

Parks & Public Landscaping Advisory Board

Agenda

**July 2, 2025
Library Meeting Room
951 Spruce Street
6:30 PM**

Members of the public are welcome to attend and give comments remotely; however, the in-person meeting may continue even if technology issues prevent remote participation.

- You can call in to **+1 408 638 0968 or 833 548 0282 (Toll Free)**, Webinar ID # 885 1622 9475
- You can log in via your computer. Please visit the City's website here to link to the meeting: www.louisvilleco.gov/pplab

The Board will accommodate public comments during the meeting. Anyone may also email comments to the Board prior to the meeting at AMcneal@LouisvilleCO.gov.

- I. Call to Order
- II. Roll Call
- III. Approval of Agenda
- IV. Approval of Minutes
- V. Public Comments on Items Not on the Agenda
- VI. Work Plan
 - Review 2025 and discuss next steps/ topics
- VII. Board Report
- VIII. Cultural Services – Mary Trebing Statue memo

Persons planning to attend the meeting who need sign language interpretation, translation services, assisted listening systems, Braille, taped material, or special transportation, should contact the City Clerk's Office at 303.335.4574 or clerksoffice@LouisvilleCO.gov. A forty-eight-hour notice is requested.

Si requiere una copia en español de esta publicación o necesita un intérprete durante la reunión, por favor llame a la Ciudad al 303.335.4536 o 303.335.4574 or email Clerksoffice@louisvilleco.gov

- IX. Staff Report
 - General Park Maintenance Standards- overview
- X. Discussion Items for Next Meeting – September 3, 2025
- XI. Adjourn

Parks and Public Landscaping Advisory Board Meeting Minutes**Parks and Public Landscaping Advisory Board Meeting Minutes**

Wednesday, June 4, 2025, 6:30pm

Library 1st Floor Meeting Room

951 Spruce St.

1. Call to Order

Meeting called to order by Chair Jody Ash, 6:32PM

2. Roll Call

Ash, Jody, Chair, Present

Buck, Signe, Present

Denat, Julien, Present

Kelsey, Kathy, Present

Kutscher, Gene, Present

Webb, John, Secretary, Present

McNeal, Abby, Parks Superintendent, Present

Blackmore, Adam, Parks and Open Space Director, Present

Cross, Ginger, City Parks and Open Space Marketing

Langley, Diana, City Manager

Guests:

None present

3. Approval of Agenda

Moved and approved

4. Approval of Minutes

Moved and approved

5. Public Comments on Items Not on the Agenda

None

6. PROS Marketing: Ginger Cross, staff report

Ginger Cross, Marketing Staff for Parks, Recreation and Open Space Departments, 9 years on the job for Louisville, and 10-year resident of Louisville, responsible for Parks and Open Space /communications Management, a specialist in marketing.

Communication is the Job! Promotion of Parks, Open Space, and Recreation including the Golf Course, and celebration of routine maintenance activities.

Challenges include communication with community members from 0 to 102 years of age and always looking for new ways to communicate to the community.

Ginger works with Abby, Adam, Ember Brignull (Open Space Superintendent), and Kathy Martin (Recreation Superintendent). The Staff Organizational chart has Adam as Director, supervising Abby, Ember, and Kathy, with a marketing handled by Ginger and an assistant, Lauren.

Ginger works with a spreadsheet on a high level for daily and weekly activities and uses Project management software for longer range activities.

The Parks and Open Space newsletter is a primary responsibility, keeping the community up to date on events and education opportunities.

She manages three Facebook pages, one each for Parks, Recreation (including Golf Course) and Open Space. Ginger also provides information to the city website, three Instagram accounts, the Louisville Buzz, and two mobile apps. She uses Next Door and Print materials frequently, and the Louisville Lantern, which comes to community members in the mail.

Ginger has promoted POS and Rec open house events, park naming contests, communicated maintenance activities and schedules (including dandelion issues), Arboretum renovations, installation of Bermuda grass turf demonstration garden, water conservation programs, and has used yard signs with QR codes for communication with the community. Louisville will soon have a new page for the Arboretum on the city website.

Up-coming events include launch of the review of the City Long Range Plan, and the openings of the renovated and restored Sunflower and Enclave parks, currently scheduled for July 10.

Abby: Appreciates the opportunity to share the activities of the parks and ground maintenance that is going on to show the community what has been accomplished. A case in point is the improvements underway at the Arboretum.

Ginger has mailed out postcards about park openings, tree trimming and removal operations, median replacement work, and the discontinuance of glyphosate and 2-4D in park and recreation areas. These efforts help give city staff the credit and acknowledgement that they deserve and appreciate.

Jody: Community members are all busy and both need and appreciate straightforward and frequent communication! Communication also creates support for public works projects.

Ginger and her assistant used graphics, animation and humor to communicate the issues around removal of the huge cottonwood tree on Dillon Road. Talking cows have made appearances in the Louisville Buzz!

7. Pesticides- discussion continued from May meeting - Staff report

Pirates and Memory Square parks have been organically managed and pesticide free since 2017.

Jody: Asked if there is data on the results of the organic management protocol, such as how it is going, management issues experienced, changes in mowing and fertilizer usage.

Abby: Mowing is unchanged, fertilizer budget has increased. Memory Square Park is heavily used and requires more attention. Details are in Abby's Staff report from last month.

Julien: Asked how it was decided which parks are managed without pesticides? Could this practice be extended?

Abby has managed this program since 2022, which originated in in 2017. Currently, hardscapes and landscape beds are the focus of Parks IWMP.

Our athletic fields are high traffic, dandelions are problematic, and impact field use. Park usage determines the potential use of chemicals. The green lawn at Community Park is used for concerts and is treated in a similar way to other high use areas. Aeration and reseeding has resulted in 10% or less of weeds. Spot applications of chemicals have been effective for weed management. Fertilizers have been changed based on soil nutrient analysis.

In 2023, these maintenance practices were reviewed with PPLAB as best practices and standards and are checked frequently for adherence and improvements.

Gene: Coal Creek Ranch HOA decided to go targeted applications and a volunteer program for maintenance. There have been no liability issues. Maybe an annual park cleanup with mulching and weed pulling could be promoted, a "Park Service" day, similar to Arbor Day opportunities.

Adam: Noted in days gone by, community participation in "Adopt a Park" program diminished. There could be an effort to bring back the program to get the community more involved. Open Space has the Weed Whacker project to control invasive plants. They are in high demand! The Open Space Program has strong community participation.

Jody: Noted that there is value in reporting on the effectiveness of organic management, and what the city is doing in that regard. We can design our economic practices to grow healthy turf grass. Memory and Pirates parks are small, an acre a piece, allowing for smaller organic treatments, not intentionally to reduce pesticides. The public is concerned about pesticide use; organically managed parks are a great promotional opportunity. Don't spray anything on any play surfaces!

Abby: Soil testing has been used to balance the maintenance and feeding of turf. Phosphorous is not currently being used on turf.

City Manager Langley noted that the Integrated Weed Management Procedures (IWMP) are under consideration, with a study session scheduled for later this year.

John: Organic maintenance practices could be a great marketing tool for our community, promoting a healthier community and quality of life.

Ginger: When Louisville originally discontinued glyphosate and 2-4d, some community education was very important. With the continued IWMP, the same degree of communication is still necessary for Parks and Open Space. In the future, Parks and Open Space may need separate plans. Reseeding and grazing are in progress to restore the original environment. We may need to correct the tools for the application, mowing is not always the answer.

Jody: Beyond Pesticides and Pesticide Free Communities are great sources that describe pesticide-free management practices. Jody noted that there is an article in the meeting packet regarding the use of pesticides in the community.

John: Can we encourage our community to learn more about more sustainable management of private lawns and turf areas. I have heard that Boulder Valley Schools have gone to organic turf management practices. This may be district wide but needs to be verified. I will check with my contact at the People and Pollinators Action Network (PPAN) to find out the details.

Signe dropped off virtual meeting due to not feeling well.

8. August PPLAB meeting schedule

Jody will be unavailable. PPLAB will need 4 members to satisfy the quorum requirement. Three members are currently scheduled to be out of town. PPLAB Chair Ash called for a vote cancelling the August PPLAB meeting. PPLAB members made and seconded the motion, motion passed.

9. Board Report

Louisville Bee City USA committee will present a Pollinator Garden Tour on Sunday, June 29, 9AM to 2PM. The committee will sponsor a Wildflower Walk at Davidson Mesa Open Space, conducted by Dave Sutherland, an independent naturalist formerly of the BoCo Open Space, the same Sunday morning, June 29, 10AM to 12 PM. These two activities dovetail with Lafayette's Old Town Garden Tour, scheduled for the previous day, Saturday June 28. This could be the beginning of a local Pollinator festival! Governor Polis has declared June as Colorado Pollinator month.

Our Art Contest did not have many entries this year, possibly because the library was closed during the month of April. Abby said that some Parks Department

support was still available for prizes, but the Bee City Committee decided that we would not award participation prizes this year.

Louisville Open Space and CSU Heritage Project will be running a BioBlitz next week! Activities are slated for Hecla Lake, Davidson Mesa, Keith Helart Park and Community Park/Coal Creek Trail, and other locations on Louisville Open Space properties. The week ends with an open house at the Rec center, Friday, June 13, from 10AM to 1PM.

