

Chapter 7 - Trail Operations & Maintenance

7.1 Introduction

Proper maintenance of the city wide trail system is important for providing a safe and productive use of the trails, protecting the financial investment each community has made in constructing the trails, and for continued future recreational benefit to citizens and visitors of the city.

7.2 Overview of Trail Maintenance Responsibilities

The following list represents the major trail maintenance tasks that will be performed by the city's park maintenance staff:

- Coordination with Home Owners Association (HOA) trails maintenance personnel (for developer built trails) on maintenance issues during the period of transition from private trail use to public trail use.
- Coordination with City Trail Volunteer Program Coordinator and trail volunteers who assist, in the maintenance duties of the Citywide trails.
- Routine inspections.
- Assistance in responding to maintenance for the trail system pertaining to those items raised by trail users and/or trail volunteers performing the routine trail inspections and maintenance duties.

7.3 Maintenance Schedules

Trail system maintenance begins immediately following construction and is an on-going aspect of operations. Not only do maintenance activities keep the trails in good condition, they help ward off claims of negligence and illegitimate or undesirable uses. This section discusses typical maintenance schedules that will protect the city's trail system investment (see Table 7.1 "Trail Maintenance Activities and Frequencies"). Trail operations and management require daily tasks, whether it is a vandalized sign or an injured trail user, the city must be prepared to deal with all types of concerns.





Maintenance Item	Estimated Frequency
Trash pick-up	3x per week
Remove fallen trees	As needed
Pothole filling	As needed
Bollard repair or replacement	As needed
Graffiti removal	As needed
Refill Dog waste bags	Average 3x per week
Pavement sweeping	4x per year
Weed control	2x per year or as needed
Tree pruning if encroachment on trail	2x per year or as needed
Sign replacement / repair	As needed
Fence repair and replacement	As needed
Clean drainage system	1x per year and after storm
Drinking fountain repair or maintenance	As needed
Bench repair or maintenance	As needed
Pavement sealing/repaving	3-5 years or as needed
Unpaved trail tread maintenance	1x per year or as needed
Kiosk repair and maintenance	As needed
Dog station replacement and repair	As needed
Trail edging repair or replacement	As needed

Table 7.1 Trail Maintenance Activities & Frequencies

The city will adhere to the general maintenance schedule and will take appropriate immediate actions to address any condition deemed a safety hazard. Many of these maintenance items are dependent on the type and amount of landscaping and supporting infrastructure that is developed along the trail. Maintenance activities will be coordinated so as to minimize impacts to trail users and to maximize cost efficiencies through the use of trail volunteers.

7.4 Trail Closures

The trail may be closed if any heavy equipment is expected to use the trail, or when any maintenance activities are occurring that could be unsafe for the general public. Trail users will need to be managed during these closures. Trails Maintenance Supervisor is responsible for advising the Parks Planning Manager at least five (5) working days in advance of such scheduled maintenance and to coordinate and provide the appropriate measures to close the segment of trail, arrange detours, and notify the public.

The policy for the procedures that will be followed prior to the trail closing, including a variety of means to inform the public, are listed below:

- The Parks Planning Manager will provide at least 48 hours advance notice to volunteer trail captains on the impacted segments to be closed indicating the expected duration of the closure. The Parks Planning Manager and Trails Maintenance Supervisor will coordinate in efforts to

keep the public informed regarding the trail closure and make every effort to keep the closure period as short as possible;

- The city will physically close off the trail that is being worked on with barriers, and post “Trail Closed” signs with a contact number for information.
- The city will provide detour signs where trail users can reasonably be detoured to other routes. If no reasonable alternate routes are available, the Trail should have an “End Trail” sign and provide access to the sidewalk system.

Permanently Close Chronic Problematic Trails

Trail segments may need to be permanently closed due to degradation, or if it poses hazards to users, or have begun to adversely impact sensitive environmental or cultural resources. Per the Habitat Management Plan, public access in the preserve areas must be consistent with the protection and enhancement of biological resources, which includes blocking-off unauthorized trails within sensitive habitats.

