CITY OF SHOREWOOD
PARK COMMISSION MEETING
TUESDAY, DECEMBER 13, 2022

5755 COUNTRY CLUB RD
SHOREWOOD CITY HALL
7:00 PM

AGENDA

1. CONVENE PARK COMMISSION MEETING

A. Roll Call

Hirner (Jan)____
Gallivan ()____
Levy (Feb)____
Council Liaison Johnson (July-Dec)____

B. Review Agenda

2. APPROVAL OF MINUTES

A. Park Commission Meeting Minutes from October 25, 2022

3. MATTERS FROM THE FLOOR

(This portion of the meeting allows members of the public the opportunity to bring up items that are not on the agenda. Each speaker has a maximum of three minutes to present their topic. Multiple speakers may not bring up the same points. No decisions would be made on the topic at the meeting except that the item may be deferred to staff or the City Council for more information.)

4. NEW BUSINESS

A. Freeman Park Trail Rehab Project
B Vandalism at Manor Park

5. OLD BUSINESS

A. IPM Plan Phase II

6. STAFF AND LIAISON REPORTS/UPDATES

A. City Council
B. Staff

7. ADJOURN

CITY OF SHOREWOOD
PARK COMMISSION MEETING
TUESDAY, OCTOBER 25, 2022

5755 COUNTRY CLUB RD
SHOREWOOD CITY HALL
7:00 P.M.

MINUTES

1. CONVENE PARK COMMISSION MEETING

Chair Hirner convened the meeting at 7:01 p.m.

A. Roll Call

Present: Chair Hirner, Commissioners Gallivan, and Levy; Planning Director Darling; and City Engineer Budde

Absent: Commissioners Schmid and Heinz

B. Review Agenda

Gallivan moved to approve the agenda as written. Levy seconded the motion. Motion carried 3-0.

2. APPROVAL OF MINUTES

A. Park Commission Meeting Minutes of September 13, 2022

Gallivan moved to approve the minutes of the September 13, 2022 meeting as written. Hirner seconded the motion. Motion carried 3-0.

3. MATTERS FROM THE FLOOR

There were none.

4. NEW BUSINESS

A. CIP Section Related to Parks

Chair Hirner noted that Planning Director Darling had mentioned to him earlier today that the City has submitted for the grant reimbursement for Silverwood Park ($25,000). He gave a brief overview of the other projects outlined within the staff report, the reserves, and the general information included in the tables. He asked about the trail overlay plans within Freeman Park.

City Engineer Budde explained that the Council has already authorized preparation of the final plans and specifications and noted that the survey work has been completed but noted that there was not necessarily any survey work needed for the other trails that will be rehabilitated. He stated that they are still in the design process and reviewing the Go Pro footage that they have gathered. He noted that they will probably have about 50% plans within the next month or so, with the expectation of bidding at the Council level around February.

The Commission discussed the CIP plans/projects for the upcoming years for 2023-2032.

Commissioner Gallivan noted that one thing that was not included in the CIP was related to the conversation about the adult exercise equipment along trails or in Southshore park. He asked if the Commission wanted to still consider this at some point.

Planning Director Darling noted that it was included in the CIP and referenced as the Southshore Park Master Plan. She noted that she had moved it back to the same year as Cathcart Park and the estimate is set with the assumption that they would be doing the majority of the work in-house along with some engineering help. She stated that there has been discussion about spending some time on the Master Plan and coming forward with a project in 2028, but allowing the funds to build up a bit between the projects.

The Commission reviewed more details from the proposed CIP.

Planning Director Darling suggested that during the next Park Tour that the Commission make sure that they compared Cathcart and Freeman North and consider which one should be the next project. She reminded the Commission that all of the numbers included in the table were very general.

Chair Hirner asked if there was anything the City could do, from a maintenance perspective, to protect the poured in place rubber surfaces, so they would last longer.

Planning Director Darling explained that there really was not much that could be done.

Chair Hirner asked if there were things that have come up at a staff level that should be added to the CIP.

Planning Director Darling stated that they have discussed the possibility of adding gaga ball pits at Cathcart and Manor Park and has priced them out around $3,000 each, but noted that dollar amount was probably too low to be included in the CIP.

Chair Hirner asked staff to make sure that they are keeping an eye on the warming house in Cathcart because if it starts to show some wear, he wants to make sure that it finds a spot on the CIP for replacement.

Commissioner Gallivan asked about plans for pickleball.

Planning Director Darling explained that all of the tennis courts are currently lined for pickleball, but noted that they do not have the specialty lower set nets. She clarified that the courts are striped for both tennis and pickleball and are being used quite a bit.

Commissioner Levy asked if when it was time for the nets to be replaced if there may be an option to purchase adjustable nets that could be cranked up or down, as needed.

City Engineer Budde explained that since the City has worked on the courts in Badger Park, what is most likely happening, it is set up for tennis with permanent nets, but then on each half of a court it is striped for pickleball. He stated that most people bring their own portable nets so they can play at the appropriate height. He explained that his understanding is that the height of the nets is a sticking point for some and stated that he has heard of other cities that have a storage locker at the facility where they can store their nets on site. He stated that he believes this is similar to what is currently being done at the lacrosse field.

Planning Director Darling confirmed that lacrosse and football associations both have some equipment that is stored on site.

Chair Hirner noted that because the Park Commission did a deep dive into the CIP last year and moved various projects around, he feels things are still in pretty good shape.

Planning Director Darling explained that the only changes in front of Commission is the Cathcart Playground and the Southshore Master Plan were pushed back by one year in order to ensure that there was an adequate amount of funds for the projects.

Gallivan moved to recommend approval of the Parks CIP, as presented, with the changes moving the Cathcart playground equipment to 2025 and the Southshore Park Master Plan to 2025. Hirner seconded the motion. Motion carried 3-0.

B. Shorewood Safe Routes to School

City Engineer Budde stated that in 2021, the City was awarded a Safe Routes to School Grant through MnDOT. He explained that the focus was on Excelsior Elementary and routes within a 1 mile radius and noted that the catalyst for this was the Galpin Lake road and sidewalk project. He noted that the plans were completed this year and looked at the infrastructure and the programming which would be more internal to the school in ways to encourage people to ride bikes or walk to school. He gave an overview of the 6 Es: Equity; Engagement; Evaluation; Education; Encouragement; and Engineering. He reviewed the data that was gathered as part of the planning process. He stated that this information does not really take it to the next level and determine its cost or how it can be implemented. He explained that a next step will require somebody to take action, but noted that it is great that this document has been completed because it offers the opportunity now for entities to go after the next round of funding. He stated that MnDOT has recently completed a road safety audit for Highway 7 and these two documents paired together, in his opinion, really 'T' the City up to be a good spot to pursue some funding. He stated that for now this study is a resource to help the City pick and prioritize projects.

Commissioner Levy asked if this was initiated by Excelsior Elementary.

City Engineer Budde stated that it was initiated by the City of Shorewood.

Commissioner Levy asked whether something similar would be done for other schools such as Minnewashta and Deephaven.

City Engineer Budde stated that there could have been one done for each school and reiterated that the driver for Shorewood was the Galpin Lake Road piece so it was focused on this location, but other areas could go through a similar process.

Planning Director Darling noted that the new Strawberry Lane reconstruction project will include sidewalks that extend all the way from Smithtown Road to 62nd Street West both completing a safe routes to school project and a planned trail in the comprehensive plan.

Commissioner Levy asked if this took into consideration what was already done planning for trail connections in 2011.

City Engineer Budde confirmed that this is building on that work and was creating a bit more of the story in order to go after some of the next steps and future funding.

Chair Hirner stated that he would find it interesting to see this same information for some of the other schools. He stated that where he lives, the sidewalks are in place from Shorewood's perspective, but as you go up Vine Hill towards the high school, the sidewalks just end so the people walking just transition to the street. He reiterated that he felt this report was good, but would like to see it done for other areas as well, so there is more of a regional plan for safe routes to school.

