

**Performance Audit 15-07:  
Public Works  
Park Maintenance**

**August 2016**

**City Auditor**

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**Senior Auditor**

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# OFFICE OF INTERNAL AUDIT

## Stan Sewell, City Auditor

August 19, 2016

To: Mayor Andy Berke  
City Council Members

Subject: Public Works Park Maintenance (Report #15-07)

Dear Mayor Berke and City Council Members:

The attached report contains the results of our audit of Public Works' Park Maintenance Division. Our audit found that parks and playgrounds were not maintained in accordance with current policies and procedures. Although the division has made great strides in developing standard operating procedures, several key areas were needed to meet industry best practices. We also found the manual work order system was not adequate to support the maintenance operations of the division.

In order to address the noted areas for improvement, we recommended actions to develop and implement service level and maintenance standards for each park and playground. To assist management with oversight, we recommended the purchase of a computerized maintenance management program. We also recommended adding several elements to the current playground inspection process as well as the software application.

We thank the management and staff of the Public Works Department for their cooperation and assistance during this audit.

Sincerely,

Stan Sewell, CPA, CGFM, CFE  
City Auditor

Attachment

cc: Audit Committee Members  
Stacy Richardson, Chief of Staff  
Maura Sullivan, Chief Operating Officer  
Justin Holland, Public Works Administrator  
James Bergdoll, Director of Parks

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## AUDIT PURPOSE

This audit was conducted in accordance with the Office of Internal Audit's 2015 Audit Agenda. The objectives of this audit were to determine if:

- The Park Maintenance policies and procedures meet industry standards;
- Playgrounds are maintained in accordance with policies and procedures set by the Division as well as industry best practices; and,
- The Division has an adequate work order management system.

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## BACKGROUND

Parks Maintenance is one of four divisions under the Public Works Department. Formerly a division of Parks & Recreation, the organization has struggled to retain personnel and cohesiveness as they adapt to their new work environment. Discussions with staff identified several challenges with maintaining the parks and playgrounds. Such issues included budget constraints, limited maintenance crew, and difficulties coordinating with other Public Works' divisions.

The Division has employed three Park Directors over the past four years, the latest hired in August 2015. As the newest Director became familiar with city objectives, he made significant changes to operations. The Division's goals and objectives include:

- Maintain all public areas, facilities, and green spaces to the highest service level.
- Support special events through preparation, event planning, grounds maintenance, and clean up.
- Program capital improvements for maintenance of facilities.
- Ensure safety and security of the Parks system.
- Ensure equitable use of public areas by all community members and groups.

The Parks Maintenance Director oversees operations and capital improvements of a park system with 4,800 acres of park space, 72 park facilities, and 35 miles of greenways and trails. The park facilities include 39 playgrounds, 4 disc golf courses, 2 splash pads, 3 dog parks, 17 community centers and 39 ballfields located Citywide.

The Administrative staff provides division support through purchasing, safety inspections, park reservations, financial collections, payroll, and

equipment maintenance. The division's operational plan includes two distinct areas: Downtown Riverparks and Neighborhood Parks. Each area has a General Supervisor who oversees landscaping, grounds maintenance, building and hardscapes maintenance, and custodial maintenance.

***Downtown Riverparks:*** Riverparks consist of parks and green spaces bordering the Tennessee River in downtown Chattanooga. The area includes 50 acres encompassing Coolidge Park, Renaissance Park, Walnut Street Bridge, Bluff View Arts District, Holmberg Bridge, the Aquarium Plaza, including stream features and The Passage, Ross's Landing, Chattanooga Green, Chattanooga Pier, the marina and docks.

These areas are a hub for tourism and have hosted Chattanooga's Ironman, Southern Brewers Festival, Pops on the River and Riverbend Music Festival.

These events bring a significant economic impact to both the City of Chattanooga and Hamilton County.

All aspects of park maintenance are accomplished using City employees. Under the direction of a General Supervisor,

three Crew Supervisor 1 and one Crew Supervisor 2 oversee ten Crew Workers and one Equipment Operator. Total personnel cost in fiscal year 2015 and 2016 was \$1.22 and \$1.18 million, respectively.