In these instances, it must be clearly communicated well in advance to staff, trail users and any other relevant groups that the trail is closing. Newsletters, kiosk notices, email, websites and meetings can be used to forewarn visitors that a specific section of trail will no longer be open and to explain the rationale behind the closure. Signs should be posted in advance of the closure and left up until no evidence of the trail remains so visitors are not tempted to detour from the new route. Other techniques include installing gates, planting vegetation at access points, and camouflaging access points with stumps, logs or brush.

Permanent closure of a trail in the coastal zone must be consistent with the Coastal Act and the city’s certified LCP, and may require a coastal development permit to analyze alternatives to trail closure and evaluate the impacts any closure will have on coastal access.

Temporarily Close Trails

There may be times when it is appropriate to temporarily close the trail system due to emergency situations, inclement weather, flooding, or accidents. The operations and management plan should include an inclement weather policy that details procedures for warning visitors of poor trail conditions, closures and detours. If there are locations prone to flooding or other issues that result from severe weather events, consider posting an inclement weather policy on the city website, on signs at the trailhead, in newsletters and via email list-serves.

In preserve areas, trails may be seasonally restricted if deemed necessary to prevent disturbance of breeding activities or to prevent habitat degradation (i.e. trampling vegetation and erosion during rains). Seasonal trail closures are common where weather conditions are known to be consistently poor.





Carlsbad Citywide Trail Inspection Form

Trail Name:		Date:
Trail Captain:		
	Condition	Comments
Trail Surface/Edge Condition		
Erosion		
Vegetation		
Signage		
Fencing		
Dog Waste Stations		
Additional Comments		

For immediate trail maintenance items, please contact Parks Maintenance at 760-434-2985. Such examples would include trees fallen over trails, drainage washout after storm events, graffiti.

Table 7.2 Trail Maintenance Inspection Form

7.5 Carlsbad's Trail Maintenance Standards

The city has developed a trails inspection form to identify, record, and respond to maintenance problems, and to keep written records of such actions (see Table 7.2 "Trail Maintenance Inspection Form"). The following maintenance duties are considered basic to all soft surface trails.

Slough and Berm Removal

Slough (pronounced "sluff") is material that has moved downhill from the backslope and been deposited along the uphill edge of the tread. This process causes trail users to travel along the outside edge of the trail. The tread eventually narrows and moves downhill from its original location, resulting in an unsafe situation. The slough must be removed to reestablish the proper backslope. The excess material may be used to fill holes in the trail and reestablish the outslope, or to build up the downhill side of waterbars. Berm is soil that has built up on the downhill edge of the trail tread. Berm prevents water from flowing off the side of the trail and allows water to channel down the trail, causing erosion. A berm may also cause nuisance water to pool on the trail surface, resulting in soil saturation. Saturated soil is damaged easily and forces trail users to detour around the area, causing the trail to widen. Berms should never be constructed intentionally, and should be eliminated whenever present.

Vegetation Clearance Maintenance

All plants encroaching on the vegetation clearance limits for the particular trail classification must be cut back. Branches should be close to the main stem without cutting into the branch collar. Plants being removed must be cut flush with the ground and stumps must be removed to prevent safety hazards. All plants growing within the trail tread must be grubbed-out. All removed plant material must be scattered in a location not visible from the trail.

Tread Maintenance

In addition to slough and berm removal, the remaining trail tread should be restored to a safe walking condition. All loose rocks, rock points, stumps and roots protruding from the trail surface should be removed. All holes should be filled to create a smooth, obstacle-free trail tread. Maintaining a proper outslope is critical to the long-term condition of the trail.

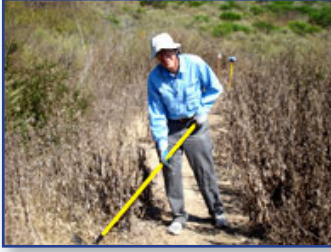
Drainage Maintenance

Special attention should be directed to the maintenance of drainage structures. These structures are extremely important in protecting the trail from erosion. If they are not maintained properly, the trail will be prone to erosion, and may become unsafe for public use and require extensive amounts of labor to repair. All repairs to drainage structures must restore them to their original standard construction specifications.

Special Structure Maintenance

Structures such as waterbars, culverts, switchbacks, retaining walls, wash crossings, overpasses, bridges, etc. are rather expensive and labor intensive to construct. Proper maintenance will prolong the life of the structures and help prevent safety hazards. All repairs to special structures must restore them to their original standard construction specifications.