City Engineer Budde stated that he believes that can happen through the next round of Comprehensive Plan work.

Commissioner Gallivan stated that he lives behind Galpin Lake on Galpin Lane. He noted that he was on the advisory committee that was involved in meeting with State staff on this issue and thanked the City for making the effort to apply this grant. He explained that he agreed that gathering this data has been an important step. He stated that part of the reason that the data shows that there are not a lot of pedestrian related accidents is because everyone knows that once they have a close encounter, they do not do that same thing again. He stated that with all the development that is going in on the Chanhassen side, it is becoming more and more of an issue and producing more and more traffic. He stated that they do not walk their daughter or dog in the neighborhood because of all of the traffic. He noted that there is a sidewalk from Chanhassen that goes up to the border and just stops. He stated that he was happy to see that the recommendation within this report included building a sidewalk along Highway 7 up to Oak Street, however it you cannot safely get to that sidewalk there would be no point in it because nobody will use that stretch of sidewalk if they cannot get there safely. He stated that what frustrates him with this report is that there has been 20 years of advocacy by the Galpin Lake area and noted that there is even a current petition that has about 700 signatures saying that this is critical to them. He noted that the City Council has voted numerous times saying that this is a priority. Mayor Labadie has testified in front of the State legislature that this is a priority. He stressed that the State legislature, regardless of party affiliation, have also stated that this is a priority and included it in their request for bonding. He stated that part of the feedback was that this report needed to be done in order to increase the chances of getting it and the purpose of the grant was specifically targeted towards that project. He stated that through the survey process, the results came back that people would walk more if they had safe intersections and sidewalks. The three projects that they acknowledge were most requested was Mill Street, Highway 7, and Galpin Lake Road. He stated that Galpin Lake Road was once again confirmed to be a priority, however, when it came down to it, they said it would be put as a low priority because of how they measure 'equity'. He stated that Shorewood is not the most diverse community but even using their heat maps and the CDC social vulnerability index, one of the bright purple areas is right along Lake Minnetonka where the lowest home price on Zillow is $1.76 million which is smack dab in the middle of the social vulnerability index. He stated that they talk about other factors beyond ethnicity and race that go into this, including age and senior populations, however, there is a senior living facility very near Galpin Lake Road that they did not seem to care about. He expressed his frustration that this seems like an example where people said what they felt was a priority, but State staff turned around and told them, "We know better". He noted that there is nothing in the statute that says that what their version of equity should be the overarching principle in how these grants are determined but that is how they decided to interpret it. He stated that it feels as though they have simply decided what was important and basically said to heck with what the community says. He stated that they are laying aside the feedback from the people who have

lived here to 20 years, what the survey says, what the petition says, what the City Council has said, what Mayor Labadie, and what the State legislature has said. He stated that he wants it on record that he would encourage the City Council and Mayor Labadie to keep pushing so it can get done, because otherwise someone is going to get hurt there because it is very dangerous.

Chair Hirner reiterated that this information would be great to have for the other schools in the area.

5. OLD BUSINESS

A. Volunteers for City Council Meeting

November 28, 2022 – Commissioner Gallivan
January 23, 2022 – Chair Hirner
February 27, 2023 – Commissioner Levy

6. STAFF AND LIAISON REPORTS / UPDATES

A. City Council

Planning Director Darling explained that Council Liaison Johnson was ill tonight.

Councilmember Gorham gave a brief overview of recent discussions and actions taken by the Council.

B. Staff

Planning Director Darling stated that she will confirm that the Cathcart warming house is in good repair and report back to the Commission. She stated that all the improvements at Silverwood Park are finished, but the vegetation is not yet fully established on the hillsides and will be asking Public Works if the City would need to put up some snow fencing in order to keep people out of the areas where they are re-establishing turf. She introduced Janelle Crossfield who will be the new Parks and Recreation Director and explained that they are working to transition various duties over to her.

7. ADJOURN

Chair Hirner adjourned the Park Commission Meeting of October 25, 2022 by general consent at 8:03 p.m.

#4A

CITY OF SHOREWOOD

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To: Park Commission

From: Marie Darling, Planning Director

Meeting Date: December 13, 2022

Re: Freeman Park Trails

Attachments: Plan with estimates by trail segment

Videos of the existing Freeman Park trail conditions may be found on the city's website by selecting: Government/City Departments/Parks/Trails and scrolling to the bottom of the page.

The attached Plan for the Freeman Park Trail Reconstruction is a summary of the project. Each segment was reviewed separately. The estimates for the project are also attached. We are looking for guidance on several options so that we know what needs to be included in the project.

The estimates are higher than estimated several years back and the CIP would be adjusted for the project when it is distributed to the City Council. To cover the additional cost, staff will be exploring various grants, requesting to use federal dollars, and additional transfers from the reserve funds. Because this project will be competing with several other important infrastructure projects for reserve and federal funds, if the funding for the full project is not secured, the project could be split into multiple phases to be accomplished, (north and south).

The project consists of restoring the trails in their current locations except as noted below. Most of the trails are 8 feet in width, but trails A, B and J are about 4 feet wide.

The Trail Reconstruction Project

The red segment is the portion of the trail that would be paid for by the Three Rivers Park District and built to their specifications. The engineer's estimate for this trail construction/reconstruction is $300,617.

The yellow segments are all existing trails. The estimate for these trails is $285,302. The estimates are prepared assuming the trails would be eight feet wide. Trail segment J may not be able to be expanded due to several issues listed on the estimate table on the plan and the potential need for additional right-of-way. Keeping the trail at the current width may reduce the price, although specialized equipment could also be needed for the narrower trail.

There are also a few optional trail segments as well:

Segment B: Repaving this trail was not included in with the yellow coded trails as the trail is duplicated by the Three Rivers Park District project. There are a few options for this trail, including:

1. Reconstruction in the same location at the same width (due to potential wetland impacts, costs to expand would increase exponentially). Likely ±$50,000.
2. Reconstruct the subgrade and add class 5 gravel or establish turf for a natural trail experience. The cost would be about $4,500 for the removal of the pavement plus the and adding more gravel or topsoil for grass seed.

Segment L: Segment L is currently unpaved and connects the southerly parking area and a neighborhood entry. This trail is the only unpaved trail proposed to be paved. If the commission would like to pave the area at this time, the cost would be about $14,250.

Segment G: This area is an old roadbed that was previously used for vehicle traffic connecting the north and south segments of the park. Now it is for pedestrian access only, except for emergency and maintenance vehicles. However, it retains its wider shape and is in poor condition. This connection could be reduced to 12 feet and reconstructed for its current purpose. This work would cost about $38,500.

Please provide your input on the options for the project so that staff can better estimate the total project cost and finalize the plans.

Financial Implications: Assuming that the Parks Commission recommends moving forward with replacing all the segments and the optional B, G and L segments as well, the total cost would be about $390,000. The estimates were greater than previously estimated. Consequently, staff increased the expected cost for the project in the CIP to $400,000 and will verbally update the Commission on whether or not the higher cost was approved at the City Council's December 12 meeting.

