maintenance hotline should be created for trail users to provide information about spot maintenance needs along the Flyway Trail.

#### **Routine Maintenance Defined**

Routine maintenance refers to the day-to-day regimen of litter pick-up, trash and debris removal, weed and dust control, trail sweeping, sign replacement, tree and shrub trimming, and other regularly scheduled activities. Routine maintenance also includes minor repairs and replacements, such as fixing cracks and potholes or repairing a broken hand railing.



*Volunteers clear heavy brush and invasive species along the Carolina Thread Trail .*

The following tasks should be performed on a regular basis to keep all network facilities in good, usable, and safe condition. Maintenance tasks should be conducted more frequently for trail facilities where use is the most concentrated. Methods such as trail use counts, sketch plan analysis methods for estimating demand, public survey results, and public meeting comments can be used to determine which areas are the most heavily used and may require the most maintenance attention. The frequency

of required maintenance tasks should be established as new phases are implemented and should be reviewed and updated annually to reflect any changes in usage, safety issues, etc.

**Task: Facility Maintenance**

Basic housekeeping of trail facilities will ensure that the network is clean and functional and will also improve the life of each facility. Where feasible, volunteer efforts should be utilized in the performance of these types of maintenance tasks, including:

- Sweeping
- Trash removal

**Table 2: Routine Maintenance Activities for Paved Multi-Use Trails**

		Frequency	Recommendations
<b>Facility Maintenance</b>	Sweeping	2 times per year	Paved facilities will be swept by machine or spot sweeping of bad areas will be swept by hand or with blowers. Some trails require a combination of methods.
	Trash removal	6 times per year	This includes removing ground debris and emptying trash containers at trailheads. Volunteers should be utilized for this task, such as adopt-a-trail programs. Emptying of trash containers may be needed more frequently at certain trailhead locations with additional recreation amenities. This activity should be coordinated with local agencies that maintain those recreation amenities.
<b>Invasive Species Control</b>	Tree and shrub trimming and pruning	Spring and fall and as needed (such as after a storm) in order to maintain 10' vertical clearance (12' for equestrian) and 12' - 14' horizontal clearance	Tree and shrub trimming and pruning should be performed to the specifications of the agency or agencies responsible for maintenance and should be scheduled according to species type. This service will be performed for the safety of trail users, to maintain safe use of all facilities without physical obstacles, such as low-hanging tree limbs, and visual obstructions, such as limited line of sight.
	Mowing	30 times per year	Vegetation along trail corridors should be mowed on a regularly scheduled basis.
	Edging	1 - 2 times per year	Edging to prevent encroachment of grass vegetation on trail is recommended.
	Invasive species control	Once a year and as needed in problem areas	Vegetation, weed, and pest management plans should be put into place to control invasive species, protect endangered plant and animal species, and preserve wetlands, riparian buffers, and other resources of special natural, cultural, or urban infrastructure value.

### Task: Vegetation Management

To maintain a high quality network, regular attention should be given to the surrounding landscape, both natural and man-made. This not only improves the aesthetic quality of the network but also improves the users' sense of safety as well. These maintenance activities include:

- Tree and shrub trimming and pruning
- Mowing of vegetation
- Mulching and edging
- Invasive species control

### **Remedial Maintenance Defined**

Remedial maintenance refers to correcting significant defects in the network, as well as repairing, replacing, or restoring major components that have been destroyed, damaged, or significantly deteriorated from normal usage and old age. 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 flood. Examples of major reconstruction include stabilization of a severely eroded hillside, repaving a trail surface or a street used for biking, or replacing a footbridge. Remedial maintenance should be part of a long-term capital improvement plan.

The following tasks should be performed on an as-needed basis to keep network facilities in good, usable, and safe condition. The repair or replacement of existing facilities should be reflected in a projected budget for future maintenance costs.