Revenue and expenditures related to downtown riverpark operations are summarized in Exhibit 1. Personnel and operating expenses have decreased 8.3% and 35.6% over the past four years, respectively. Revenues from carousel ridership fees have steadily increased (\$43K) over the past four years. In general, facility rental revenue has remained steady with a large peak during fiscal year 2015. Total operating and personnel cost are partially reimbursed to the City from Hamilton County under an inter-local agreement.

**Coolidge Park –North Chattanooga Area**



**Exhibit 1: Riverparks - Revenues and Expenditures**

	2013	2014	2015	2016
Carousel Ridership Fees	(83,011)	(92,151)	(117,285)	(126,295)
Facility Rental Revenue	(136,043)	(144,580)	(210,897)	(148,558)
Interlocal Agreement Funds	(1,202,944)	(1,053,143)	(988,002)	(811,199)
Personnel Expenses	1,291,780	1,217,952	1,226,232	1,185,023
Operating Expenses	1,064,009	899,471	855,101	684,926
Net (Profit) Loss	933,791	827,549	765,149	783,897

Source: Oracle Financials

**Neighborhood Parks:** The Neighborhood Parks include 875 acres of parkland at over 80 sites; 12 miles of greenways, trails, and paths; 52 tennis courts; 47 athletic fields; 34 pavilions and picnic shelters; and 39 playgrounds.



Heritage Park in East Brainerd Area

City employees provide security, custodial service, playground maintenance, and some grounds and building maintenance.

Employees include two Crew Supervisor 2, four Crew Supervisor 1, four Crew Workers, and two Equipment Operators. Total personnel cost in fiscal year 2015 and 2016 was \$812,000 and \$716,000, respectively.

In early 2014, the City began outsourcing grounds maintenance<sup>1</sup> for Neighborhood Parks. Payments for grounds maintenance were \$115,000 and \$226,000 for fiscal years 2015 and 2016, respectively. As shown in Exhibit 2, personnel and operating expenditures have decreased by 55% since 2013.

**Exhibit 2: Neighborhood Parks – Expenditures**

	2013	2014	2015	2016
Personnel Expenses	1,796,169	1,409,412	811,898	715,863
Operating Expenses	866,708	681,226	474,661	475,557
Total Expenditures	2,662,877	2,090,638	1,286,559	1,191,420

Source: Oracle Financials

Per the 2016 Budgeting for Outcomes (BFO) proposal, the primary goal of the division is to maintain all public areas “to a high service

<sup>1</sup> These services include, but are not limited to, mowing, trimming, edging of all areas including around all trees, shrubs, buildings, structures, banks, fences, curb and gutters, and concrete islands on the contracted sites.

level keeping with the standards of the National Parks and Recreation Association (NPRA).” CAPRA<sup>2</sup> *Standards for National Accreditation* provide an assessment tool for park and recreation agencies. Compliance with the standards ensures a high level of quality service.

## FINDINGS AND RECOMMENDATIONS

### Industry standards recommend defining desired service levels and developing detailed maintenance standards.

The division has begun the process of establishing park maintenance operating policies and procedures. Developed policies for Neighborhood Parks include park and playground inspection routes, landscape management plan, playground maintenance plan, and tennis court preventative maintenance plan. For the Downtown Riverparks, management has implemented a monthly maintenance schedule.

Our review of the current policies and procedures found areas for improvement. Developing these key elements would serve two purposes. First, management can effectively use resources where best suited to meet the objectives of the department. Second, they will provide meaningful feedback to evaluate the effectiveness of operations.

### Defining desired service levels

The determination of proper service levels for each park is the first step in developing a comprehensive maintenance program. Acceptable quality levels are assigned based on the park type, park size, park category, and the desired outcome set by management.

As a guideline, the NRPA<sup>3</sup> has developed four modes of service levels, as shown in Exhibit 3. These service levels provide a framework for management to identify alternative levels of service. The formal definition for these service modes can be found in Appendix B.

Is this an acceptable level of service for Sylvan Park?