Freeman Park Trail Improvements

City of Shorewood

Trails Per Segment

December 2022

BOLTON & MENK

Legend

- Trail Segment to be Reconstructed
- Trail Segments for Potential Rehabilitation
- Trail Segment Recon from Gravel to Pavement
- Trail Segment TBD
- Maintenance Access Road for Potential Rehabilitation
- Lake Minnetonka Regional Trail

SEGMENT	SEGMENT LENGTH (LF)	WIDTH (FT)	COST PER SEGMENT		NOTES
			RECLAMATION & PAVE	RECONSTRUCTION	
A	342	6	$18,307.26	$19,329.84	
B	885	6	$4,478.10	N/A	
C	873	8	$46,731.69	$49,341.96	
D	687	8	$36,775.11	$38,829.24	
E	565	8	$30,244.45	$31,933.80	
F	236	8	$12,633.08	$13,338.72	
G	309	20	$34,735.98	$38,459.22	RECLAMATION & RECONSTRUCTION COSTS ADJUSTED TO 12' WIDTH
H	341	8	$18,253.73	$19,273.32	
I	1007	8	$53,904.71	$56,915.64	
J	794	5	$42,502.82	$44,876.88	POSSIBLE ISSUES WITH WIDENING TRAIL TO 8' WETLAND IMPACTS, TREE REMOVALS, CULVERT EXTENSION, SMALL UTILITY CONFLICTS, & RELOCATION OF STREET SIGNS
K	206	8	$11,027.18	$11,643.12	
L	252	8	N/A	$14,243.04	
TOTAL LENGTH	6497		$309,594.11	$338,184.78	

COST PER LF AT 8' WIDTH - RECLAMATION & PAVE	$53.53
COST PER LF AT 8' WIDTH - RECONSTRUCTION	$56.52

NOTES:

1. SEGMENT A & J ARE ASSUMED TO BE REBUILT TO AN 8 FOOT WIDTH.
2. SEGMENT B IS RECOMMENDED TO BE RECLAIMED AND NOT PAVED DUE TO THE NEW PARALLEL TRAIL SEGMENT. THE TRAIL WILL BE SIMILAR TO OTHER EXISTING TRAILS IN WOODED AREAS OF FREEMAN PARK. ALSO, EXPANDING ITS WIDTH TO 8 FEET MAY CAUSE ISSUES WITH WETLAND IMPACTS AND PERMITTING NEEDS.
3. SEGMENT G IS CURRENTLY 20 FEET WIDE AND COULD BE NARROWED TO 12 FEET WIDE PAVEMENT TO ACCOMMODATE EMERGENCY SERVICES, IF NEEDED. ADJACENT AREAS WOULD BE CONVERTED TO TURF.

CITY OF SHOREWOOD

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To: Parks Commission

From: Janelle Crossfield, Parks & Recreation Director

Meeting Date: November 22, 2022

Re: **Deterring Vandalism**

Attachments: FlashCAM Packet

Background: The City of Shorewood has experienced an increase in the level of vandalism and the associated costs of repairs to the restrooms at Manor Park. Staff have prepared a selection of options for deterring vandalism for the Parks Commission review. Options include: security camera similar to the one set to be installed at Badger Park, a FlashCAM solar powered motion censored camera, public safety enforcement and/or a community mural.

Security Camera: $9,000; $50 annually for recurring monitoring fees
(A two-camera video surveillance system)

- 2-5mp high resolution vandal resistant dome cameras with varifocal lenses.
- Wall hanging NVR lock box
- 20 inch monitor
- Hanwha NVR with 30 days of video storage
- UPS for Video System- Backup Power and Surge Protection

FlashCAM: $7,850
(A solar-powered, portable, motion-sensing camera with voice recording)

- Completely portable and self-sustaining: solar-charged and easy to move.
- No internet network required, photos are received via Bluetooth.
- Powerful active deterrence, stopping it before it happens is the goal.
- High-resolution photo: technology is proven to provide prosecutable photos and can ID a suspect from 100's of feet away.

Public Safety Enforcement:
Requesting South Lake Minnetonka Police Department to increase patrol at Manor Park.

Community Mural: $2,000 - $10,000
Engaging the community to create a mural in Manor Park in the bathrooms and/or on the exterior of the building. Research has shown that art deters vandalism by removing the blank canvas that attracts vandals in the first place. It also creates a relationship with the space and can provide an approach to prevent vandalism, improve park amenities, engage residents young and old as well as strengthen community pride. Grants may be obtained to help cover the expenses.

Staff Recommendation: Staff recommends a dual approach of the FlashCAM and a community mural.

Options: The Parks Commission should review the options and send a recommendation to staff and the City Council.

Next Steps and Timeline: Following the Park Commission review and recommendations, the matter will be placed on a City Council agenda for final decision.

QStar Technology, LLC
2730 Monterey Street, Suite #106
Torrance, CA 90503
T: 310.294.8194 F: 310.781.1025
FEIN: 20-8051493

SOLUTION OVERVIEW AND PRICE QUOTE

DATE	QUOTE#
11/16/2022	133532

Prepared For:
Janelle Crossfield, Director Shorewood Parks & Recreation 5735 County Club Road Shorewood, MN 55331 Ph: (952) 960-7902 E: jcrossfield@ci.shorewood.mn.us

Addressing
Vandalism, Graffiti and Nuisance Crimes
Shorewood Parks & Recreation
Shorewood, MN

November 16, 2022

This quote will expire in 30 days unless a written request indicating the intent to purchase is received. This information is provided solely for the intended recipient and may not be used to solicit other vendors. This proposal contains proprietary and confidential information of Q-Star Technology LLC and must be protected pursuant to the Federal Trade Secrets Act, 18 U.S.C. § 1905.

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FEIN: 20-8051493

I. OBJECTIVE:

Addressing Nuisance Crimes and Unwanted Activity. Nuisance crimes are chronic issues nationwide costing city and state parks millions of dollars annually. Specifically, the unwanted activity within Shorewood Parks are concerns, and it may be only a matter of time before an incident occurs that will cost the parks and recreation department significant time and materials to mitigate not to mention the costly distractions to manpower and mission. Besides wasting precious resources and funding, it also raises concerns about overall public safety, declining property value and the well-being of the community.

II. SCOPE OF SOLUTION:

Addressing Crime at the Source. A key element in proactively fighting nuisance crimes such as: vandalism, trespassing, illegal dumping, metal/equipment theft and graffiti, is to address the issue directly at the source - the criminals themselves. It is, of course, important to quickly reverse the damages resulting from the crime, but if the culprit has not been addressed directly; they most likely will strike again. This is a common challenge that many parks encounter, investing thousands of dollars into the resources and materials to reverse the damages, yet not stopping the criminal or, if warranted, identifying and prosecuting them. Ultimately the issue will persist unless the culprit is truly deterred.

The FlashCAM Is a Proactive Solution to Stop Nuisance Crimes. For over 18 years, Q-Star Technology has been helping city and state parks across the country address issues of nuisance crimes with the FlashCAM portable crime deterrent systems. The FlashCAM is a crime fighting tool designed specifically to protect city and state parks from nuisance crimes such as graffiti, vandalism, illegal dumping, metal/equipment theft and other unwanted activities. These types of crimes destroy property, increase liability risks and deplete precious resources and budgets. The longer these issues are not addressed, the bigger the problem becomes.

High Resolution Imaging. Since the FlashCAM is a deterrent system rather than surveillance set up, the security efforts are proactive instead of reactive to the crime. The unique features (i.e.: motion-triggered strobe flash and customizable voice warning) stop the criminals before they can strike. The system also captures high resolution (24 megapixel) images of the activity, suspects and license plates, even in complete darkness (approx. 250 ft.). The clarity of the captured images allows law enforcement to identify and prosecute these criminals with this key evidence.

No Infrastructure Requirements – No Expensive Installation Crews. The FlashCAM is completely self-contained. There is no hard wiring required with the solar-charged battery. This simplifies installations and system movement. Many FlashCAM users partner with other departments within their community to rotate their systems to various locations such as: recreation areas, pavilions, power substations, recycling facilities, bridges/highways, water reservoirs, historical monuments etc. The portability and ease of installation of the FlashCAM, as well as the versatility on a range of applications, allow parks to develop a comprehensive program to combat nuisance crimes within their community in even the most remote locations.