RAB: No comment

10. Staff Report

See details included in Parks Division Monthly Report in Meeting Packet. Highlights include:

- Planting and installation of hanging baskets and corner pots on Main Street, Completion of Transformative Landscape Change Challenge at the arboretum, with installation of 270 plants provided by Resource Central and the Colorado Water Conservation Board with Sunlit Fiesta and Color Pop preplanned gardens and installation of Bermuda Grass Demonstration turf.
- Pollinator-focused plants at the arboretum include Golden Currant shrubs, and Catmint (Nepeta), Purple Cone Flower (Echinacea), Black-eyed Susan (Rudbeckia), Butterfly weed (Asclepias tuberosa) and Blanket Flower (Gaillardia) perennials.
- Planting of annuals throughout Parks landscape beds.
- Support of general parks maintenance, shelter permits, and special events, weekly mowing and trimming, preparation of athletic fields for tournament and permitted play
- Forestry planted 25 trees in collaboration with Tree Foundation, PLAY Boulder, and Boulder Youth Corp tree planting in three locations: Washington Ave., S Boulder Rd., and Cleo Mudrock Park.
- Park renovations at Sunflower and Enclave parks are on schedule. Trees have been planted and sod installed. Ribbon cutting planned for both parks.
- Irrigation improvements - controllers purchased and 22 of 26 have been installed.
- Contacts in progress with Cornerstone regarding the recent email sent to PPLAB members. Staff are already planning on entryway improvements.
- Looking into median landscaping seed mix, seeking some shorter growing plants.
- Parks staff has repurposed an older electric mower, added larger rear wheels and swapped original rear wheels for smaller front wheels to allow for better cutting of typically taller growing median seed mix.
- Long range Parks and Trails Master Plan moving forward. Expect June kickoff with consultants and staff to establish timelines and project planning, efforts to be tied to the city Comp Plan, still in progress. OS plan kickoff yet to be

determined. Waiting on approval of the Comp Plan, Council set to meet on these issues June 17 for first draft of Comp plan, final expected July 19.

- Parks will be revisiting medians. "Medians 2.0" due at Council soon. Church lane on Via Appia has been hydroseeded with the Verge seed mix.

11. Discussion Items for Next Meeting

Next meeting:

Look at work PPLAB Work plan to see what else might be appropriate.

Memory Square discussion at some point, nothing on the radar for now!

Education aspect of PPLAB. What would that look like going forward?

Past efforts include Japanese Beetle mitigation, Milkweed removal from weed list, Louisville Bee City activities.

Subcommittee on future rec sites, tennis courts, for 2027 buildout. What will that look like?

Ask Bryan for review of current 6-year plan, funding will be dictated by Long range plan

What to do about rabbits? Currently rabbits are managed by County Board of Health

Highlight city best practices for Turf management for community education

Site visit to arboretum?

12. Adjourn

Meeting adjourned 7:57 PM

PPLAB 2025 PPLAB Work Plan

approved March 2025

Requests are in order of priority and will adjust to align with City Council Work plan.

Maintain what we have with a focus on Sustainability, Fire Hardening, Economic Vitality, EDI thought actions targeted at the objectives listed

			Core Services	Affordable Housing	Economic Vitality	Sustainability	EDI	Budgeted
Program Area	PPLAB Recommendations	Outcomes	Council Priority					
Budgetary Support	Support Park Operational budget needs for current 2 year budget cycle. Keep communications regarding the underfunding of Parks Operations anticipated in 2027	PPLAB and City Council communications to support funding for Park Operations	X					
Pollinator Habitat, Resilience, Fire Resistant, Low-water, Sustainable Landscape Opportunities	Sustainable landscape opportunities that are resilient fire resistant low water pollinator habitats. Collaboration with OSAB for pocket plantings and transitional planting areas from Parks to Open Space. Enhance Cornerstone raised landscape bed and continue work at Arboretum	Staff to continue enhancing and renovating landscaping beds throughout city promoting resilient, fire resistant and pollinator plantings.	X		X	X		X
Education	Find educational opportunities as outlined in PPLAB mission to support public's knowledge and understanding of the Parks Operational program. Topics to include Fire Hardening, Sustainable Landscaping, Japanese Beetle, Mental Health benefits of Park Spaces and continuation of the Bee City USA designation through public outreach opportunities.	Continue to support Park Operations in city publications. Various educational events hosted by sub-committee, Open Space and Parks for community supporting bio-diversity pollinators. Art Contest for Elementary and Middle School students.	X			X	X	X
Outdoor Recreation Amenities Roadmap and buildout of Operational Model including multi-use fields	RAB/PPLAB subcommittee participation, continuing planning and identification of priorities and project recommendations. Potential Tennis programming expansion 5th court at Centennial Park. Feasibility study on multi-use fields and redesign of current athletic field space at Cleo Mudrock	On going meetings and discuss on, PPLAB recommendations/ memo submittal. PROS Long Range Plan data review to support of need. Work jointly with RAB on discussing Lafayette IGA for property development of multi-use fields.	X		X		X	X
Integrated Pest Management	Continue to support the reduction of pesticides use in Parks and City maintained properties. Encourage community members to reduce pesticide use and enhance community education. Increase transparency on pesticide use on city properties. Review current Integrated Weed Pest Management (IWPM).	PPLAB recommendations, communications and educational opportunities. Work toward measurable pesticide reduction in parks and surrounding community. Work towards transparency of use in PPL.	X			X	X	
PROS Projects - Playground: Memory Square. Median renovations and identified 2025 CIP projects, Development Review	Design process for Memory Square playground renovation 2025, Median renovations. Development as requested.	Review and provide input as requested by staff. Medians- incorporate sustainability, local materials, and more perennials.	X			X	X	X
Collaboration with other Advisory Boards or Commissions	Collaboration opportunities to work with city advisory boards and commission to further enhance the community. OSAB, RAB, LRC- as examples.	Outdoor Amenities subcommittee participation with RAB designees. Future OSAB collaborative meeting	X				X	
Bench Marking GMMP	How has the GMMP been implemented, what is needed to support requests to increase maintenance and operations using the data to support.	On-going- Staff report in first qtr. 2025, PPLAB recommendations from data review	X			X		X
Parks Long Range Plan	Long Range planning	Review as requested	X		X	X	X	X
PPLAB Bylaws Review and Update	Work with City Clerk, Staff Liaison and Advisory members to review and update PPLAB Bylaws.	TBD City Clerk						

Memo on Mary Trebing Statue

Summary

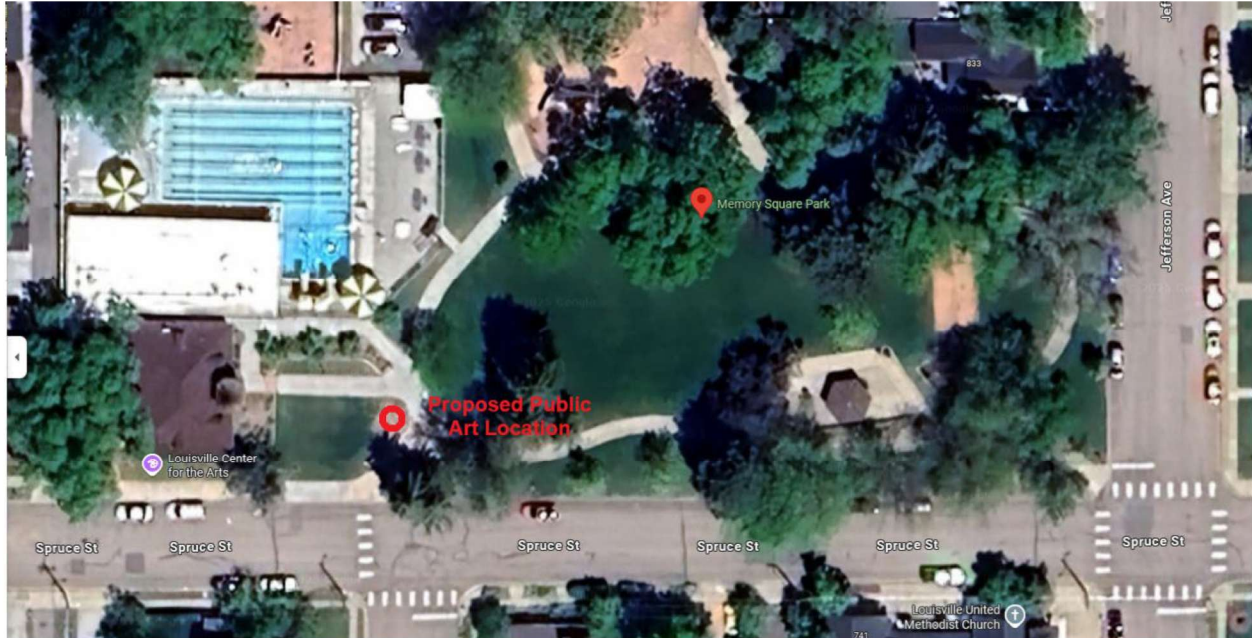
The Museum and Arts & Events divisions in the City of Louisville are working together to commission and install a piece of Public Art and corresponding plaque commemorating Mary Trebing, a person of note in Louisville and Colorado history.

Mary Trebing (1920-1943) was one of only 15 WASPS (Women Airforce Service Pilots) from Colorado to serve during World War II. She died in service at the age of 23 when her plane crashed in Oklahoma. She lived and attended school in Louisville from ages 9-14. Her parents, William and Mrytle Trebing lived in Louisville in various locations until 1949.

Staff plan to install the sculpture dedicated to Trebing's life and experiences in the eastern corner of the lawn directly in front of Memory Square Park (as seen in the image below). Mary Trebing would have attended Louisville Grade School and many community events at Memory Square Park, including at the current Arts Center building.