<sup>2</sup> The Commission for Accreditation of Park and Recreation Agencies

<sup>3</sup> *Operational Guidelines for Grounds Management*, National Recreation and Park Association, 2001



**Exhibit 3: Maintenance Service Levels**

Service Level	Service Level Definition and Required Maintenance Staffing
"A"	State-of-the art maintenance applied to a high quality, diverse landscape. Turf is lush, free from weeds and cut to a precise level. Plants and trees in parks are pruned for safety, tree health and ornamental beauty. Hardscapes are regularly swept and litter is collected 5-7x per week. Requires one park maintenance worker per 4 to 6 developed park acres.
"B"	A reasonably high level of maintenance associated with well-developed park areas with higher visitation rates. Major difference with Service Level "A" is turf is not cut on frequent, regular intervals at precise level and plants and trees in parks are pruned and trimmed at the same frequency. Litter control is periodic and hardscape maintenance is less frequent. Requires one park maintenance worker per 6 to 10 developed park acres.
"C"	The lowest expected service level for fully developed parks or a moderate level of maintenance associated with park locations of large size, of average development, and/or visitation. Maintenance is accomplished, usually with longer service intervals, to keep the park safe and minimally servicable to the community. This level requires one park maintenance worker per approximately 12 to 18 park acres.
"D"	A minimal service level to parklands or open space with no facilities with the intent to maintain safe grounds and a "natural" ambience. Generally inspection services and litter control are conducted, but on an infrequent basis. Usually such services are conducted as "fill-in" work by staff but otherwise one park maintenance worker can cover several hundred acres of undeveloped parkland or open space.

The division has limited resources available to maintain the City’s extensive park system. Through the development and use of service level modes (or categories), management’s expectations and resource needs are clearly defined. This key element will assist with allocating staff resources and developing annual budgets for operating and personnel costs.

**Recommendation 1:**

We recommend the division determine the appropriate service level for each park. The acceptable service levels, by park, should be documented in the policies and procedures.

***Auditee Response:** We concur with the audit finding and recommendation. A policy will be developed to determine service levels for all park sites. A procedure will be developed to ensure service levels are maintained. This will be completed in 3 months. The Parks Division already has a complete inventory of parks and a basic service level has already been created.*

### Developing maintenance standards

The next step in creating a comprehensive maintenance program is to create written maintenance standards. The standards should be a



**Pringle Park**

specific objective for an area within the park that defines the desired appearance and condition. The following exhibits provide examples of assigning a desired level of service for the various parks along with maintenance activities needed to achieve the quality standard.

As shown in Exhibit 4, Coolidge Park’s landscape standards fall under Mode “A” because it is a fully developed, regional park with several facilities. This park has high usage and management expects it to be maintained at the highest level of service.

In contrast, Pringle Park is currently not maintained at the highest level of standard. The park caters to a small neighborhood area, lacks flower beds and facilities, and gets less usage than the larger parks. Therefore, the service level expected from management could be Mode “C” for turf.

#### Exhibit 4: Landscape Quality Standards

Activity	Coolidge Park	Hill City Park	Heritage Park	Pringle Park
Turf	A	B	B	C
Trees and Shrubs	A	B	B	D
Flower, bulbs, and perennials	A		B	
Roadways/parking lots	A	C	B	D
Walkways/pathways/sidewalks/trails	A		B	
Site lighting and electrical systems	A	B	B	B
Drainage systems	A		B	
Plumbing, irrigation, water systems	B		B	
Fixtures and furniture	A	B	B	D
Waste/cleaning operations	A	B	B	C

\*A - D represent mode of service level

\*For illustrative purposes only.

Maintenance standards are used to describe the activity required to meet the outcome desired for each service level. These detailed standards provide achievable goals to maintenance staff and performance measurements for supervisors. They also provide management with additional tools to strategically plan its maintenance

program and focus resources more effectively. Exhibit 5 provides an example of turf standards.