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FLASHCAM
Portable Crime Deterrence

SOLUTION OVERVIEW AND PRICE QUOTE

This proposal includes:

- Each FlashCAM-880SX system includes:
  - ONE (1) wall mounting bracket
  - ONE (1) RF keyfob controller
  - ONE (1) battery charger
  - ONE (1) 8.0 GB Secure Digital Memory Card
  - ONE (1) Quick Move Adapter (QMA)

- The wall mounting bracket and QMA hardware are used to mount the systems to the desired location, and the system can be quickly installed at any location where a QMA is mounted. The RF keyfob allows control of the FlashCAM-880SX from ground level, such as: changing settings, checking battery status etc.

- Each FlashCAM-880SX system includes a one (1) year factory warranty. Optional Extended Warranty coverage is available through additional purchase.

- Optional onsite consultation services are available through additional purchase.

Community Impact

The "Broken Window Theory," introduced in the early 1980's and effectively used in the 1990's to lower the crime rate to historic lows in New York City, suggests that by addressing lesser crimes such as vandalism the overall crime rate can be lowered by creating an environment that encourages community involvement and discourages criminal activity. This FlashCAM program will thus help create awareness in residents as well as the would-be criminals that crime will not be tolerated within Shorewood Parks. This is the real key to addressing this issue. One could call this: Behavioral Modification through Forced Accountability!

The long-term benefit of stopping nuisance crimes at the source of the issue not only helps protect this specific location from any further damage but it also helps maintain a safe and healthy environment for the entire community.

III. VENDOR INFORMATION:

Q-Star Technology is a Veteran-Owned Small Business, GSA Certified, Sole Source vendor, with all FlashCAMs proudly manufactured in the USA (Torrance, CA) for over 18 years. The FlashCAM is a unique one-of-a-kind product, with no other product like it in the market.

GSA Contract Number: GS-07F-0355U
Sole Source Letter: Available upon request (310) 294-8194

Contact Information:

Regional Representative
Name: Andrew Clarke
Title: Account Manager
Tel: 310-294-8194 Ext. 112
Email: AClarke@qstartech.com

Corporate Headquarters:
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Portable Crime Deterrence

SOLUTION OVERVIEW AND PRICE QUOTE

Terms	Rep	FOB
Net 30	AC	Torrance, CA

ITEM #	Description	Qty	Unit Price	Total
FC-880 SX	FlashCAM-880 SX System	1	$ 8,600.00	$ 8,600.00
Discount- Municipal	Municipal Discount	1	$ (750.00)	$ (750.00)
			SUBTOTAL:	$ 7,850.00
			Shipping & Handling:	$ 95.00
			Sales Tax 0.00%	$ -
			TOTAL:	$ 7,945.00

All Dollar amounts are in United States Dollars. Customer responsible for all Duties, Taxes and/or Broker Fees if Applicable. Prices include a Cash/Check/ACH discount.

MADE IN USA

QStar Technology, LLC
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T: 310.294.8194 F: 310.781.1025
FEIN: 20-8051493

ADDENDUM INFORMATION:

I. **FlashCAM-880SX Portable Deterrent System with Wireless Download Specifications**

II. **Customer References**

SPECIFICATIONS:

OPERATING RANGE:	Up to 100 feet for a human, up to 175 for a vehicle			
SENSING DEVICE:	IR Motion Sensor with Variable Trigger Options - adjustable sensor delays to reduce false triggers			
CAMERA:	**RESOLUTION**	**MEMORY**	**PHOTOS PER EVENT**	
	24 megapixels (depending on availability)	22 Gigabyte storage with (FIFO) Overwrite capability	User selectable 1, 2, 3 or 4	
STROBE FLASH:	Proprietary design. Captures night time images and acts as deterrence (Can be disabled)			
OPTICAL ZOOM:	18mm to 55mm, manually adjustable			
KEYFOB:	**BUTTONS**	**CONTROL MODES**	**RANGE**	
	5-button keyfob to change modes, allow status reporting, system tests, and access WiFi server	ARM - Stays armed until changed. SENSOR - Arms at dusk; disarms at dawn. DISARM - Stays disarmed until changed. DOWNLOAD - Wireless download of picture files TEST - Test system features	75 feet at 20 feet AGL	
DELAYS:	**ARM**	**TRIGGER ZONE**		
	0-8 hours from dusk (user selectable)	Can be set to any value. Default values are 3 and 5 seconds.		
CUSTOMIZABLE AUDIO WARNING:	**OUTPUT**	**RECORD**		
	Supports up to 14 seconds	Pushbutton controls support recording and playback of voice messages		
SYSTEM STATUS REPORTING:	Via voice prompts and audible beep code			
MODES:	**TEST**	**LICENSE**	**DOWNLOAD**	
	Test daylight sensor; motion sensor field-of view test and system test	Sets camera lens to allow photographing reflective surfaces. Allows camera to capture license plate numbers more than 250 ft. away in TOTAL DARKNESS.	Wireless download of pictures onto any WiFi enabled device using a standard browser.	
POWER:	Solar Panel (with 30 Ampere Hour rechargeable battery)			
CASE:	16 gauge steel with bullet resistant Lexan covering the camera lens			
MOUNTING:	Heavy-duty (removal resistant) wall mount bracket. C-Clamp parapet mounting optional			
DIMENSIONS:	**HEIGHT**	**WIDTH**	**DEPTH**	**WEIGHT**
	6.81"	10.21"	11.25"	20 LBS.

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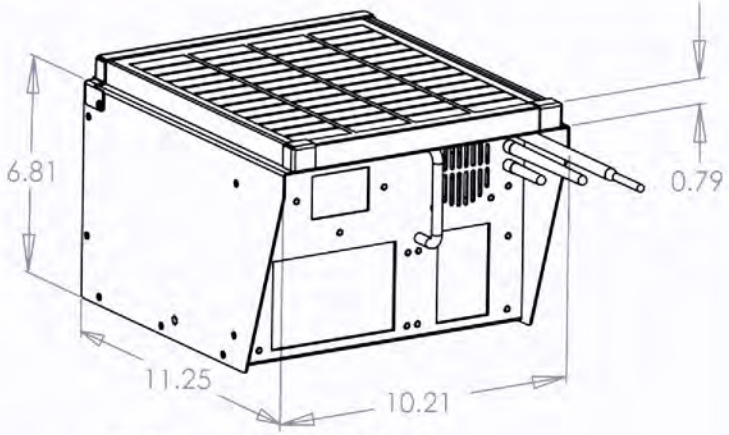
FLASHCAM

PORTABLE CRIME DETERRENT CAMERA SYSTEMS

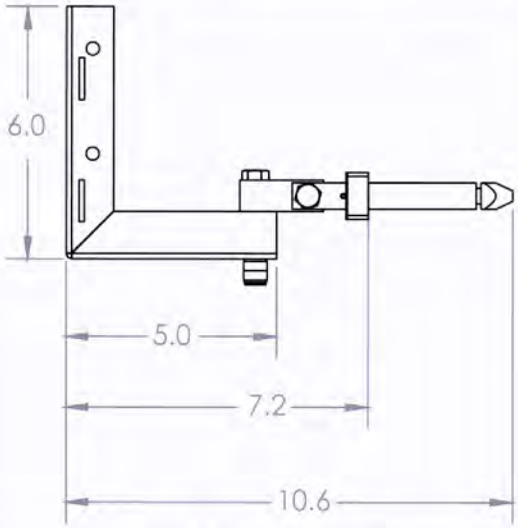
The FlashCAM-880SX is a proactive deterrence / investigation tool with high resolution, low light imaging capabilities, used for apprehension and prosecution of crime suspects. The FlashCAMs are designed as a proactive solution to safeguard property, infrastructure and equipment while preventing undesirable consequences from occuring.