Emergency Access

The trail shall be cleared and maintained in a manner that ensures that emergency (police and fire) vehicles have access to the trail. Emergency access for safety, security, or maintenance purposes is based on an established protocol between the parks, fire and police departments. Protocol will be developed along with an Emergency Plan that will be developed by each department. The initial responding party will notify the other departments as soon as possible. If removable bollards are installed all appropriate police and fire personnel shall have the keys for access.

7.6 Operation and Maintenance Plan

Maintenance plans and policies are one of the primary ways to limit hazards and lawsuits, as well as ensure a trail system remains attractive and usable. Periodic inspections, documentation of hazards and remedies, and maintenance activities should all be part of a well-rounded plan. Carlsbad Operations and Maintenance Plan (OMP) includes the following:

- Contact information for trail managers, organizations, and/or volunteers responsible for maintaining the trail system.
- Written inspection and maintenance policies that include tasks, timeframes and responsible parties.
- Inspection forms that document date, time, person/group, trail condition, hazards and other pertinent information.
- Trail maintenance schedule that identifies timeframes for regularly-scheduled maintenance activities such as pruning, trash pick-up and fixing potholes or erosion.
- List of constructed features, such as bridges, culverts and fences that require regular inspection and maintenance.

The following are included in the OMP:

- List of personnel with keys to locked gates and bollards;
- List of locked access points and how they are locked;
- Plans for quickly dealing with unexpected events such as storm damage;
- Daytime and nighttime contact information for trail managers;
- Contact information for any local or state or violation information, including local law enforcement, fire and other first responders, both emergency and nonemergency contacts;
- CA Department of Fish and Wildlife (poaching, unlicensed fishing); and
- Animal control or shelters (loose or lost pets).

7.7 Safety and Enforcement

To minimize liability, it is critical to adhere to established standards in trail design, signage, and maintenance. California State Statute 831.4 provides for substantial immunity to public agencies that construct and operate trails in accordance with widely accepted standards or guidelines, such as the California State Parks Trail Design and Maintenance Guidelines. Measures listed to minimize liability include:

- Post trail regulations and provide enforcement;
- Post warning signs for known hazards that are not easily identified;
- Keep accurate routine maintenance records;
- Inspect the trail regularly for hazards;
- Evaluate and address hazards and maintenance problems reported by trail users with appropriate measures as soon as possible;
- Ensure that there are adequate emergency access points to the trail along its entire corridor.

Safety of trail users must be paramount in priorities. This section describes basic safety elements that need to be reviewed and encouraged. This section also looks at some of the management strategies to ensure that trail users are following the regulations necessary to protect other users and resources found along the trail.

Utilize a Trail I.D. System

Trail Identification Signs have been placed at trailheads that correspond with GPS Coordinates that have been mapped by the city's GIS staff and provided to Police and Fire. Trail names and corresponding GPS coordinates are effective in assisting fire and safety personnel in locating trail users who may need assistance in emergencies. Trail identifications are also useful for staff to locate maintenance areas on some of the longer trail systems, such as at Lake Calavera, Hosp Grove and the Rancho La Costa preserve. These trailhead signs also indicate trail difficulty, length, surface type and are typically posted along with the trail rules and regulations.

Develop an Emergency Response Plan

Emergency response plans clearly indicate how emergency situations, such as injured, lost hikers, or stranded cyclists, can be assisted. While not every emergency can be imagined and there will be unforeseen instances, having a plan that covers typical emergencies will go a long way to providing care for trail users and limiting liability. Emergency response plans should include the following:

- Emergency contact information for local police, hospitals, fire, and rescue agencies.
- Emergency contact information for specialized services such as search-and-rescue groups, tow trucks, and helicopter services.
- 24-hour contact information for trail managers or responsible trail organizations.
- Identification of all potential trail or path access points, the limitations of each access point (vehicle size, difficult terrain, etc.), list of personnel responsible for keys to any locks at any locked access point.
- Inclement weather plans for closing sections of trail that may be hazardous during events such as storms. These plans should also include evacuation methods to use during an emergency.

Monitor the Trail System

Monitoring is a general term for actively watching over trail users and activities and may be accomplished by local law enforcement, private security, preserve



managers, staff, and other trail users. The Rails-to-Trails Conservancy recommends that local law enforcement agencies tasked to monitor trails do so on bicycles rather than in cars or all terrain vehicles (ATVs).