### Exhibit 5: Quality Standards for Turf

Mode "A"	Mode "B"	Mode "C"	Mode "D"
Activity - Turf: Includes all turf areas.			
Manicured Lawn (turf only with no other type of ground cover).	Well-maintained lawn (turf with some other type of ground cover)	Meadow-like fields with tall grass and some weeds.	Field kept clean of debris.
All turf area is at maximum density, uniform in cut, texture, color and appearance (no bare spots, minimum weeds).	Most turf area is at medium to maximum density, uniform in cut, color and general appearance (minimum bare spots and weeds).	Fields are cut periodically; swaths are cut along fences, lanes, roads and paths for fire breaks and visibility.	Three-meter-wide swaths are maintained along fence lines, roads and paths.
All maintenance subactivities are at maximum frequency.	All maintenance subactivities are close to maximum frequency.	Maintenance subactivities are at minimum to medium frequency	Maintenance subactivities at minimal frequency.
Subactivity 1: Cutting and Trimming			
Cut to 7 cm before it reaches 10 cm.	Cut to 8 cm before it reaches 12 cm.	Cut to 15 cm when it reaches 25 cm (only for fire breaks and overflow parking).	Cut to 15 cm when it reaches 25 cm (only along fence lines and pathways).
		Cut in July and September (all lands in general).	Cut three to four times per season (5 m wide along fire lanes and 2 m wide each side of pathways).

\*For illustrative purposes only.

As shown, each service area includes the desired outcome for the activity as well as the sub-activity. Based on Coolidge Park’s turf level of service, Mode “A”, staff should maintain the turf as a manicured lawn with maximum density, texture, color and appearance. All sub-activities would occur at the highest frequency. Therefore, the sub-activity mowing would require more man-hours to keep the grass cut to the specific link than a park classified as Mode “C”.

### Recommendation 2:

We recommend the division develop written standards for all areas of park maintenance, including landscapes, hardscapes, recreational areas (e.g. tennis courts, football fields), amenities and structures (e.g. restrooms, parking lots, benches). The standards should include measurable elements with desired outcomes.

***Auditee Response:** We concur with the audit finding and recommendation.*

**Computerized maintenance management systems provide better oversight tools.**

Each operational group manages maintenance tasks and daily work using manual work logs and work orders. With equipment, supplies and personnel dispersed at multiple locations, each group has distinct operations and challenges. However, both could benefit from the implementation of a maintenance management system.

***Downtown Riverpark Operations are centralized and coordinated at Coolidge Park.*** All staff work within a two mile radius of their hub. In general, necessary equipment to perform tasks and supervisory oversight are present and readily available. Both the areas of custodial and landscape maintenance have dedicated staff. The custodial staff cleans and stocks facilities and fixtures, empties trash cans, and removes litter and graffiti. Following the monthly maintenance plan, landscape staff maintain the turf, trees and shrubs.

Daily work logs are completed and submitted to the General Supervisor. The daily work logs provide the detailed daily work performed at each downtown riverpark. Although the General Supervisor inspects the parks daily, he hasn't documented the inspections. Park condition assessments are not periodically conducted. Work orders for repairs are prepared manually and not tracked for completion, cost or efficiency.

To determine if the staff followed the monthly maintenance plan, we randomly selected and reviewed six weeks of operations. The information reported on the daily work log was compiled by the auditor. We found 35% of daily work logs were missing. Our analyses of the work logs available indicate overall compliance with the landscape maintenance calendar.

***Neighborhood Park Operations require staff working throughout the City.*** Staff are scattered and do not operate in close proximity to a general supervisor or equipment. A one or two-person crew assigned to a park performs both custodial and landscape maintenance. Contractors provide some landscape maintenance (mowing) and specialized maintenance and repairs to facilities and assets.

The division developed a detailed asset inventory listing, complete with estimated acreage and inspection times for all city parks. In collaboration with GIS, the neighborhood parks were mapped to determine vicinity and travel times. Using this information, crew supervisors and crew workers were assigned daily, weekly and bi-weekly inspection routes. Crews are stationed (report to work) at Coolidge Park, Greenway Farms and Heritage Park.

To determine the efficiency of the inspection routes, we randomly selected and reviewed six weeks of operations. The information reported on the daily work log was compiled by the auditor. We found 8% of the work logs were missing.

Because we had missing work logs, we could not verify if all the inspection routes were performed as required by the stated policies. We did, however, have complete data for 45% of the parks. Our analysis indicates **only** 17% of these parks were visited (inspected) as required by policy.

We noted other inefficiencies in the current route system. We found instances where a park was inspected more than once on the same day by different employees. On some occasions, staff would visit the same park twice on the same day (once in morning and once in afternoon). We found, typically, the same job functions were completed during both visits. Possible causes of these deficiencies are summarized below:

- The duplicate inspections were the result of new inspection route assignments (confusion of responsibilities).
- Each crew supervisor plans their daily inspection route. The General Supervisor only assigns work if an issue comes to his attention.
- Supervisory inspections are not documented.
- Manual work logs do not provide efficient tracking of operations.