FEATURES:

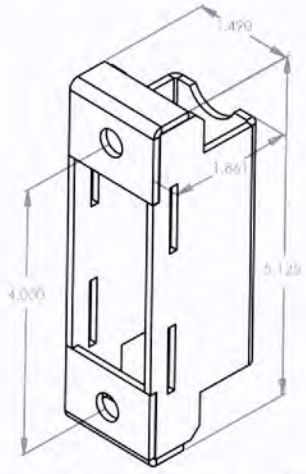
- **Portable/Completely Self Contained**
- **SD Card Overwrite**
- **Solar Charged Battery**
- **Vandal Resistant Rugged Design**
- **24 Mega Pixel High Resolution Images**
- **Bright Strobe Flash**
- **Customizable Audio Warning**
- **Wireless Image Download**



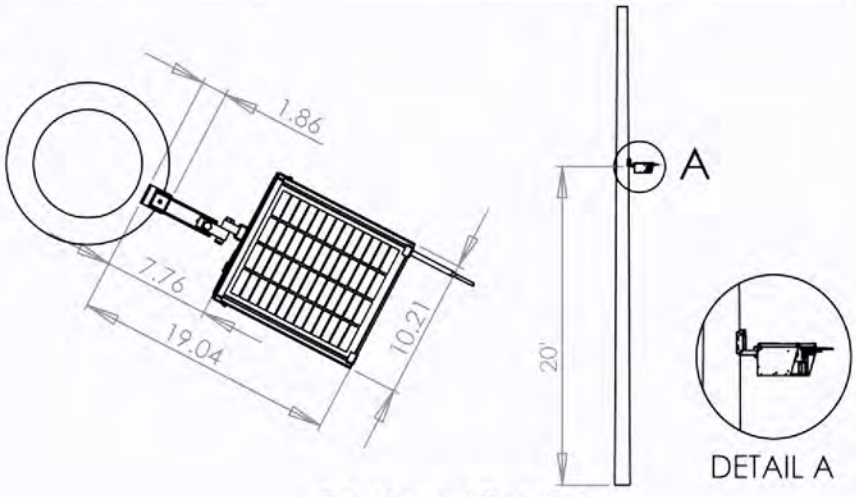
WEIGHT:	20 LBS (9.07 kgs)
WIDTH:	10.21 inches (259.33 mm)
DEPTH:	11.25 inches (285.75 mm)
HEIGHT:	6.81 inches (172.97 mm)



Wall Mount Bracket



Quick Move Adapters (QMA)



Pole Mounted FlashCAM

FLASHCAM CRIME DETERRENT CAMERA SYSTEMS

Customer References: Illegal Dumping

"The [FlashCAM] is fantastic! Within a month of installation, we were able to get high resolution photographs of 10-12 different people dumping illegally and we even identified people coming from as far as three towns over! The FlashCAM also works very well as an effective deterrent. Before the install, it seemed almost every other day there was someone illegally dumping. The FlashCAM has noticeably cut that down."

-Jeremy K.
Round Hill Association
Fishkill, NY

"We are averaging 5-13 cases a month with a very high conviction rate.'
Re: FlashCAM Report- Stats 8/22/18, Of the 35 cases:

- 28 have pled liable for a total fine collections of $52,745) Avg: $1883.75/case)
- 4 cases were dismissed-reasons range from stolen vehicle, owner no longer owned vehicle, individual was deceased, etc.al.
- 3 cases have a court date set for 9/19
- An Additional 4 cases have been submitted t Law for review to submit to court.
- 10 different FlashCAM sites are responsible for this data.

-Chicago Streets and Sanitation Department
Chicago, IL

"The [FlashCAMs] are working wonderful. We're catching illegal dumper[s] and making arrest[s]."

-Keith Walker
Camden Public Works, NJ

"The system produced by Q-star is by far one of the best. My field officers enjoy the fact that deployment and setup are quick and easy. The follow up photograph download process is user friendly, but what truly sets this system apart is the clarity of the photographs and the ability to zoom is said photographs. My officers were working one incident involving theft from one of our 17 trash drop off centers. After deployment of the system, my officers were able to take a photograph from the camera and zoom in on an individual's hands showing a distinct dragon tattoo. My officers were able to take the photograph and match it up to a previous booking photo. Therefore, allowing us the ability to identify the individual. These systems can be an asset to law enforcement agency both urban and rural tacking these types of issues."

-Jamie Nelson, Director
Spartanburg County Environmental Enforcement Department, SC

Customer References: Nuisance Crimes

"We were using 20 gallons of paint every day to cover over the graffiti. It was an expensive problem when you factor in the labor costs. So, we installed a FlashCAM system, left it at that location for two months, and the graffiti stopped!"

-Danny Mercado
New York City Parks
New York, NY

"We have had great success with our 6 Q-Star systems. We mainly use them for graffiti prevention but have caught several thefts and even a sex assault suspect leaving the backyard of the victim."

-Sgt. Scott Wegscheider
Brighton Police Department
Brighton, CO

"We love the FlashCAM, we had at least 1 incident every week, but since the FlashCAM has been implanted, we had only 1 incident in an entire year!"

-Mike Aho
Fair Oaks Parks & Recreation
Fair Oaks, CA

"We love the FlashCAMs! We are so spoiled at this point with these cameras, we wouldn't know what to do without them!"

-Sgt. Ron Hasty
St. Louis Metropolitan Police Department
St. Louis, MO

"The (FlashCAMS) have been up for over a year and not a scratch has been made on facility... We are situated in a high-risk area, but since we installed the FlashCAMs, we have not seen any damage on our facility."

-Craig Callahan
Bernalillo County Parks & Recreation
Albuquerque, NM

Breaking the NUISANCE CRIME LIFE CYCLE

STOP THE SOURCE → **BREAK** THE CYCLE → **ELIMINATE** THE CRIME

THE NUISANCE CRIME LIFE CYCLE...

No matter how quickly and frequently the damages of nuisance crimes are repaired, it continues to come back. This is what we refer to as the *"Nuisance Crime Life Cycle."*

We help our customers break this cycle by directly addressing the source of the crime - the criminals themselves. With customized and strategic behavior modification approaches, we have helped our customers STOP nuisance crimes in their community.

New York City Parks were using over 20 gallons of paint every day to cover graffiti. They eliminated the weekly clean-up costs of almost $2,000 by breaking the vicious graffiti removal cycle. This is a savings of almost $94,000 per year!

Once the crime stops, all of the resources wasted on reversing the damages can now be allocated to other key areas of need. With this reallocation of resources, a new cycle of continuous improvement can begin to take place, providing a safe, healthy and thriving community.

OUR CUSTOMERS REPORT A

90-100% REDUCTION

IN NUISANCE CRIMES

"We have seen an immediate drop off of vandalism..."
- Brentwood, CA

"...been up for over a year and not a SCRATCH has been made on our facility!"
- Bernalillo County, NM

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FLASHCAM
Portable Crime Deterrence

Customer References: Nuisance Crimes

"We were using 20 gallons of paint everyday to cover over the graffiti. It was an expensive problem when you factor in the labor costs. So, we installed a FlashCAM system, left it at that location for two months, and the graffiti stopped!"

-Danny Mercado
New York City Parks
New York, NY

"Everywhere the FlashCAM is placed vandalism drops dramatically. The voice by the camera turns the vandals away. We have many cases studies that show vandalism drops where the FlashCAM is placed. For example, there was this air condition company that got vandalized regularly every month by gangs including the Latin Kings. Once the FlashCAM was up the problem stop 100%"

-Jan Noble
Belvidere Police Department
Belvidere, IL

"The FlashCAM has proven beneficial for us. We were having problems in an Alleyway with some negative behavior (loitering, graffiti, urinating, etc) once we put the FlashCAM up the problem went away. We moved it to a house that was getting lots of calls with some negative behavior, since we put the FlashCAM up there, we haven't got any calls. We have another FlashCAM at a parking lot near a dollar store that was getting auto theft, the FlashCAM has proved useful there too. I like that fact you can just pop the FlashCAM anywhere and move it around also that you can program when you want it to trigger"

–Anthony Morgan
Mount Rainier Police Department
Mount Rainier, MD

"We love the FlashCAM, we had at least 1 incident every week, but since the FlashCAM has been implanted, we had only 1 incident in an entire year!"