Staff will publish a Call for Entries for the piece in the Summer of 2025 with the intention of selecting an artist before the end of the year. Staff hopes to install the new piece before the end of 2026, so the unveiling can be a part of the City's Sesquicentennial (America 250, Colorado 150) programming.

Proposed Location



Additional Info on Mary Trebing

See attached Historical Marker Draft for a short biography of Trebing.

Mary Trebing has also been honored at the following events and locations:

- On May 24, 2025 Memorial Day, Colorado Remembers Ceremony at the Colorado Freedom Memorial in Aurora, CO. A video about the ceremony can be found [here](#).
- At Spirit of Flight Center, Erie Colorado (relocated to Idaho) and posthumously awarded Congressional Medal of Honor September 30, 2010.
- On bronze plaque at the Air Force Academy in Colorado Springs, as one of the 38 WASPS who were killed during WWII. Honor was on May 4, 2000.

Detailed Description of the Location and Physical Format of the Proposed DAR Marker

Proposed Text and Images



Photo courtesy of Find-A-Grave

Mary Elizabeth Trebing, WWII WASP Aviator
1920 – 1943

Mary Elizabeth was born William and Myrtle Mae DeWitt Trebing in Royalton, IL. Coal mining brought the family to Louisville before 1930 where Mary attended Louisville Public School at Memory Square Park from 1929-1934 and her family rented a house on Front Street. By 1940, Mary was attending Oklahoma A&M and working to support herself. On 21 Feb 1943, Mary entered Army Air Force Flight Training at Avenger Field, Sweetwater, TX. After graduating 7 Aug 1943, she was assigned to Love Field in Dallas as a WASP Ferry Pilot. On 7 Nov 1943, Mary's plane crashed near Blanchard in rural McClain Co, OK. She is one of 38 WASP aviators who died in service. On 30 Sep 2010, she was posthumously awarded the Congressional Gold Medal.

Honored by Indian Peaks Chapter, NSDAR and Louisville Historical Museum

The above image provides the proposed text and an image (courtesy of Find-A-Grave) of Mary Elizabeth Trebing. The proposed marker does not include the DAR Logo but references Indian Peaks Chapter and the Louisville Historical Museum with whom we've partnered to locate and place this plaque.

Memorandum

To: Parks Public Landscape Advisory Board (PPLAB)
From: Abby McNeal, CSFM, CPRP
Date: 07/02/2025
Re: Parks Division Monthly Report

Streetscapes/ Horticulture:

Staff worked with contractor to plant and install landscape renovations at Cornerstone and Hillside entryways.

Overseeded Via Appia and McCaslin medians with staff created low growing native seed mix Buffalograss, Blue Grama, Alkali grass, and Fine Red Fescue.(note these grasses can be found in the Verge seed mix)

Parks, Athletic Fields, Cemetery:

Supporting general parks maintenance: shelter permits and special events

Mowing and trimming weekly.

Athletic Fields work on preparing infields for annual July 1-5th IDT tournaments (estimated 500 + visitors)

Forestry:

Supporting weekly visits to educate Boulder Youth Corp tree planting 3 locations: Washington Ave, S Boulder Road, Cleo Mudrock detention area.

Larger Cottonwood tree pruning- various locations near McKinley park

Projects:

Playgrounds/ Park Renovations (Sunflower/Enclave) –opening July 10 at 11am

Cultural Arts- mural installation at Cottonwood early September, Planning sculpture installation in 2026 at Memory Square

PPLAB Development Review:

None at this time

LOUISVILLE PARKS BEST MANAGEMENT PRACTICES AND PARKS MAINTENANCE STANDARDS

Best Management Practices (BMP's) or Parks Maintenance Standards are incorporated in conjunction with the dedication, experience, and education of City of Louisville Parks, Forestry, and Cemetery staff. The varied areas that require the attention of staff include, but are not limited to, the following diverse responsibilities:

- Creating a nutrient management plan to apply only the necessary nutrients where and when needed.
- Utilizing cultural practices including irrigation, mowing, cultivation, etc. to grow the healthiest turfgrass possible, even under the stress of wear and tear and high frequency use.
- Implementing an integrated pest management (IPM) approach to control diseases, insects, and weeds that would otherwise impair the park conditions.
- Asset management of our Park equipment and systems
- Additional duties as assigned to sustain safe park spaces for our community.

The emphasis in this document is to establish BMPs that focus on the protection and conservation of all resources. These BMPs form an integrated protection system, based on a tiered concept: prevention (preventing problems from occurring), control (putting safeguards in place to control and mitigate potential problems), and detection (using a monitoring program to detect changes in environmental quality). These strategies for minimizing potential risk can be achieved through the successful implementation of these BMPs. Additional benefits of incorporating BMPs include:

- Recognition by regulators, users groups, parents, and the community within our park systems as responsible resource managers and environmental stewards.
- Cost savings associated with more efficient irrigation and other water conservation efforts.
- Environmental and cost benefits associated with a reduction in product inputs such as fertilizer and pesticides.
- Care practices that support improved soil health.
- Enhanced safety and appearance of park spaces for active and passive community use.

Landscaped Areas

Landscaped areas within parks or adjacent areas such as trails may provide additional recreational opportunities, wildlife habitat, and natural buffers that help delineate field or property boundaries and moderate external noise. While these areas serve to enhance the quality of life for recreation enthusiasts, they can also provide habitat for pollinators – a focus of numerous conservation efforts.

Communication

Besides communicating with decision-makers, communicating with various constituent groups – citizen advisory boards, city leadership members, and park users – helps each to understand the balancing act required to grow natural grass that is both safe and usable for all. Signs in landscaped or native areas can also communicate important information such as marked sections that should not be entered. Educational signs can be posted in environmental areas such as wetlands, rain gardens, and pollinator gardens to promote their importance to the public.

Louisville Parks, Forestry and Cemetery staff is dedicated to supporting the BMP's and Maintenance Standards outlined in this document. The staff will contribute to an annual review of the information to have an evolving maintenance program that supports safe and sustainable landscapes, parks, athletic fields and amenities for the community to enjoy.

GENERAL PARK MAINTENANCE

Cultural practices for established parks include mowing, nutrient management, and irrigation. These practices are described below with respect to maintained parks with sustainable turfgrass coverage.

MOWING BEST PRACTICES

Mowing is the most basic and perhaps the most important cultural practice of managed natural grass systems that affects turfgrass quality and playability. Mowing practices impact turfgrass density, texture, root development, and wear tolerance. Failure to mow properly results in weakened plants with poor density and quality resulting in fields that offer poor play and possibly unsafe. Regular mowing promotes new tiller formation and stimulates turfgrass growth and density.

A good rule to follow when mowing is the "One Third Rule." For plant health it is best to never cut more than 1/3rd of the leaf blade off at one time. If more is taken, scalping can occur which stresses the plant, causing an unsightly yellow color.

Mower maintenance is key - sharp/clean blades cut best and avoid tearing the leaf blades, which will weaken the plant and allow for more issues with disease and damage. The soil should be dry and stable enough to support the weight of mowing equipment without rutting.

Mowing height can also be varied seasonally to improve turfgrass responses to changes in weather and available sunlight, such as during spring green up, the heat of the summer, and late fall as temperatures cool. Adjusting mowing height of cut (HOC) incrementally a few weeks in advance of anticipated seasonal growth reduced the stress on the turfgrass and can provide a denser surface.

NUTRIENT MANAGEMENT BEST PRACTICES

Proper nutrient management in our parks plays a key role in plant health and stress resistance, as well as overall aesthetics and playability (plant density, recovery, and wear tolerance). However, improperly applied nutrients can result in wasteful use of natural resources and nutrients. Thus, nutrient use should be undertaken with care and consider the impact of nutrient applications with respect to the environment, economy, and society. Therefore, the goal of the nutrient program should be to achieve an acceptable, safe surface that maximizes plant nutrient uptake while applying a minimum of nutrients to achieve these results.

Soil tests should be conducted prior to seeding or sodding. Unless soil tests report deficiencies, supplemental micro- and macronutrient, besides nitrogen may not be needed during establishment.

Nitrogen (N) management is also essential for parks spaces. These nitrogen sources are typically 50% or greater slow-release N in order to provide uniform nitrogen release for a period of six to 10 weeks. This usage maintains consistent N feeding to the turfgrass.

Nutrient Application Program and Strategies

Stewardship that considers the impact of nutrient applications with respect to the environment, economy, and society, includes the following "4R's":

- Right fertilizer sources
- Right rate
- Right timing
- Right placement

Applying a quick-release fertilizer at high rates on a hot, windy day near impervious surfaces is a good example of ignoring the 4R's rule. This example represents a waste of natural and facility resources, results in contamination to the environment, and may result in poor plant health as well. Poorly managed fertilizer usage has resulted in some instances of serious environmental contaminations and adoption of regulatory requirements by many state or local agencies. Parks employees need to be good environmental stewards to avoid further problems and additional regulation. A one-size-fits-all approach to nutrient application is not possible, given all the variables of turfgrass species, sports, traffic intensity, soil, climate, budget and equipment available. Knowing park usage and park leadership expectations, will help create a more comprehensive and effective nutrient program.

IRRIGATION BEST PRACTICES

Water Conservation

Water is a fundamental element for physiological processes in turfgrass such as photosynthesis, transpiration, and cooling, as well as for the diffusion and transport of nutrients. Turfgrass quality and performance depend on an adequate supply of water through either precipitation or supplemental irrigation. Too little water induces drought stress and weakens the plant, which decreases resilience to wear. Too much water causes saturated surfaces and compacted soils, often leading to anaerobic conditions that stunt plant growth and promote disease. Excessive water can also lead to runoff or leaching of nutrients into groundwater and surface water.