Compliance with service levels and maintenance standards is difficult to track and measure under the current operation. Using manual daily work logs to develop meaningful operation reports would be time-consuming and counter-productive.

A maintenance management system will streamline park maintenance operations. Management would have tools needed to efficiently track work orders, track daily maintenance performed, plan for future maintenance and replacement needs, improve workforce efficiency and decrease overall maintenance cost. Coupled with a mobile application, the system could improve efficiency and eliminate any duplicated work.

### **Recommendation 3:**

We recommend the division invest (or expand its current application) in a maintenance management software that provides asset tracking, preventive maintenance scheduling, inspection tracking/history, work order management, mobile access and detailed report generation.

***Auditee Response:*** *We concur with the audit finding and recommendation. We are working with PW Engineering GIS team to*

*develop a maintenance management program to be used in association with already developed park & playground inspection applications for mobile use. This will include building a database for tracking and storing data associated with preventative maintenance, site history, work order development and management and other report generation. We plan to have this completed in four months.*

**Recommendation 4:**

We recommend management evaluate the current routing system and develop a daily route to ensure adequate park coverage.

***Auditee Response:** We concur with the audit finding and recommendation. We are in the process of evaluating and adjusting routes and site coverage for crews to ensure efficiency and equity.*

**Recommendation 5:**

We recommend General Supervisors perform and document periodic inspections.

***Auditee Response:** We concur with the audit finding and recommendation. We have a park inspection procedure with General Supervisor and Parks administration. Program to be expanded with use of mobile application.*

**Areas of improvement were identified for the playground maintenance and inspection program.**

City playgrounds require preventative maintenance, repairs and inspections to ensure equipment and surrounding area safety. The division spent approximately \$110,000 on operating and personnel expenses related to playground and hardscapes maintenance in fiscal year 2015 and 2016.

Industry standards and guidelines provide agencies with guidance regarding components to include in playground maintenance

operations. The United States Consumer Product Safety Commission (CPSC) *Playground Safety Handbook* is the leading authority and



**Milliken Park – located in Alton Park Area**

resource for maintaining our playgrounds to the highest level of standards.

Per the 2016 BFO, the division has one performance measurement related to playgrounds. The primary desired outcome is to reduce playground injuries in FY2016 by 25% through hazard identification. To accomplish this mission, the division developed a bi-weekly inspection route. The ultimate goal is to increase monthly inspections performed by staff. Currently, one employee handles all aspects of the program.

Per the policies, the inspector must perform a detailed visual and tactile inspection of all hardware. A visual inspection of the entire playground also occurs to identify safety hazards from damage or wear. Once potential hazards and damage are identified, the inspector completes preventive maintenance on the equipment and surfacing. A site-specific maintenance plan should be used to conduct the routine maintenance.

### Identify the type and frequency of inspections

The type and frequency of inspections performed should be based on the age, usage, and materials of the equipment. Regardless of these factors, two types of inspections should be performed on all playgrounds: low frequency and high frequency.

“Low frequency inspections”, conducted quarterly or semi-annually, offer in-depth examinations of the equipment and surfacing. Staff performs preventative maintenance and repairs to remedy problems identified during the inspection. This inspection requires a staff with mechanical knowledge about playground equipment and safety standards, known as a Certified Playground Safety Inspector (CPSI).

“High frequency inspections”, performed daily or weekly, look at frequently changing conditions caused by use, weather and/or vandalism. Staff would check and correct conditions such as loose-fill surfacing, sanitation issues and trash and debris. Unlike low frequency inspections, these do not require technical training.

Clearly identifying the level of inspections needed and developing site-specific maintenance plans will improve the efficiency and effectiveness of the playground inspection program.

### Recommendation 6:

We recommend management identify and document the type and frequency of inspections needed at a site-specific level.

**Auditee Response:** *We concur with the audit finding and recommendation. We will update our procedure to specify the type and frequency of inspections. We plan to have this complete in 4 months.*

**Recommendation 7:**

We recommend management develop site-specific maintenance plans based on the type and age of equipment.