-Mike Aho
Spokane Parks & Recreation
Spokane, WA

"The FlashCAM works great and we have been very mobile with it. It's a great deterrent and has been working out well for us. It has noticeably decreased vandalism in areas prone to vandalism. We can even clearly see the vandals with the high-quality photos. There was this lighthouse that would get vandalism regularly, since we put the FlashCAM the vandalism drastically decreased. There was an area prone to dumping almost every day, now there is no dumping in that area. Wherever we pot the FlashCAM it makes a huge difference"

- Aron Lee
Hannibal Parks and Recreation
Hannibal, MO

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FLASHCAM
Portable Crime Deterrence

Customer References: Nuisance Crimes

"Before the FlashCAMs were installed at our 6 parks. We were continually having burning, vandalism, and graffiti problems..and then to not have problems after FlashCAMs.. even with when we had a bad economy you would think the problems and cost would go up, but they went down with the FlashCAM"

-Kost Kapchonick
Southfield Parks and Recreation
Southfield, MI

"The (FlashCAMS) have been up for over a year and not a scratch has been made on facility... We are situated in a high-risk area, but since we installed the FlashCAMs, we have not seen any damage on our facility."

-Craig Callahan
Bernalillo County Parks & Recreation
Albuquerque, NM

"We have had great success with out 6 Q-Star systems. We mainly use them for graffiti prevention but have caught several thefts and even a sex assault suspect leaving the backyard of the victim."

-Sgt. Scott Wegscheider
Brighton Police Department
Brighton, CO

"We have been using your FlashCAM system to watch over one of our Community Gardens, which has had vandalism, theft, and break-ins. We have had success in deterring those activities and our gardeners love that both their property and their harvest are left untouched. "

- Matt Travino
Fair Oaks Parks and Rec District
Fair Oaks, CA

"The deterrence program seems to be working really well…..lots of pictures of shocked trespassers and no new graffiti!"

- Adam Robertson
El Paso County Parks
El Paso, CO

"We love the FlashCAMs! We are so spoiled at this point with these cameras, we wouldn't know what to do without them!"

-Sgt. Ron Hasty
St. Louis Metropolitan Police Department
St. Louis, MO

CITY OF SHOREWOOD

5755 Country Club Road • Shorewood, Minnesota 55331 • 952-960-7900
www.ci.shorewood.mn.us • cityhall@ci.shorewood.mn.us

To: Parks Commission

From: Janelle Crossfield, Parks & Recreation Director

Meeting Date: December 13, 2022

Re: **Phase II IPM Plan**

Attachments: City Council Work Session Minutes November 7, 2022 (On the city website click on Agendas and Minutes, scroll down to 11/07/22 and click minutes)
IPM plan Phase II (Electronic copy only)

Background: The City of Shorewood has contracted with the IPM Institute of North America to prepare a guiding document regarding alternatives to the use of chemicals or pesticides for city owned facilities and grounds.

As the plan moves forward, it is very important for the City Council to define a clear and concise approach to address the issue, but also to recognize the additional labor, costs, and tradeoffs for putting such a policy in place. The Parks Commission may be asked to provide recommendations as the implementation plan is prioritized.

Staff will ultimately be asking for direction from City Council on the following items:

1. Will a separate advisory committee be created for oversight as listed in the model policy or will those duties be assigned to an existing commission or the City Council? Which department would be the staff support for such a board? If this is a permanent assignment to a commission City Code may need to be amended to include this duty or to add another commission.
2. Will the Phase 2 implementation strategies be implemented as indicated and if so, will the chemicals used be the fully organic fertilizers or

pesticide-free fertilizers?

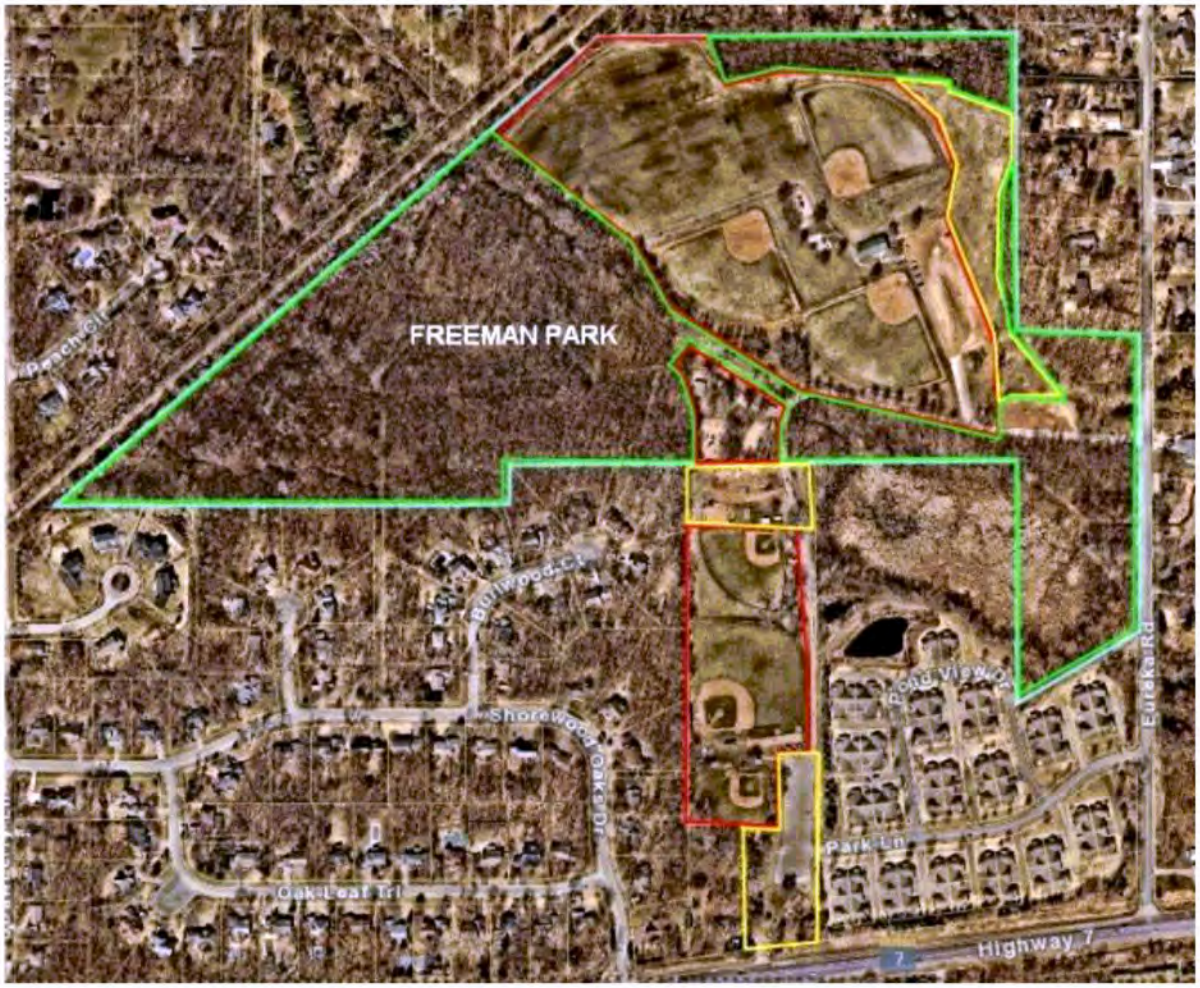
3. Will all turf areas be overseeded and aerated? Will the City hire an outside company or purchase the equipment and hire more employees?
4. Should irrigation be added to the parks?
5. How will buckthorn be removed? After the initial removal, will organic/pesticide free products be used or are conventional products acceptable? Long-term, how will buckthorn in the parks be managed.
6. Should staff use conventional ash borer treatments for trees, reduced risk insecticides, or remove the ash trees preventatively rather than treat them?
7. Continue the Manor Park pond copper sulfide treatments, alum treatments, replace the treatments with something else, or discontinue
8. How is the city to maintain sidewalks and trails without conventional chemicals that destroy the plants roots?
9. How is the city to meet the legal requirements to meet state statutes regarding noxious/invasive weed eradication/removal?
10. How is the city to respond to aggressive pests, such as wasps and hornets within the parks?