Although irrigation may be needed, water conservation is also vital for socioeconomic and environmental reasons. As committed environmental stewards, parks managers regularly conserve water while maintaining healthy, dense turfgrass necessary for safe surfaces. Balancing these demands with natural resource conservation goals takes experience, training, and a comprehensive understanding of turfgrass management in relation to practical water management, including sound irrigation practices.

Irrigation is used to supplement seasonal water deficiencies to meet plant needs. Ideally, irrigation systems should be designed and managed to accurately and evenly apply just enough water to meet the needs of plants in order to maximize water conservation. Poorly designed and/or managed irrigation systems can lead to under- and over-watering, which can affect plant health, increase pest and disease pressure, waste water, and ultimately lead to unnecessary surface runoff or leaching. Proper irrigation scheduling, careful selection of turfgrass species, and incorporation of cultural practices that increase the water holding capacity of soil are addressed through these BMPs.

In addition to consideration of the total amount of water to apply, water should not be applied faster than the soil can take it in (infiltration rate). Infiltration rate tables are available, although the rate is so variable that it is a good practice to observe when water ceases to infiltrate and begins to run off. If this occurs before the total amount of water needed is applied, then adjustments need to be made. Cultivation will improve infiltration rate. In severe cases, low flow heads/nozzles should be used. Alternatively, irrigation can be cycled intermittently by shutting it off temporarily to allow for some infiltration and drainage before applying the remainder of the total amount needed to move water to the bottom of the root zone. This cycling can be

repeated as many times as necessary in order to apply the desired total rate. Multiple cycle irrigation controllers can be programmed to do this automatically in installed systems.

IRRIGATION SYSTEM MAINTENANCE

General Overview for Irrigation Systems.

Irrigation systems are regularly and continuously functional. Maintain efficient and effective irrigation systems, adhere to current water restrictions and BMP's. Frequency and amount of irrigation is determined by park location, event schedule, weather, Evapotranspiration (ET), for a 72 hour period, and plant material. All repairs to the system will be prioritized and reviewed within 24 hours of reported issue.

Activate Irrigation Systems: Activation of each park system will be determined by the Parks Superintendent, Supervisor, and Irrigation Technician, along with event schedule and weather conditions. Activation will be done in a manner that reduces the potential for spring freeze and system damage. Irrigation systems should be slowly charged to avoid water hammer damage.

Irrigation Repairs: Repair components to their operating level in an efficient manner and to specifications. Replace or repair worn out components when a problem is reported or noticed during inspection. Significant changes should be recorded on updated as-built plans for future reference- electronic and paper copy.

Program Controller: Routinely check and adjust programming on each controller to meet seasonal watering needs for plant type along with event schedule at location. Target a watering window for programming automatic irrigation systems, between 10:00 p.m. and 6:00 a.m., with seasonal and event adjustments as needed per park location. Application rate should be less than infiltration rate.

Manage Consumption: Monitor and evaluate actual consumption compared to allocated water budgets. Review monthly and year end meter readings. Use data from readings to manage leaks, backflow operations, and water budget.

System Performance and Irrigation Audits: Utilize the Irrigation Association's Certified Landscape Irrigation Auditor training to evaluate inefficient irrigation. Visual irrigation operations should occur not less than on a bi-monthly schedule. Frequency to be determined by Irrigation Technician using visual observations or reported concerns.

Winterize Systems: Shut down and drain irrigation systems during extended low temperature periods as determined by Superintendent and Supervisor to minimize system damage. Ideally, all systems will be drained between October 15 and 30, as weather determines. Start with systems with backflow devices smaller than 2 inches. Systems are to be shut off at the point- of-connection, and drained from the lowest points in the system. Then, all mainlines and laterals are to be cleared of water using compressed air. Systems should be clear of water to the extent that minimizes freeze damage to components.

Maintain Irrigation Zone Info: All parks and parkways with irrigation systems shall have an up-to-date file within Irri- base (software system) and file a laminated 8-1/2" x 11" irrigation system chart for reference. Existing components identified and labeled shall include: Water meter, stop and waste valve, backflow device and size, mainlines, laterals, valve boxes, drains, quick couplers, and irrigation heads.

Winter Overhaul/Repair: Prioritize repairs/replacement with available resources for winter overhaul and repair. Review project work list with Supervisor and/ or Superintendent to ensure prioritization and proper budget support.

Pump Station Maintenance: Coordinate pump maintenance start-up and shutdown. Utilize pump-operating manual for routine operation during the irrigation season. Schedule pump contractor as needed to ensure proper pump operations- seek approval prior to arranging.

Read Water Meters: Review all monthly water meter readings for accuracy. Report discrepancies to Supervisor.

AERIFICATION BEST PRACTICES

Cultivation practices disturb the soil or thatch through the use of implements to relieve soil compaction, support thatch/organic matter reduction, and improve the opportunity for a healthy water and air exchange. However, cultivation should be used judiciously as it can disrupt field use and require significant time for recovery. The table below, shows the relative agronomic benefits of cultivation practices.

Method	Compaction Relief	Thatch control	Water/air movement
Hollow tining	High	Medium	High
Solid tining	Low	None	High
Spiking/slicing	None	Low	Low

Cultivation frequency should be determined by the amount and timing of park use, degree of soil compaction, soil type, and the amount of accumulation of excessive thatch and organic matter. Excessive organic matter reduces root growth, encourages disease, and creates undesirable playing conditions. Cultivation events can be stressful to turfgrass, so they should occur when turfgrass recovery potential is optimized, aiding in the quick recovery of surface density. If done improperly, cultivation can decrease lateral stem and root growth. Aerification is most commonly done in one of two forms, slicing and coring. You cannot over-aerify turf areas. Aerifying monthly from April-September would be ideal, however working to aerify at least twice each summer is adequate, with more if time allows.

Slice aeration: creates slits in the ground/thatch of the turf plant in order to increase moisture and air movement. No material is removed, and play can generally occur immediately after the process is complete.

Core aeration: physically removes a core from the ground, which then needs to be pulverized or removed before play. Pulverizing can be done by mowing, although this is hard on mower blades and extra maintenance may be needed on the mowing unit to keep the blades sharp. Another option is dragging with a heavy metal drag. Sweeping or raking of the cores for complete removal from the area is recommended for immediate play on athletic field turf areas. Removal of cores is not required for recreation turf areas.

INTEGRATED WEED MANAGEMENT (IWM)

Established turfgrass that is used for activities and events is expected to provide dense, uniform, and safe playing surfaces all season long. However, when natural grass faces excessive stress from wear or environmental conditions such as heat or drought, pest pressures can become a serious problem. Park staff can implement comprehensive and effective approaches to pest management, using IWM programs. An IWM approach considers all strategies to reduce pest damage to manageable and acceptable levels in the most economical means, while simultaneously considering potential impacts on humans, property, and the environment. In parks operations, these programs involve various agronomic practices, as well as the option to consider the use of chemical applications in situations when other means have been exhausted or deemed ineffective.

Where allowed, pesticide use can be incorporated into an overall IWM strategy that also includes non-chemical control methods such as biological controls, cultural methods, or pest monitoring. The judicious use of pesticides, when needed, helps to control diseases, insects, and weeds that can compromise the quality and safety of the playing surface. The safe and effective use, storage, and handling of pesticides is highly regulated, which helps to ensure that their relative risk is largely mitigated. Licensed professional applicators are subject to a certification process and must be regularly recertified, further ensuring the safety of pesticide applications.

Pests must be properly identified in order to be optimally managed. Understanding the biology of pest species and their vulnerable life stages assists with management. Park staff should continually hone their diagnostic skills by attending training seminars and field days, obtaining reference materials, and providing peer-to-peer training. Communicate with university Extension specialists to confirm the identification of a pest and seek advice on appropriate control methods.

Weeds

Because of the mechanical stresses associated with normal use of parks, bare spots provide an advantageous environment for encroachment by weeds. Over time, weeds can become a persistent presence on the park surface, comprising safety, disrupting usability, harboring other pests, competitively displacing desirable turfgrass, as well as being unsightly.

Two major weed types impact field quality and function: annual weeds, such as crabgrass, annual bluegrass (*Poa annua*), and knotweed (*Polygonum arenastrum*), and perennial weeds, such as plantain (*Plantago* spp.), clover, dandelion (*Taraxacum officinale*), and ground ivy (*Glechoma hederacea*). While some weeds are easily identified, others may be more difficult. The Weed Science Society of America maintains links to university Extension specialists and other industry experts across the country that can provide more information and weed identification assistance.

Irrigation plays an important role not only in influencing weed populations, but also with efficacy of control products. Pre-emergent products form a “barrier” on the soil surface preventing germination of grassy and broadleaf weeds. Products applied to parks without a natural rainfall event or supplemental irrigation may limit efficacy of the product. Conversely, sites that are over-irrigated may have higher densities of weeds.

Role of Cultural Practices in IWM

Cultural practices, especially irrigation, mowing, topdressing, over-seeding, and core cultivation, greatly affect both short- and long-term turfgrass health. Especially in times of stress, using and/or altering appropriate cultural practices can be an alternate or supplemental approach to help grass withstand weed, insect, and disease pressure. It is important to recognize that turfgrass management practices such as core cultivation should occur when plants are actively growing to facilitate recovery. If these practices are implemented when growing conditions are not optimal, they can stress grass surfaces and make them more susceptible to pest invasion. Cultural practices are not curative. However, when optimized, they render a field less susceptible to pest infestation.