**Auditee Response:** *We concur with the audit finding and recommendation. Site-specific maintenance plans will be based on type and age of equipment. We plan to have this complete in 4 months.*

**Redistribute routine daily tasks**

As shown in Exhibit 6, the Playground Inspector spent between 1.62 and 4.36 hours at any given playground per visit. Because the data does not provide the necessary detail, we cannot determine if the inspector conducted inspections and maintenance efficiently. However, the data indicates the playgrounds did not receive the minimum bi-weekly visit, as required by policy.

Exhibit 6: Analysis of Playground Inspection Rates

Month	% of Locations Visited	Total Monthly Visits	Hours on Duty	Average Hours per Visit
July	74%	40	111.5	2.77
August	82%	79	168	2.13
September	51%	35	148	4.23
October	95%	106	172	1.62
November	72%	73	151	2.07
December	56%	35	152.5	4.36

Source: Park Maintenance Playground Data, Analysis by Auditor

We also identified overlaps in maintenance tasks. Some tasks were performed by both landscape maintenance personnel and the playground inspector. From our analysis of work logs, we noted twenty (20) occasions this occurred during six weeks of operations. Types of activities overlapping include removing litter, blowing surfaces to remove leaves or debris, checking for vandalism, applying insecticides and/or weed control.

According to policies, all maintenance staff will be trained to identify potential playground hazards and complete typical playground maintenance activities. Landscape maintenance personnel could



perform some playground maintenance tasks as part of their essential routine functions. Based on our review of work logs, it didn't appear that landscape maintenance staff performs any of these functions.

### Recommendation 8:

We recommend management provide the necessary training to all maintenance personnel.

***Auditee Response:** We concur with the audit finding and recommendation. We will prepare training related to playground maintenance with all staff and document completion.*

### Recommendation 9:

Once management has implemented the previous recommendations, we recommend management add high frequency playground inspections to other maintenance crews (as deemed necessary to provide adequate coverage).

***Auditee Response:** We concur with the audit finding and recommendation.*

## Conduct playground safety audits



**East Lake Park:** Drainage issues continue to strip the playground of mulch. The inspector identified the safety hazard on numerous occasions.

During the audit period, the Crew Supervisor identified numerous hazards and maintenance issues throughout the playground system. These were reported using the iPad application. To determine if issues were resolved, we selected and inspected a sample of 23 playground locations. We found 13 locations had 18 documented safety hazards. Only hazards identified at 4 (or 30.7%) of the 23 locations were repaired.

The inspection data also indicated 34 work orders were needed to complete work at the sampled playgrounds. Our on-site inspection and analysis found only 20.6% of the work orders were completed. Per management, these deficiencies are directly related to management oversight. They recently identified that management was not reviewing the data contained in the application. They assigned this responsibility to a new position, Crew Supervisor III.

The first step to developing an effective inspection and maintenance program is to evaluate the current condition of each playground. Known as a safety audit, it identifies non-conforming products and designs, installation problems and environmental conditions that could pose long-term hazards to children. The hazards would be categorized by their potential for causing harm. Exhibit 7 provides an example of five levels of safety concern.

### Exhibit 7: Five Levels of Safety Concern<sup>4</sup>

Five Level Safety Concern Priority Rating System	
Rating Safety Concern Priority	Description Condition Likely to Cause
Priority 1 Safety Concern	Non-compliant safety concern that may result in permanent disability, loss of life or body part.  Condition should be corrected immediately.
Priority 2 Safety Concern	Non-compliant safety concern that may result in temporary disability.  Condition should be corrected as soon as possible.
Priority 3 Safety Concern	Non-compliant safety concern that is likely to cause a minor (non-disabling) injury.  Condition should be corrected when time permits.
Priority 4 Safety Concern	Non-compliant safety concern whose potential to cause an injury is very minimal.  Condition should be corrected if it worsens.
Priority 5	The item has been determined to be compliant with the owner/operator's operating policy and standard of care.  Continued ongoing preventive maintenance is recommended.

A formal and documented playground safety audit is needed to evaluate current conditions and set priorities for playground repairs. A CPSI should perform these audits using a standardized form. Management will have the necessary information needed to develop an updated asset listing of playgrounds and conditions. Based on current conditions, inspection and maintenance operation plans should be developed to best use the limited resource of one Playground Inspector.