Financial or Budget Considerations: The cost for implementation of the recommendations are going to exceed the current operating budget for the parks. Based on the proposed levy rate, at the time of writing this report, an additional $45,000 was added to operations as a starting point and will not cover the full cost of the proposed implementation plan.

The cost for an aerator, as mentioned in the plan, is $12,500.

Staff Recommendation: Staff recommends the implementation of a community engagement plan to provide public input to the Parks Commission, City Council and staff on how to prioritize items in the implementation plan with a $45,000 budget.

Next Steps and Timeline: Following the Park Commission review and recommendations, the matter will be placed on a City Council agenda for final decision.



Bee City Resolution Implementation Plan City of Shorewood Fall 2022

By Alec McClennan, Sydney Lezaic and Ryan Anderson
Good Nature Organic Lawn Care & Midwest Grows Green

Content

1 Overview

The City of Shorewood selected Midwest Grows Green's (MGG) Technical Assistance Program (TAP) to audit their current landscape maintenance practices, assess if they comply with the 2014 Bee City Resolution and make recommendations to help the city comply and exceed the resolution. In the Spring of 2022, Good Nature Organic Lawn Care's Alec McClennan & Sydney Lezaic assessed management at seven Shorewood parks: Badger Park, Cathcart Park, Freeman Park, Manor Park, Silverwood Park, South Shore Community Park, and Gideon Glen.

Good Nature assessed turfgrass characteristics and extracted soil samples from different sections of each location. TAP and Good Nature used the soil test results, site assessments and maintenance records provided by the City of Shorewood to create an organic based maintenance guide for each location.

The maintenance guide includes suggestions for cultural practices, such as aeration, irrigation, overseeding, mowing, fertilizations and soil amendments and pest suppression. Weekly and yearly calendars for the maintenance team have been provided to help make the transition to organic as straightforward as possible. This respective report does not cover Shorewood's natural area management or offer recommendations for these natural areas. For natural area management recommendations, please refer back to MGG's Phase I Shorewood Sustainable Landscape Management Audit.

2 Introduction

Shorewood, Minnesota selected several park locations to receive feedback on sustainable park management from MGG's Technical Assistance Program (TAP). These locations include Badger Park, Cathcart Park, Freeman Park, Manor Park, Silverwood Park, Southshore Community Park and Gideon Glen. Alec McClennan, CEO and Founder of Good Nature Organic Lawn Care, and Sydney Lezaic, Research and Development Specialist at Good Nature, created an organic turfgrass management program using past data on park maintenance, feedback from the City of Shorewood's Parks and Recreation Department and their own assessment of the parks.

The TAP team collected data and assessed the parks in late April of 2022. This report provides a cost-effective maintenance program for the City of Shorewood to implement on all parks that avoids the use of chemicals potentially harmful to pollinators, pets and people. The report

discusses the initial site assessment and soil test findings collected from multiple sections of the park. Finally, Good Nature developed schedules for cultural practices, fertilization, soil amendment applications and weed and pest control to transition management to completely organic.

3 Summary of Expectations

To help develop cost-effective sustainable landscape management plans for Shorewood, MGG asked the City of Shorewood to prioritize each park into Category A, B, & C areas. Category A parks, the highest priority locations, are Freeman Park and Badger Park. Category B parks, moderate priority locations, are Manor Park and Cathcart Park. Finally, Category C parks, the lowest priority locations, are Silverwood Park, South Shore Community Park and Gideon Glen.

While each location has a general categorization, they, also, have classifications within themselves. Category A locations have the highest level of foot traffic and are considered the most important areas for maintenance and product treatment. Category B locations have moderate foot traffic and are, also, ideal locations for maintenance and treatment. Category C locations are low priority and can receive the least amount of attention when it comes to fertilizations and other maintenance.

This report used weed tolerance thresholds set by MGG, since the City of Shorewood did not provide their own tolerance thresholds. Category A locations can tolerate no more than 15% weed density. Category B locations can tolerate between 16% and 30% weed pressure. Category C locations have no desired level of weed control.

This report created a spreadsheet where the city can change the size of each location's A, B, & C fields to better suit whatever budget the city can allocate for this project. Good Nature, also, developed a budget-friendly scenario by providing their own categorizations of A, B, & C fields (reducing the size of A & B). This scenario grouped most recreational areas in categories B & C and allocated most fertilization treatments to sports fields (A fields).

4 Methodology

Soil Compaction Assessments

Good Nature used a soil penetrometer to measure compaction at each park. Soil compaction causes most turfgrass field performance issues by limiting root growth. A soil penetrometer is a useful device to compare compaction in soils managed under the same conditions or similar soils managed under different conditions. Soil penetrometers measure the pounds per square inch it would take for plant roots to grow through the soil. Root growth decreases linearly with increasing penetration resistance until practically stopping at 300 psi.

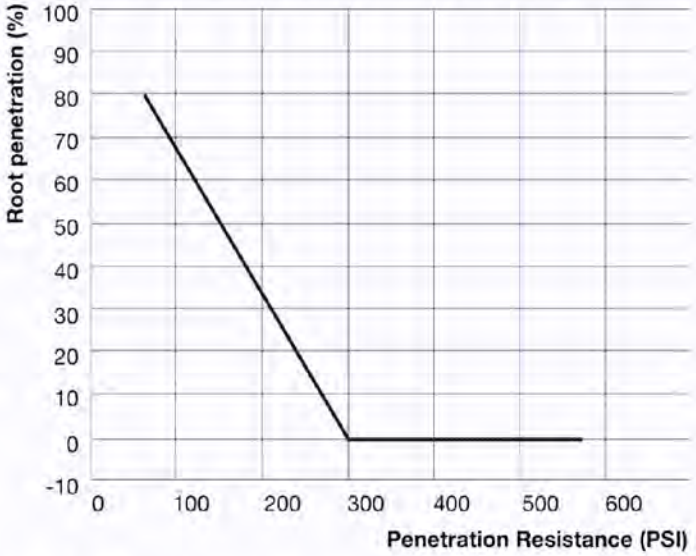


Chart from Penn State relating root penetration (%) versus penetration resistance (PSI).

Soil Testing

Soil testing provides an in depth look at the essential elements and other factors that contribute to overall soil health. Good Nature Organic Lawn Care focused on the following key indicators for Shorewood parks:

Exchange capacity: Exchange capacity reflects the availability of nutrients in the soil, and how well plants uptake the nutrients. **Exchange rates over 25** means that the soil has a good rate of cation exchange, and nutrients are able to move from within the soil to the plant.

Water pH: Water pH, also, influences the availability of nutrients in the soil. Turf does well in **neutral pH soil, 6.5 to 6.9**, and often turns yellow in high pH soils.

Organic material/matter: Organic matter, such as lawn clippings and compost, provide oxygen, carbon and other nutrients to the soil. This feeds healthy soil biota such as fungi, bacteria, and decomposers like worms.

Primary macronutrients of nitrogen, phosphorus, and potassium: All three primary macronutrients promote soil and plant health. Nitrogen serves as a building block for plant proteins, nucleotides and other cellular components. Phosphorus facilitates energy transfer, regulates protein synthesis and stimulates root growth. Potassium triggers the activation of enzymes for many basic functions.