Evaluation and Record Keeping

It is essential to capture and record the results of IWM-related efforts to develop historical information, document patterns of pest activity, and evaluate overall turfgrass health. Records of turfgrass management practices and pesticide use are highly recommended and may be required by state regulatory agencies. State

regulatory agencies and university Extension programs may be able to provide sample record keeping forms that meet state regulatory requirements.

For IWM purposes, records should be kept for all pesticide applications and should include additional information, such as monitoring records, weather records, cultural management logs, and pest response.

Recording Monitoring Information

When pests are discovered during monitoring, the “pest pressure” should be quantified with measurements such as:

- Number of pests (weeds, insects, disease symptoms) per unit area.
- Percent of area affected.

Documentation should include useful information such as photographs, delineation of pest boundaries on an area map, outbreak date, description of the prevailing weather conditions, and recent management practices. This information can be used to build a database for reference in future seasons and for updating the IWM plan.

For further information please see the City of Louisville’s IWM at <https://www.louisvilleco.gov/local-government/government/departments/parks-recreation-and-open-space/integrated-weed-management-plan>

HORTICULTURAL STANDARDS

INTRODUCTION

The Parks Horticultural Program performs care and maintenance for flower gardens, shrubs, ground covers, management for native vegetation, wildlife habitats as well as weed and pest management programs. Its activities include transplanting, cultivating, trimming, spraying, fertilizing and amending, pruning, restoring, designing, and watering vegetation. Although these individual activities represent the program, of most importance is the ability of staff to identify the necessary resources with the desired outcomes.

Therefore, developing work plans, methods and procedures, and work priorities is essential to a successful program.

The Parks Department has developed these Horticultural Standards to establish general standards, guidelines and criteria that assist as an informational resource and highlight existing policy and regulatory requirements. This document is meant to support and enhance existing design and maintenance standards documents. At the highest level, this document is guided by the values that work towards a sustainable environment, equity, engagement and sound economics. This document defines the Horticultural Program’s resources and establishes best management practices that are consistent and equitable. It provides a direction on new designs and protocols for adapting existing conditions to meet current needs. It can also serve as a tool for training new staff.

For all these reasons, the document is designed to be used by a wide range of groups: from Senior Management who set large scale policies for the department, to Planners who help master plan and construct parks, to volunteers to who assist with planting and maintaining vegetation, to citizens who want to be informed on City practices. The careful management of the City of Louisville’s Parks Horticultural Program is required to continue the heritage and maintain the value of these significant living assets.

The Horticultural Program's resources can be separated into two distinct categories: Planting Areas and Xeric Areas. The following text details these categories and defines the subgroups within the two areas.

Planting Areas: Planting areas are non-turf, planted beds that include herbaceous and/or woody plant material. These plant beds can be divided into sub-categories according to their size, location, usage and design function.

Flower Beds: Floral displays that consist mainly of annual and perennial plant material. Flower beds are further divided by scale, but can generally be categorized as either beds or gardens. Beds are typically one or two small size areas meant to be viewed individually. Gardens typically consist of many beds meant to be viewed together and designed with a consistent theme. Parks Horticulturists currently maintain 22 annual and 270 perennial and shrub beds within 356 acres of park land. Flower beds are designed to improve park aesthetics as well as educate on different plant material themes, like xeriscaping.

Park Bed: One or two small size areas meant to be viewed individually. Averaging approximately 500 square feet, these beds can range from 50 to 1000 square feet in size. These beds are mainly located in community and neighborhood scale parks, or as complementing amenities to Park Gardens in regional parks.

Park Garden: Many beds meant to be viewed together and designed with a consistent theme. Averaging approximately 2,000 square feet with multiple beds in each garden, the gardens can range in size from 500 to 7,000 square feet. Gardens are typically located in community and regional scale parks, in highly trafficked areas either by pedestrians or automobiles.

Median Bed: One or more small size areas meant to be viewed individually. Averaging approximately 500 square feet, these beds can range in size from 75 to 1500 square feet. These beds are located in medians.

Combinations Beds: Many beds meant to be viewed together and designed with a consistent theme. Averaging approximately 2,000 square feet, these gardens can range in size from 950 to 4000 square feet. These beds are typically located in areas near major traffic intersections.

Building Location Bed: Averaging approximately 500 square feet, these beds can range in size from 25 to 1,500 square feet. These beds are located in limited areas near city facilities.

Sign Bed: Averaging approximately 200 square feet, these beds can range in size from 100 to 1,200 square feet. These beds are located near park entry signage.

Shrub beds: Shrub beds are mainly deciduous and evergreen shrubs, or a combination of ornamental trees, shrubs, groundcovers, and other woody plants. Shrub beds are spread throughout the park system and their design function might include screening, adding year round visual interest, adding wildlife habitat, parking lot enhancement, green infrastructure, and highlighting a diversity of plant materials.

Combination beds: Combination beds contain combinations of different types of vegetation, such as shrubs, trees, annuals, perennials and bulbs, without a significant majority of any individual type. These types of beds are typically seen in newer park designs within the park system as well as at building entries. Similar to shrub beds, the design function of combination beds might include screening, adding year round visual interest, adding wildlife habitat, parking lot enhancement, green infrastructure, and highlighting a diversity of plant materials. These beds are differentiated from shrub beds by the fact that they might include a more diverse and longer blooming season. Ornamental grass beds would also be considered combination beds.

Passive Xeric Areas: Grasses and forbs that demand less water than bluegrass turf and may feature native species within their blends. This turf is typically found in passive use areas and is in the low hydrozone category (7"-15" per year in an average precipitation year).

GENERAL HORTICULTURE MAINTENANCE

General maintenance practices for the horticultural program are divided into two categories: Planting Areas and Xeric Areas. The following are guidelines for general maintenance practices. Maintenance standards can be specialized and prioritized by using the subcategories of each horticultural resource. Monitor landscape quality to identify strengths and weaknesses of these landscape management practices and use results to revise management and maintenance strategies.

Design: Evaluate, monitor, design, and plan planting areas. Collaborate with Forestry Supervisor and Parks Superintendent, plant selection, water requirements, plant availability, bed selection, location, and maintenance impacts. The success of your bed design and implementation depends on how well you consider all factors. All bed designs will take into account pollinator and native plantings.

Overall Design Scheme: Consider the type of planting area (Flower, shrub, combination bed) and decide on a design scheme. Design schemes can be inspired by a desire to convey an educational message, can be built around a dominant color or tone, highlight a unique plant, mimic an architectural feature or rhythm, display a natural pattern, frame a view, or help support wildlife.

PLANTING AREAS

Site Inventory: Complete a site inventory (see checklist below) to determine conditions of the site and how best to match those with the best adapted plant material.

- Type of soil (see CSU fact sheet Estimating Soil Texture <https://cmg.extension.colostate.edu/Gardennotes/214.pdf>)
- pH of soil (neutral, acid, alkaline or a combination)
- Existing irrigation, equity of coverage and water type
- Grade and aspect (full sun, full shade or a mix)
- Significant views
- Existing plants
- Unique, natural features
- Entry points (primary, secondary)
- User experience (pedestrian, automobile)

Detailed Plant Design: Choose plants that build on the overarching design scheme.

When designing for commercial-scale landscapes such as parks, massings of plants make a greater impact than a lot of individual specimen plants. Some of the best designs use just a few carefully placed varieties in measured intervals that establish a natural rhythm.

Consider texture, height, color, bloom time and size of each individual plant species and variety, as well as the combination of plants to create patterns or sequences. See the section on Planning Process for more information on annual/perennial siting criteria.

Complement the surrounding environment or adjacent landscape of the park site.

Consider maintenance requirements of plants and/or choose plants that can help reduce maintenance. For example, groundcovers can help to reduce weeding.

Group plants together that have the same water requirements. Plants located within the dripline of large trees and shrubs should have similar water requirements. See CSU Extension fact sheet Xeriscaping: Perennials and Annual Flowers for a guide to annual water requirements.

Consider water source when choosing planting material. Raw water or recycled water may have additional requirements or plant restrictions.

Choose plants along walkways and roadways that have maximum tolerance for high salt levels or can withstand de-icing chemicals.

Preferred Planting Palette consists of perennials, grasses, shrubs, and trees, reference Appendix A - Plant Palette (updated annually).

Determine plant availability by working with the vendor as the planting list is finalized.

Spacing: Once the detailed planting design is complete, determine how fast the plants grow and how big the plants get.

Plants should be close enough to provide adequate coverage to prevent weeds, and provide effective display, without being too crowded at maturity. Good air circulation and availability of sunlight, water and nutrients will increase vigor and prevent disease development.

A well-spaced annual planting should knit together within 4-6 weeks of planting. Perennial beds may take up to a year or two to fill the planting area, while shrub and combination beds may take up to 3 years.

Plant Ordering & Pickup: Order plants from the city approved vendor, in a timely manner for plants to be ready for installation at proper time the following year. The ideal timeline is 4-6 months prior to pick up from vendor.

SITE PREPARATION/END OF SEASON MAINTENANCE

Removals/Replacements: Remove existing plant material if needed; prune back overgrown plants. Remove existing weeds by using mechanical, herbicide, or manual methods.

Ornamental grasses and other desired plant material should not be removed until March to provide winter interest within park planting areas.

Annual flowers are to be removed after first hard frost in the fall. After all of the annual flowers have been removed, the soil will be spaded/turned over.

Amending: Supplemental organic material should be applied to the beds in the fall after removal of plants (as the ideal time) or early spring where needed before planting. Add proper organic matter to the soil to increase the water holding capacity and improve drainage. Proper addition of organic matter also means not applying too much, which can lead to salt accumulation.