**Ross' Landing Park:** Replacement wall climber pegs were identified as needed on multiple occasions.

#### Recommendation 10:

We recommend the division perform playground safety audits on all City playgrounds. We recommend management update its policies and procedures to formally document the priority system used for safety hazards.

**Auditee Response:** *We concur with the audit finding and recommendation. The process of auditing playground equipment is*

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<sup>4</sup> GSA Playground Inspection developed by International Playground Safety Institute, LLC.

*extremely thorough and maintenance staff currently do not have the credentials to complete audits. We will evaluate and determine the most effective manner of completing this. We will work with PW Engineering GIS team to update current inspection app to incorporate a priority system for safety hazards. We plan to have this complete in 3 months.*

### **Recommendation 11:**

We recommend management determine the appropriate coverage needed at the playgrounds. The policies should be updated to reflect the different types of visits the inspector may initiate. Each type should be clearly defined as to purpose and tasks performed.

***Auditee Response:** We concur with the audit finding and recommendation. We will update the inspection process to be able to document the purpose of the visit. We plan to have this complete in 3 months.*

### **Mobile application enhancements**

MTAS Records Management for Municipal Governments states the City should retain records of inspections and maintenance or repairs to playgrounds and equipment for five (5) years. Complete and accurate records are essential for a thorough maintenance program and risk control. Documenting the performance of inspections and maintenance verifies a standard of care. The historical records could be required to honor equipment warranties.

Recently, Park Maintenance had a mobile application developed (using in-house resources) to document the inspection and maintenance program. Prior to the mobile application, the Inspector completed a “High Frequency Playground Inspection Form”. During our review we compared the inspection form to the fields available in the mobile application. We found several key areas were needed to properly track and document the playground maintenance program. We also noted inconsistent use of the application further reduced its usefulness. To address these issues, the following changes are needed.

***Consolidate Asset ID numbers and add fields for type of visit, hazard priority code and depth surface.*** Our review of the data found several asset ID numbers that represented the same playground. The parks included Avondale, Heritage and Rivermont Park. Corrections to the data should remove multiple asset ID numbers.

Visits are not categorized by purpose (e.g. high frequency inspection, low frequency inspection, preventative maintenance, work order,

emergency repair). Currently, the data doesn't include a field to indicate the type of visit. Therefore, we could not determine if an inspection took place. Also, a field that identifies the level of priority for safety hazards will assist with managing work orders.

In addition, the policies require documenting the depth of surfacing on the inspection form and rate of surfacing wear (to estimate playground usage). These data fields are not available in the application.

***The written policies and procedures should include detailed procedures for the application.*** The playground inspection program policies and procedures do not include how the application will be used by maintenance staff. We found the "code" field includes the options "Corrective Action Complete", "Needs Maintenance", and "Work Order Needed". These were used interchangeably by staff. Also, the safety hazard field was inconsistently used.

#### **Recommendation 12:**

We recommend management update the application referencing the changes identified above.

***Auditee Response:*** *We concur with the audit finding and recommendation.*

#### **Recommendation 13:**

We recommend updating the policies and procedures to address the application use.

***Auditee Response:*** *We concur with the audit finding and recommendation. Policies will be updated after evaluation and correlate with updates and implementations. We will create an inspection app manual.*

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## APPENDIX A: SCOPE, METHODOLOGY AND STANDARDS

Based on the work performed during the preliminary survey and the assessment of risk, the audit covers Park Maintenance Operations from January 1, 2015 to December 31, 2015. When appropriate, the scope was expanded to meet the audit objectives. Source documentation was obtained from Public Works Department. Original records as well as copies were used as evidence and verified through physical examination.

To evaluate the effectiveness of the division, we interviewed maintenance crews and conducted visual inspections of playgrounds and parks. We compiled and analyzed daily work logs and playground inspection data. We compared division policies and procedures to operations. To develop our recommendations, we reviewed industry best practice articles and documents. We also reviewed examples of maintenance programs administered by other government agencies to identify common and best practices.