In July 2017, City of Carlsbad launched the Ranger Pilot Program to patrol the open space in the City of Carlsbad, including the preserves, trails, lagoons, beaches and parks. The pilot program, which includes two full time positions and a new off road vehicle, is being run by the City of Carlsbad Police Department. Rangers have the power to issue citations, although they also focus on providing information about the law and why it's important to preserve these natural areas. Preserve managers also continue to provide patrolling and enforcement, in addition to police officers, who provide back up as needed.

Among other duties, the rangers patrol the city's habitat preserves to help ensure the sensitive plant and animal species there are not disturbed by human activity. They also help ensure trail users are aware of rules, such as keeping dogs on leashes.

Enforce of Rules and Regulations

Rules and regulations are useful to deter unlawful and undesirable activity on trail systems. While the majority of visitors who read rules and regulations will abide by them, enforcement may be necessary to promote the safety and enjoyment of all users. In most cases, professional law enforcement officers are responsible for issuing citations for legal violations such as littering, after hours use and unauthorized vehicle use. While other involved in monitoring cannot enforce laws, they can aid law enforcement officers by noting and calling in criminal activity and providing emergency relief until professionals arrive. Others should be trained to understand the extent of their monitoring capabilities and how to contact the proper authorities.

Mobile Application for Trails

The city is exploring a mobile application (app) for trails that can provide a unique platform to enhance outdoor adventures for trail users. It can create a better experience, offering an effortless way to enjoy nature yet have vital information within the palm of your hand. Visitors can follow the best route, visit the must-see sites and never get lost again. The app can provide general information about the trail, such as classification, topography, surface, accessibility; directions to its location; and updates about current conditions. Another potential option is an ability to download a trail map to your smart phone and use it off-line, in remote areas where cell service is not available. This technology is creating a new standard for the outdoor experience, where information is instantly available and communication with trail users is at the push of a button.

7.8 Trail Volunteer Programs

Volunteers fill many different positions throughout the city, and play a vital role in the maintenance of existing trails throughout the city. They assist with trails improvements such as installation of directional and interpretive signage, fencing, kiosks and other trails amenities. The Citywide Trails Volunteer Program is outlined in the Appendix B Trail Volunteer Handbook.

Saturday trail clean-up events are very popular and enlist hundreds of volunteers throughout the year to assist in trail maintenance, erosion control, weed abatement, and other important tasks associated with keeping the trails safe and enjoyable for residents and visitors. After initial experience working on the trail, many participants decide to take a greater role in monitoring and maintenance of the city's trail network. They register as official trail volunteers or sign up for a trail captain role. To become a city trails volunteer, person must submit an application with the Community Volunteer Program Manager and attend a mandatory volunteer orientation. Trail volunteers are integral part of the successful trail management program in the City of Carlsbad. Their dedication and commitment help to maintain city's prestigious trail network. **In the fiscal year 2017-2018, volunteers donated 1,253 hours of trail work with a total value of \$30,937.**

In addition to the City's Trail Volunteer Program, lagoon foundations also offer trail volunteer programs and training at their respective nature centers. Visit the city's website at www.Carlsbadca.gov/trails for more information on the City's Trail Volunteer Program.



Volunteers repair trail erosion at Lake Calavera Preserve during Saturday work event

Regulations for Trail Use

1. Stay on the designated trail
2. Put litter in containers provided;
Do not leave or deposit any litter
3. Pick up after your pet
4. All pets must be on a hand-held leash under 6' long
5. Bicycle riders 17 years and younger must wear a helmet
6. Bicycles should be driven at safe speeds considering
all other trail users
7. Ride or walk on right side when traffic is coming from
the opposite direction or when someone signals they
would like to pass
8. Motorized vehicles and horses are not allowed on this trail
9. No smoking, fires or firearms

Carlsbad Municipal Code Sections 7.08, 11.32, et seq.
San Diego County Code Sections 62.669 & 62.670
VC Sec. 21212

Emergencies	9-1-1
Police Non-Emergency	760-931-2197
Trail Maintenance	760-434-2824



Figure 7.1 Trail Regulation Sign