Soil should be rototilled to a depth of 8 to 12 inches. Delay digging or tilling if bed is too wet because it can break down the structure and aeration capacities of the soil. Hand-dig or till the bed, adding soil amendments if necessary. Previously applied soil amendments would be tilled into planting area at this time.

Edging: Beds will have a defined edge. Accomplish edging in annual beds by keeping turf mowed and a consistent soil edge border with a 2 to 4 inch trough as the defining edge. Bed planting areas should be raised above surrounding areas to improve drainage and presentation. Edging controls plant growth from either entering or leaving a bed, in both adjacent lawn areas and/or plant material in the plant beds themselves. The main purpose of edging is to maintain a neat edge to the planted area. Chemical edging in shrub and combination beds will be best achieved by applying herbicide during early spring to control the rhizomes and stolons from running into the flowering or shrub/tree beds. Manual edging will have similar results if done in early spring and again in mid to late summer. Remove all stolons and rhizomes of grasses.

Irrigation: Visually test the irrigation system. In early May of every year, check automated irrigation systems for proper coverage. Repair or adjust as necessary in coordination with Maintenance Technician.

PLANTING

Spacing: Refer to spacing in planting design. Adjust on site as necessary.

Planting Depth: Plants must be placed at proper depth, taking into consideration room needed for mulch, if necessary. Holes should not be dug deeper than pot depth to avoid settling. Root bound material should be sliced, cut, or pruned before planting. The width of the hole should be a minimum of twice the diameter of the container or root ball. For bare root plants (roses), spread the roots out evenly without bending or crowding.

Fertilizing: Fertilize using a granular fertilizer by incorporating into soil. It is best to wait until woody plants or trees are established before adding chemical fertilizers.

Irrigation: Water new plantings to settle soil and reduce transplant shock. Ensure adequate moisture levels during establishment and growing season.

Mulching: Mulch at planting time using compost, wood chips, bark, or rock to retain moisture and suppress weeds. Mulches must be weed free. Keep mulch more than 3 inches away from the stems or trunk and mulch to a depth of 2 to 4 inches.

MAINTENANCE

Irrigation: Site conditions such as soil type, slope, exposure, and moisture requirements of plants play a crucial role in plant water demand. Soil moisture levels should be regularly monitored and tested by digging. Weather conditions, such as temperature and rainfall, require monitoring and active adjustment of irrigation response.

Watering schedule shall be based on plant material, soil, type and location within the park. Avoid creating runoff. Morning is the best watering time, so leaves can dry off and avoid water borne diseases. Bed water schedule is determine by plant material needs and coordinated with the Irrigation Technician and/ or Parks Supervisor. Where possible landscape beds shall have separate irrigation zoning from the rest of the park space.

Visually inspect plants for symptoms of water stress or overwatering. Signs of water stress include drooping, wilting, yellow foliage, leaf or needle drop, brown leaf tips, and rot. Plant damage can be caused by either too much or too little supplemental water.

Consider pedestrian access, park usage, and available personnel when establishing irrigation schedules. Bed watering schedule is coordinated with Irrigation Technician and/ or Parks Superintendent.

Newly planted or renovated landscape beds, or newly planted trees should be irrigated routinely until established.

Adjust watering methods during and after establishment. Trees and other woody plants typically require additional watering for one to two growing seasons to become established (As a rule of thumb, trees require one year per inch of caliper to become established).

Winter Watering: Water plant material when there has been less than .5-inch moisture within a four-week period when irrigation systems are inactive. (October –March). Water only when temperatures are above 40 degrees and no snow cover exists.

DEADHEADING/EDGING

Annuals/biennials: deadhead as needed to promote continued flowering, to freshen the display and prevent self-seeding.

Perennials: Most perennials produce vigorous shoots in spring. When the perennial plant is one-quarter to one-third of its final height, pinch out or cut back weak shoots; the remaining sturdy shoots will usually bear larger flowers. Deadhead as needed. In autumn, cut perennials grown for floral interest back to above crown, and remove dead and faded growth. Certain perennials such as Agastache (hyssop) and Lavender overwinter better if only minimally cut back before winter. Cut back perennials with winter interest in spring to create a habitat for stem-nesting bees, or when necessary during winter as winter damage occurs.

Ornamental grasses: Delay cutting ornamental grasses until spring. Dry stems, flowers and seed heads provide winter accents and should be retained as long as they provide winter interest.

Edging: Keep edges well-trimmed throughout the growing season. See Site Preparation section for more edging detail.

Pruning: Prune shrubs to promote healthy vigor. See Tree section for additional pruning information.

Shrub Pruning: Pruning needs will be based on:

- Maintaining plant health by removing dead, damaged, or diseased plant tissue.
- Remove branches to thin shrubs when necessary.
- Stimulate flowering or fruiting.
- Improve plant appearance by training to a particular shape or size (naturalized growth/form will be the standard).
- Rejuvenate old, overgrown shrubs to restore their shape and vigor.
- Improving safety, maintaining visibility and creating pedestrian access.
- Maintenance considerations such as mower access and improved irrigation coverage.

PRUNING CONSIDERATIONS

Plant Selection: Use appropriate plant materials that grow to the correct size for the space. Good plant selection reduces the need for frequent pruning.

Natural Form: A natural form is most desirable in many park settings.

Growth Habit: Growth habit and flowering cycles of specific plant material will determine optimum pruning method.

Timing: Dormant season pruning may be the easiest time to allocate resources to pruning. Best pruning time for radical renovation of shrubs and/or groundcovers is early spring, just prior to bud break, generally late February-early March. The least desirable time for any pruning is immediately after new growth develops in the spring. It also is advisable to limit the amount of pruning done late in summer as new growth may be encouraged on some plants. This growth may not have sufficient time to harden off before cold weather arrives resulting in cold damage or winter kill.

Broadleaf Shrubs Pruning: Prune shrubs to keep their natural shape unless they are used as formal hedges. Shearing should not be widely used; thinning of older, taller growth should be the primary type of pruning.

Ground Covers Pruning: Pruning ground covers is usually necessary only to remove unhealthy tissue, awkward or straggling branches, or keep a plant from becoming too invasive. Periodic mowing is one way you can keep ground covers vigorous, neat, and healthy with no significant loss of attractiveness.

Evergreen Pruning: See CSU Extension garden note on pruning evergreens

<http://www.cmg.colostate.edu/gardennotes.shtml#pruning>

Rose Pruning: Rose plants need pruning to tidy up their appearance; control size; and improve their vigor, growing habits and bloom. Pruning methods vary according to the type of rose plant.

Shrub Replacement: When shrubs become woody and filled with dead twigs the best option may be to replace them. Shrubs can also be overwhelmed by invading woody species and if routine clearing is not done, the original shrubs may need to be replaced.

See CSU Extension Fact Sheet on Pruning flowering shrubs for additional information:

<http://www.ext.colostate.edu/mg/gardennotes/619.html>

Fertilizing: Monitor for fertilizer needs. Adequate soil fertility is only one of the many soil-related growth factors. Fertilizers will increase desirable plant growth only if the plant is deficient in the nutrient applied and other growth factors are not also significantly limiting plant growth. Fertilization will not compensate for poor soil preparation, the lack of water, weed competition and other non-nutrient growth limiting factors.

Nutrients & Application: Nutrient requirements differ according to plant type, desired performance of a plant and available water source. See CSU Extension fact sheet on Plant Nutrition for additional information.

Floral plantings can be fertilized at planting time with slow release fertilizer. Flowers can also be supplemented during growing season with foliar feedings of liquid fertilizer. Water soluble fertilizers are recommended at planting and possibly two and four weeks after planting (depending on soil organic matter content). It is the nitrogen content that promotes growth rather than any hormones or vitamins in the product. On cool springtime soils, the readily available phosphate may also be helpful.

Fertilizing perennials is generally not needed if proper soil preparation is done prior to planting. Fertilizer causes lush growth that requires more water. If fertilization is needed, a slow release fertilizer can be applied in the spring. Moderate fertilization for bedding plants (annuals) is recommended either in liquid or granular form or a combination of both.

<https://www.louisvilleco.gov/local-government/government/departments/parks-recreation-and-open-space/integrated-weed-management-plan>

XERIC AREAS

Xeric areas are low water landscapes that may be composed of both native and non-native grasses and forbs. These areas are differentiated from natural areas because they are typically small fragmented areas found throughout the park system. General maintenance practices follow scaled-back natural area standards and operations. High use activity can often occur in these areas, although xeric areas thrive when pedestrian traffic is minimized. In many cases, these occurrences happen in highly active regional and community parks.

FORESTRY STANDARDS

Tree Inventory

The Superintendent of Parks, Forestry, and Cemetery, along with the Forestry and Horticulture Supervisor, will continuously compile an inventory of tree points stored in a shape file in the City's Geographic Information System database City Tree Inventory. The locations, size, species, and conditions of trees on City-owned property are included in the database.

The City Tree Inventory is utilized as a planning tool in the scheduling of tree maintenance and disease treatment, as well as determining locations for additional plantings.

The City Tree Inventory is updated periodically, at the discretion of the Forestry and Horticulture Supervisor.

Regulations

Under the direction of the Forestry and Horticulture Supervisor, the City of Louisville Code Section 8.12.200, originally established in 2006, and updated as needed, promotes the planting, preservation, and proper care and maintenance of trees and plantings within the incorporated city limits of the City of Louisville.