### Task: Facility Repair or Replacement

All facilities will require repair or replacement at one time or another. The time between observation and repair or replacement will depend on whether the needed repair is deemed a hazard, to what degree the needed repair will affect the safety of the user, and whether the needed repair can be performed by an in-house maintenance crew or if it is so extensive that the needed repair must be done by outside entities or replaced completely. Some repairs are minor, such as repainting or resurfacing, and can be done in conjunction with other capital projects, such as repaving the adjacent street. Typical repair or replacement activities include the following:

- Replenish gravel, mulch, or other materials
- Repaint/restripe/stain
- Repave/seal
- Replace asphalt or concrete
- Remove encroaching debris along paved trail/sidewalk edges
- Regrade to prevent or eliminate low spots and drainage issues
- Add culverts, bridges, boardwalks, retaining walls, etc., to prevent or eliminate drainage/erosion issues
- Reroute trail, if necessary, to avoid environmentally sensitive or overused areas and any safety issues

**Task: Seasonal Maintenance**

Seasonal tasks should be performed as needed. When conditions cannot be improved to provide for safe use, the facility should be closed to prevent the risk of injury to facility users. Designated maintenance crews will remove leaf debris, snow, ice, etc., from all network facilities as soon as possible. Leaf debris is potentially hazardous when wet, and special attention should be given to facilities with heavier usage. Ice control and the removal of ice build-up is a continual factor because of the freeze-thaw cycle.

Ice control is most important on grade changes and curves. Ice can be removed or gravel/ice melt applied. After the ice is gone, leftover gravel should be swept as soon as possible. These activities should be incorporated into a remedial maintenance schedule:

- Remove leaf litter from network facilities via raking, blowing, mulching, etc., as needed to sustain the safe usability of all network facilities and prevent any storm water drainage or erosion issues;
- Remove snow and ice from network facilities, via shoveling, picking, salt, sand, etc., as soon as possible after storm.

**Table 3: Remedial Maintenance Activities for Paved Multi-Use Trails**

		Frequency	Recommendations
Facility Repair or Replace	Resurfacing	10 - 12 years	Replace asphalt or concrete.
	Drainage	As needed	Regrade to prevent or eliminate low spots and drainage issues.
	Structures	30 years or as needed	Addition or repair of culverts, bridges, boardwalks, retaining walls, etc., to prevent or eliminate drainage/ erosion issues.
	Rerouting	As needed	Reroute trail, if necessary, to avoid environmentally sensitive or overused areas, safety issues, or construction projects.
Seasonal Maintenance	Remove leaf litter	As needed	Prioritize removal by the most heavily used facilities and geographic location. Limited development trails should be emphasized as natural environments and warnings should be posted that hazardous conditions may exist with the changing seasons.
	Remove snow and ice	As needed	Prioritize removal by the most heavily used facilities and geographic location. Limited development trails should be emphasized as natural environments and warnings should be posted that hazardous conditions may exist with the changing seasons.
Habitat Enhancement	Vegetative Enhancements	As needed	Install fencing, prune trees and shrubs, apply herbicide, and take other measures to support a healthy and attractive habitat surrounding the trail.



### Task: Habitat Enhancement and Control

Habitat enhancement and control can improve aesthetics, help prevent erosion, and provide for wildlife habitat. Habitat control also involves mitigation of damage caused by wildlife to plant vegetation, such as trees and shrubs. The following actions should be applied to support and enhance natural ecosystems while also minimizing damage to both trail facilities:

- Take preventative measures to protect landscape features from wildlife, such as installing fencing around sensitive or newly planted plant materials
- Apply herbicide to eliminate any problem plant species, such as poison ivy, non-native bush honeysuckles, and reed canary grass
- Apply herbicide to maintain facility edges and prevent encroaching vegetation along trails and sidewalks
- Deter interaction between facility users and facility inhabitants, such as feeding the wildlife
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- Deter interaction between facility users and facility inhabitants, such as feeding the wildlife