The sample size and selection were statistically generated using a desired confidence level of 90 percent, expected error rate of 5 percent, and a desired precision of 5 percent. Statistical sampling was used in order to infer the conclusions of test work performed on a sample to the population from which it was drawn and to obtain estimates of sampling error involved. When appropriate, judgmental sampling was used to improve the overall efficiency of the audit.

We conducted this performance audit from November 2015 to June 2, 2016 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## APPENDIX B: DEFINITION FOR SERVICE LEVEL MODES

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**Mode A** is state-of-the-art maintenance applied to a high quality, diverse landscape usually associated with City-owned core facilities, destination parks with high levels of visitation, championship golf courses, and the like. Mode A locations have the following characteristics:

- The turf is lush, dark green in appearance, of high quality and free from weeds, insects, fungus, or any foreign grasses.
- The turf is cut to a precise level, and groomed weekly on a consistent schedule. Trimming along all lawn edges is performed concurrent with mow services.
- Plants and trees are pruned, trimmed, and shaped to ornamental beauty and are free from insects or fungus.
- Planter beds are well raked and cultivated weekly and are free of any weeds, grass, or any foreign matter. Significant color planting (flower beds) are noted throughout the park network.
- Irrigation systems are constantly maintained and tested weekly. There are no brown spots in the lawn as a consequence of irrigation issues or under watering.
- Litter and/or other debris are removed daily along with trash receptacles.
- Reseeding and sodding are done rapidly whenever bare spots are present.

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**Mode B** is a high level of maintenance associated with well-developed park areas with reasonably high visitation. Mode B level of service is similar to Mode A level of service, with a major difference being the degree of plant and turf grooming. Other characteristics include:

- The turf has a lush green appearance and is relatively free from weeds and foreign grasses (less than 5%).
- Precise cutting and mowing (e.g. golf course-like) however, is generally not practiced.
- Plants and trees are trimmed, pruned, and shaped but not with the same level of frequency.
- Planter beds are generally free from major weeds, debris, or grasses, but flowerbeds are not as extensive throughout the park network.

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**Mode C** is a modest level of maintenance associated with locations of moderate to low levels of development and moderate to low levels of visitation. Mode C facilities have the following characteristics:

- Turf management such as mowing, reseeding and sodding, weed control, fertilization and irrigation are practiced to maintain generally healthy grass. Turf maintenance services are applied less frequently than other maintenance modes (levels).
- Turf areas are generally not useful for a variety of high-traffic organized sports and leisure activities (e.g., soccer) unless turf degradation (browning, bare patches, etc.) is tolerable over the course of a season.
- Weeds and mixed grasses are tolerated in the turf and are considered minimally intrusive since turf conditioning and mowing is practiced on a scheduled basis.
- Turf edging is performed monthly conducive to a generally neat appearance for a larger portion of the time.
- Litter and/or other debris are removed weekly. Trash receptacle maintenance can be problematic in certain instances of high activity as refuse is not removed on a more frequent basis.
- Plants and trees are trimmed and pruned annually to ensure proper growth, risk reduction (e.g. falling limbs), and to maintain a reasonably healthy appearance.
- Planter bed areas are weeded and cultivated at four-month intervals so wild weeds or grasses may be present for shorter periods of time prior to scheduled maintenance. They are tolerated at this level as long as they are small in size and the area covered with weeds is minimal.

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**Mode D** level of service is for areas in which maintenance is reduced to a minimum. Such areas do not have developed turf or irrigation systems. These areas are maintained only to the extent necessary to control growth, reduce fire hazards, keep native vegetation alive and healthy during the growing season, and to eliminate unsafe facilities. However, these facilities will need variations in the level of service defined based upon the type of open space.

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### **City of Chattanooga Fraud, Waste, and Abuse Hotline**

Internal Audit's Fraud, Waste, and Abuse Hotline gives employees and citizens an avenue to report misconduct, waste or misuse of resources in any City facility or department.

Internal Audit contracts with a hotline vendor, The Network, to provide and maintain the reporting system. The third party system allows for anonymous reports. All reports are taken seriously and responded to in a timely manner. Reports to the hotline serve the public interest and assist the Office of Internal Audit in meeting high standards of public accountability.

To make a report, call 1-877-338-4452 or visit our website:

[www.chattanooga.gov/internal-audit](http://www.chattanooga.gov/internal-audit)