Master Street Plan

The Forestry and Horticulture Supervisor, follows the Urban Forestry Master Plan, prepared and adopted by Park, Forestry, and Cemetery Master Plan. This plan includes actions related directly to trees on City-owned properties, with a focus on maintaining a safe and diverse tree population within the City, and increasing public awareness of the importance of the urban forest.

Planting and Pruning Program (see Section 8.12.170 City Municipal Code)

The Forestry and Horticulture Supervisor adheres to the American National Standards Institute (ANSI) A300 standards for tree, shrub, and woody plant management. These standards are stored in the Forestry Operations office and are applied to the management of trees, shrubs, and woody plants on City-owned properties. The Forestry and Horticulture Supervisor devises proactive pruning cycles for trees, based on age and species, and does an annual drive-by inspection in order to plan for the planting of new trees. Inspections, pruning, and replacement of shrubs, flowerbeds, and other decorative plantings on City-owned properties are conducted by landscaping crews, under the direction of the Superintendent of Parks, Forestry, and Cemetery. These inspections by the Forestry and Horticulture Supervisor and Parks Landscaping crews are used to plan for scheduling maintenance and replacement.

Transplants

The Forestry and Horticulture Supervisor adheres to ANSI A300 standards for tree, shrub, and woody plant management, including transplanting. These standards are stored in the Forestry Operations office and ensure the probability of survival of a transplanted tree, shrub, and woody plants within the City of Louisville.

Transplant timing and frequencies are outlined in ANSI A300 standards for tree, shrub, and woody plant management.

The Forestry and Horticulture Supervisor, follows best practices in accepting donations of trees, shrubs, and woody plants, and approval by Superintendent of Parks, Forestry, and Cemetery and the Director of parks, Recreation and Open Space.

Disease and Insect Control in Trees

The City of Louisville Forestry and Horticulture Supervisor, has the responsibility of identifying, evaluating, and managing insects and disease of the City's street trees. The Forestry and Horticulture Supervisor, annually inspects street trees and investigates reports of insect and disease damage to ensure the health of the City's urban forest.

Removal of Diseased and Hazardous Trees

The Forestry and Horticulture Supervisor, complies with City Code Section 8.12.090 and 8.12.100 which establishes the policy and deadlines for diseased and hazardous tree removal (Section 8.12.070) on both public and private property.

Property owners have thirty days to remove a tree once ordered by the Forestry and Horticulture Supervisor. (Also property owners can inquire about an extension if they have extenuating circumstances)

Tree Removal

The City of Louisville Forestry and Horticulture Supervisor, follows both ISA Tree Risk Assessment Manual & Form, and ANSI A300 Part 9 Tree Risk Assessment Standard for tree removal on both public and private property. A copy of this standard is stored in the Parks Forestry operations office. When needed, the Forestry and Horticulture Supervisor, utilizes the Tree Hazard Evaluation Form to assist this process in determining if a tree should be removed.

ATHLETIC FIELDS STANDARDS

Turfgrass Maintenance

Athletic field turfgrass should be maintained to provide the safest and smoothest surface for the athletes, at a minimum referencing the previously stated standard. Mowing frequency should be established to promote density and at a height that is appropriate for the sport. Cultural Practices (aerification, top dressing, over-seeding etc.) should support a dense and healthy turf canopy. Irrigation should align with the department's water conservation goals and be managed to promote deep rooting and stronger turfgrass canopy. Irrigation should be scheduled in accordance to the event schedule and weather. Fertilizations should be determined based on soil testing, plant health, and the need for plan recovery under an event / usage schedule.

Baseball/Softball Field Infield Skinned Areas

The integrity and performance of infield skinned areas in baseball and softball competition is crucial to the quality of play in each of these sports. Athletic Field managers greatly influence the playability of skinned surfaces with game day grooming practices and the sufficient application of water to the infield soil surface as needed. To be in position to have a successful infield surface, some standard practices on material selection and installation need to be followed during construction or substantial renovations.

The percentage of sand, silt, and clay is a critical consideration during the planning phases. Mixes of all types should have a silt to clay ratio of 0.5 to 1. Fields with greater sand content are better suited for low maintenance situations. Higher silt and clay surfaces are more typical of professional or college fields with dedicated sports field managers providing daily grooming and watering. Choose an infield soil that can be managed according to the labor and budget of the facility. For example, a professional level infield mix is 60% sand, 18% silt, and 22% clay with a silt to clay ratio of 0.82. An ideal park maintained infield mix is a blend of 72% sand, 12% silt, and 16 % clay with a silt to clay ratio of 0.75. Water should be consistently applied so that moisture infiltrates all the way through the soil profile to ensure that the ball rolls and reacts consistently.

When looking at material sizing tests for an infield mix, no particles should be greater than 3 millimeters. Five percent or fewer of particles must be retained in a sieve at 2 millimeters. Regarding sand size, the combined amount of sand retained on medium, coarse, and very coarse sieves should total a minimum of 65% of the total sand content. The delivered product should be free of rocks, stones, or any particle greater than 3 millimeters. Weeds or weed seed contamination is unacceptable. Testing of the finished product for particle sizing is strongly recommended at least once during the installation process. A lab that conducts tests in accordance with ASTM F-1632 should be used.

Prior to installation of the new infield skin mix, the subgrade should be established and graded to match the slope of the finish grade. Flexibility with use of subgrade materials is possible, but at minimum it should be free of large rocks or excessive organic matter and should be clean enough to be laser graded to a tolerance of + or – 0.25” in any direction. It is critical that the slope of the subgrade match the slope of the finished grade. Proper surface drainage is all that is needed to remove water from the skinned area.

A minimum of 3” of the imported infield mix must be installed consistently over the entire skin and baseline areas. As much as 6” of material is acceptable, as long as the depth of the product is consistent throughout the infield. Sufficient moisture should be present in the material to ensure proper compaction.

The new infield material should be installed in lifts, no more than 2” at a time. Each lift should be rough graded, rolled, and compacted. Then it should be scarified prior to the next layer being installed, to ensure bonding of the product. Sufficient moisture should be present in the material to ensure proper compaction. The range for the finish grade slope of skin areas is between 0.5% and 1.5%. Laser grading of the finish grade must be a requirement of any construction specification. Finished infield skinned areas should be laser graded to a tolerance of + or – 0.25” in any direction.

The use of conditioners is strongly encouraged to aid in moisture retention and to improve playability of infields. Conditioners, applied at 0.25” in depth, should be the choice of the Athletic Field Manager. Three widely used and proven conditioners are calcined clay, vitrified clay, and expanded shale. Once an infield skinned area material is properly installed, moisture management of the product becomes the most vital aspect of day-to-day maintenance.

Pitcher’s Mound and Batter’s/Catcher’s Box Areas

The construction of the pitcher’s mound, as well as of the batter’s and catcher’s box areas of home plate, requires a firmer material than the infield skinned area. These areas should consist of 6” in depth of the specified mound clay product (see table below). The pitcher’s mound dimensions should be designed in accordance with the appropriate league’s specifications.

Mound clay (by volume)

Sand	30% or less
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Clay	30% or more
Silt/Clay	0.75-1.25%

During installation of the clay product in these areas, the clay should be compacted in lifts of no more than 2" depth, then scarified to assure bonding prior to adding more material. Slightly more moisture in the base than the added material should be present so that the product bonds more consistently. These areas should be compacted using a manually operated small plate compactor. Detail finishing of areas around the pitching rubber can be done with an 8" square hand tamper. A minimum of 1.5 tons of material per cubic yard of installation is typically used during construction. Infield soil should have been graded during construction so that storm water runs off instead of forming puddles.

SUSTAINABLE LANDSCAPING STANDARDS

While care of the general park space is the focus of the parks team, native areas may also be an important component of parks staff responsibilities. Landscaped and natural areas provide additional recreational opportunities, such as areas and paths for walking, wildlife habitat, and natural buffers that help delineate field or property boundaries, while also moderating external noise. Maintaining these aesthetically pleasing areas for the safety of recreational users and as sustainably as possible is economically advantageous and supports biodiversity. Developing or expanding naturalized areas may also reduce dependence on water, chemical, and fuel inputs, while allowing more intensive maintenance to be reserved for areas dedicated to users.

Facilities with additional acreage can provide an ideal opportunity for environmental stewardship and conservation. Vegetated areas with a greater diversity of plant species support wildlife by providing forage and habitat. Less intensively managed vegetation (e.g., tall grass and naturalized areas) directly correlates with a higher biodiversity for plants, animals, and insects. Properties can contribute to plant and pollinator diversity by expanding natural habitat throughout the property, both in the native areas and in high-visibility areas, such as the property surrounding outbuildings and parking lots.

Benefits of Sustainable Areas

An ecosystem with a healthy variety of plants fosters a robust biodiversity of animal and insect species. Plants provide a primary food source and habitat, yield nutrients, improve soil health, and produce oxygen. Properties can provide a critical link that connects wildlife corridors by increasing naturally vegetated habitat, including unmown grass and native wildflower meadow areas. Benefits of increasing the sustainability of native areas include:

- Attracting beneficial wildlife, supporting pollinator habitat, enhancing biodiversity, and creating aesthetic interest that provides year-round visual pleasure for sports enthusiasts using sports fields and users of recreational fields or trails.
- Providing an option for native areas that requires fewer non-renewable inputs (fertilizer, water, and gasoline) to maintain.
- Protecting soils, natural vegetative cover, water resources, and water quality.

Sustainable Naturalized Areas

Sustainable naturalized areas can help managers meet their goals to improve both environmental protection and economic sustainability. While parks normally requires sufficient irrigation for overall plant health and recovery from wear, other areas of the facility will not need to be as intensely maintained. In particular,

facilities that experience increased seasonal water limitations may consider design alterations of non-turfgrass areas to increase or reduce the amount of natural grass areas that require irrigation.

These non-turfgrass areas can also help to restore habitat and increase biodiversity. Conventional landscapes use less than 15 species in an average landscaped lot, while the average undisturbed forest or meadow can support 100 species in the same area. In addition, diverse, multi-storied plantings store more carbon than mown turfgrass areas. Parks strive to retain or restore existing native vegetation, where possible. Where appropriate, existing vegetation is enhanced through the supplemental planting of native species around native areas and water sources. Nuisance, invasive, and exotic plants are monitored and replaced with native species adapted to the site.

Pollinator Habitat

Habitat for pollinators includes foraging habitat, nesting sites, and available water sources. Pollinator-friendly habitat contains a diversity of blooming plants of different colors and heights, with blossoms throughout the entire growing season. Native plants provide the most nutritious food source for native pollinators.

Increasing habitat to meet pollinator needs can be accomplished simply by adding to existing plantings or through more intensive efforts to establish a larger native area. Pollinator habitat includes grassy areas and landscaped areas. Areas renovated specifically with pollinator habitat as a priority include native plants, wildflowers, and flowering trees and shrubs. To convert existing areas to a new native area, site preparation is key and may require more than one season of effort to reduce competition from invasive or other undesirable plants prior to planting. In addition to foraging habitat, pollinators require nesting sites. Providing nesting sites for native species can be accomplished by making simple alterations in landscaped or natural areas, such as:

- Leaving exposed patches of bare soil in natural areas.
- Leaving dead trees, stumps, and posts.
- Planting hollow stem grass species.
- Providing stem bundles of hollow plant stems like bamboo.
- Creating bee blocks for solitary nesters such as mason and leafcutter bees.
- Creating artificial boxes for bumble bees.

A clean, reliable source of water is another essential habitat consideration for pollinators. Pollinators can use natural and human-made water features such as running water, pools, ponds, and small containers of water. Water sources should have a shallow or sloping side, so the pollinators can easily approach the water without drowning. In addition, irrigation management practices that preserve ground-nesting pollinators include irrigating at early morning before pollinators leave their nests to forage and avoiding flooding any areas.

MAINTENANCE OPERATIONS STANDARDS

Equipment Storage, Maintenance, and Cleaning

Equipment is maintained and operated according to manufacturer's recommendations. The proper storage, maintenance, and cleaning of all parks equipment is essential to supporting the lifecycle of the equipment and operations support. Equipment cleaning shall be done at the end of each use or work day. During the cleaning an inspection of the unit should be done. Any damage or repairs should be reported to the Supervisor and scheduled to reduce equipment downtime. Proper cleaning of equipment helps prevent residues (grass clippings, soil, soap, oil, fertilizer, and pesticide) from reaching surface waters, groundwater, drainage pipes,

or storm sewers. Using compressed air or a leaf blower to blow clippings off mowers before washing can help reduce the amount of nutrients that enters drains via wash water.

Safety Data Sheets (SDS)

Safety Data Sheets for all chemicals stored in a storage facility should be readily available at all times to employees, employers, and any emergency personnel. Safety Data Sheets provide important information on hazardous chemicals, including PPE requirements.

OSHA's Hazard Communication Standard – 29 CFR 1910.1200(g), revised in 2012 – requires that the chemical manufacturer, distributor, or importer provide SDS for each hazardous chemical to users to communicate information on these hazards. More information on SDS can be found on the Hazard Communication Standard: Safety Data Sheets page of the OSHA website.

<https://www.osha.gov/sites/default/files/publications/OSHA3514.pdf>

Search page for SDS sheets <https://chemicalsafety.com/sds-search/>

An up-to-date file should be maintained with copies of all the SDS for all chemicals used. The file should be stored on the property and made available to employees. Safety Data Sheets should be reviewed yearly and match chemical inventory on property.

Parks, Forestry, and Cemetery staff, need to regularly review how they handle the disposal of unwanted, expired, or accumulated items, including chemicals, paints, pesticides, tires, batteries, used oils, solvents, paper products, plastic or glass containers, and aluminum cans. Developing recycling programs reduces waste and minimizes the quantity of waste reaching landfills.

PLAYGROUND STANDARDS

Weekly site Inspections, of all playground areas and equipment for excessive wear, deterioration, and any potential hazards. Clear off debris from playground walkways. Follow manufacture and CPSI guidelines.

Rake Fall Zone Material. Move material so it is at a consistent level and has a consistent type of material within the fall zone areas. The area should maintain positive drainage.

Add Fall Zone Material. Add fall zone material to meet ASTM and National Playground Safety Institute Standards. Fill material to be 4-6 inches below top of containment edge per design specifications.

Document Inspections monthly and properly file inspections, centrally filed for access both electronically and hard copy. Immediately take from service any CPSI classified safety hazard within the playground. Schedule repairs all repairs in a timely manner. Record all maintenance and repairs. Should there be an accident or injury reported properly document the post inspection and all repairs associated with the incident.

AMENTITIES STANDARDS

Park inspections should be done monthly documenting all noted deficiencies. Inspections include all amenities, features within the park, and park lighting. Report all damaged items, create a plan for taking the feature out of service, and schedule necessary repairs. Inspection reports are to be filed for access both electronically and hard copy.

Graffiti/Vandalism: remove graffiti at scene as soon as reported. Document graffiti as needed to Rangers or Police. Vandalism should be repaired in a timely manner and the area secured to reduce hazards to others or taken out of service immediately.

Trash: should be removed as needed. Handpick or barrel, emptied per the schedule to provide clean and safe areas for the community to enjoy. Empty and replace liners that are more than half full or that have a strong odor.

Picnic Table and Bench Maintenance: benches and tables are to regularly inspected, free of debris, and provide for safe usage. Remove all graffiti from the tables and benches in a timely manner. Schedule pressure washing and other repairs as needed per inspection.

Hardscape Maintenance: (walks, park roads, plaza spaces, etc.) surfaces are to be free of glass, litter, debris, and trip hazards. Painted lines and informational/directional signs are to be clear, distinct, and readable. Walkways shall be clear of litter, debris, and trip hazards. Sweeping or cleaning of all hardscapes should be scheduled monthly or as needed.

Athletic Court Maintenance: surfaces should be smooth, free of cracks, holes, trip hazards, graffiti, sand/gravel, and debris. Worn painted surfaces (under 20% visible markings) should be re-painted.

Basketball: backboards, rims, and nets should be secure, level and free of rust and graffiti. Nets are to be intact and properly hung. Frayed or worn out nets will be replaced as noticed.

Tennis Courts: should be resurfaced or repaired as surface conditions present unlevelled areas. Review full replacement projects with Superintendent. Nets are to be free of tears and holes. Support poles and net cables are to be properly installed and secured. Center straps are to assist with retaining the net at the proper height. Report all damaged items, create a plan for taking the court out of service, and schedule necessary repairs.

Fencing Materials: fencing in all park locations to be secure without holes, bending, or sagging materials. Gates and latches are to be functional. Report all damaged fencing, gates, and latches, create a plan for taking the item out of service, and schedule necessary repairs.

Snow Removal: clearing of snow that accumulates on park roads, parking lots, or walkways per city code 1" depth or greater, will be removed. Any snow removal not accessible by machine will be removed manually. Any ice accumulation will be treated with proper ice melt: sand/ sicer/ or environmentally safe chemical.

Shelter Structures: are to regularly inspected, free of debris, and provide safe usage. Schedule pressure washing and other repairs as needed per inspection report. Remove all graffiti from the structures in a timely manner. Replace signage as needed.

Restroom Maintenance: restrooms are to be clean and free of any hazards or debris, and all amenities are functional. Paper products are to be stocked.

Restroom Structures: inside and outside, are to free of graffiti and in good conditions. Portolets are to be clean and free of any debris or hazards, and all amenities are to be functional.

Drinking Fountains: are to be kept operational and clean. Maintenance is to be performed as needed to provide functionality for users.

Fencing Maintenance: fences and gates are to perform as designed per specifications and are to be operational and attractive. Fabric, posts, and rails are to securely fasten and be free of holes, gaps, and rust. Athletic field fencing should be inspected regularly, repairs scheduled per inspection. Privacy slats and fence cap should be repaired to present a clean and safe facility.

Sign Maintenance: park identification, traffic, and rules signs are to be secure. All signs are to be clean, legible, visible, and free of hazards. Remove all graffiti from the signs in a timely manner or replace the sign.

Waterway Management: waterways, lakes, and amenities are to be maintained to be safe, healthy, and aesthetically pleasing. Aquatic weed and algae growth will be managed to preserve the intended use of the amenity. Shorelines are to be kept clean and free of debris. Inlets/outlets are to be kept free of debris to maintain proper flow and prevent flooding. Storm drains are to be clean and free of debris. Water inlet height is to be maintained at design standard.

Dog Park Maintenance- dogs should only be off leash within the designated dog off leash properties. Dog parks shall be kept free of items left behind by users. Dog Park users are required to refill holes their dogs dig in order to keep the area safe. Dog parks shall be free and clear of debris to provide safe usage. Surface material is to be added as determined by Superintendent to sustain a usable surface year round. Doggie bag dispensers are installed throughout the parks system. Signage, dispensers, fencing, gates, and other Dog Park amenities are to be inspected as part of the overall park inspection. Remove all graffiti in a timely manner and report all damaged items, create a plan for taking the item out of service, and schedule necessary repairs.