Secondary macronutrients of sodium, sulfur, calcium and magnesium: Sodium activates enzymes for basic functions. Sulfur converts sunlight energy into plant growth. Calcium ensures proper cell division. Magnesium aides in photosynthesis.

Essential micronutrients of boron, iron, manganese, copper, zinc, aluminum: These nutrients help plant growth, overall health and cation exchange in the soil. These nutrients are needed at much smaller levels. We recommend first correcting the macronutrient deficiencies or surplus, because these micronutrients usually follow suit.

For further information regarding soil testing indicators, please visit LawnandLand.org's soil testing section at bit.ly/LLFsoiltesting

5 Description of Assessed Parks

Community Field Use

For most of the year, sports associations book fields at Freeman, Cathcart, Manor and Badger each weeknight for practices and each weekend day for games. All these fields receive heavy use due to this practice and game schedule.

Badger Park

Badger Park is located at 5745 Country Club Road in Shorewood, Minnesota, and sits next to Shorewood City Hall. The City of Shorewood reports that the park spans approximately 8.64 acres (376,000 square feet) and that the City maintains 4.72 acres (205,000 square feet). The park contains an artificial turf lacrosse field, two tennis courts, a playground and a small pond.

Figure 1 shows the image provided by the city and their categorizations of Badger Park. The area outlined in red shows the highest priority fields (Category A). Areas outlined in yellow are moderate priority (Category B). Areas outlined in green are the lowest priority (Category C). Figure 2 shows Good Nature's recommendations for categorizations of Badger Park for a more budget friendly approach. Category A fields measure approximately 50,000 square feet and Category B fields measure approximately 32,000 square feet. The City of Shorewood reports that the Category A areas have the heaviest foot traffic, Category B areas have moderate foot traffic, and Category C areas have the least amount of traffic annually.

Figure 1: Badger Park aerial map and priority categorizations provided by the City of Shorewood.

Figure 2: Badger Park aerial map with Good Nature's budget friendly priority categorizations.

Cathcart Park

Cathcart Park is located at 26716 West 62nd Street in Shorewood, Minnesota. The City of Shorewood reports that the park spans approximately 4.54 acres (198,000 square feet) and that the City maintains all 4.54 acres. The park has a hockey rink, ballfield, tennis courts, a sports court and a playground. Figure 3 shows the image provided by the city and their categorizations of Cathcart Park. The area outlined in red shows Category A fields, areas outlined in yellow are Category B, and areas outlined in green are Category C. Figure 4 shows Good Nature's recommendations for categorizations of Cathcart Park for a more budget friendly approach. Category A fields measure approximately 88,000 square feet with approximately 17,000 square feet belonging to the hockey rink, approximately 2,500 square feet belonging to the baseball infield, and approximately 30,000 square feet belonging to the baseball outfield. The Category B fields measure approximately 36,000 square feet.

Figure 3: Cathcart Park aerial map and priority categorizations provided by the City of Shorewood.

Figure 4: Cathcart Park aerial map with Good Nature's budget friendly priority categorizations.

Freeman Park

Freeman Park is located at 6000 Eureka Road in Shorewood, Minnesota. The City of Shorewood reports that the park spans approximately 61.41 acres (2,675,000 square feet) and that the City manages 31.78 acres (1,384,000 square feet). The park has six ballfields, three batting cages, a concessions area, an area dedicated to soccer fields, a volleyball court, two playgrounds, a community garden and several paths that lead through wooded areas of the park. The areas outlined in red show Category A fields, areas outlined in yellow are Category B and areas outlined in green are Category C. Figure 5 shows the image provided by the city and their categorizations of Freeman Park. Figure 6 shows Good Nature's recommendations for categorizations of Freeman Park for a more budget friendly approach.

The following measurements are all approximations. The Category A fields measure a total of 877,000 square feet. About 279,000 square feet of the Category A fields belong to areas that are not sports fields: the concession area is 122,000 square feet, the area surrounding the northern parking lot is 16,000 square feet, the area surrounding the northern baseball fields is 23,000 square feet, the area surrounding the playground is 52,000 square feet, and the area around the southern baseball fields is 66,000 square feet. About 621,000 square feet of the category A fields belong to sports fields. The outfields of fields 4-6 (northern fields) are all 52,000 square feet, the area dedicated to soccer fields is 295,000 square feet, the outfield for the two little league fields are 30,000 square feet and the infields are 5,000 square feet, and the large baseball field in the southern portion of the park measures at 65,000 square feet for the outfield and 12,000 square feet for the infield.

The Category B fields measure approximately 123,000 square feet, with 84,000 square feet belonging to the northern parking lot area, 15,000 square feet belonging to the parking lot in the middle of Freeman Park, and 24,000 square feet belonging to the southern parking lot area.

Figure 5: Freeman Park aerial map and priority categorizations provided by the City of Shorewood.

Figure 6: Freeman Park aerial map with Good Nature's budget friendly priority categorizations.

Manor Park

Manor Park is located at 20600 Manor Road in Shorewood, Minnesota. The City of Shorewood reports that the park spans approximately 6.39 acres (278,000 square feet) and that the city maintains the entire location. The park contains a ballfield, a tennis court, a volleyball court, a shelter, a playground and a pond. Figure 7 shows the image provided by the city and their categorizations of Manor Park. The area outlined in red shows Category A fields, areas outlined in yellow are Category B, and areas outlined in green are Category C. Figure 2 shows Good Nature's recommendations for categorizations of Manor Park for a more budget friendly approach. Category A fields measure approximately 176,000 square feet with approximately 44,000 square feet belonging to the soccer field, approximately 63,000 square feet belonging to the baseball infield, and approximately 69,000 square feet belonging to the area surrounding the playground and tennis court. The park has no category B fields according to the City of Shorewood's categorizations.

Figure 7: Manor Park aerial map and priority categorizations provided by the City of Shorewood.

Figure 8: Manor Park aerial map with Good Nature's budget friendly priority categorizations.

Silverwood Park

Silverwood Park is located at 5755 Covington Road in Shorewood, Minnesota. The City of Shorewood reports that the park spans approximately 7.47 acres (325,000 square feet) and that the city maintains 2.25 acres (98,000 square feet) of the park. The park contains a sports court, a playground and a pond. Figure 9 shows the image provided by the city and their categorizations of Silverwood Park. The area outlined in red shows Category A fields, areas outlined in yellow are Category B, and areas outlined in green are Category C. Figure 2 shows Good Nature's recommendations for categorizations of Silverwood Park for a more budget friendly approach. Category A fields measure approximately 56,000 square feet. The park has no category B fields according to the City of Shorewood's categorizations. The park is used for mostly recreational activities. Silverwood Park was under construction during park assessments causing Good Nature to not select soil samples.

Figure 9: Silverwood Park aerial map and priority categorizations provided by the City of Shorewood.

Figure 10: Silverwood Park aerial map with Good Nature's budget friendly priority categorizations.

South Shore Community Park

South Shore Community Park is located at 5355 St. Albans Bay Road in Shorewood, Minnesota. The park has a community garden. Figure 11 shows the image provided by the city and their categorizations of South Shore Community Park. The areas outlined in red show Category A fields, areas outlined in yellow are Category B and areas outlined in green are Category C. Figure 2 shows Good Nature's recommendations for categorizations of South Shore Community Park for a more budget friendly approach. Category A fields measure approximately 89,000 square feet. The park does not have any category B fields according to the City of Shorewood's categorizations.

Figure 11: South Shore Community Park aerial map and priority categorizations provided by the City of Shorewood.

Figure 12: South Shore Community Park aerial map with Good Nature's budget friendly priority categorizations.

Gideon Glen

Gideon Glen is a natural area located at 5620 Country Road 19 in Shorewood, Minnesota. The City of Shorewood prioritized the entire park in Category C. Good Nature did not conduct soil

tests for the park, because it does not contain turfgrass. Figure 13 shows the image provided by the city and their categorizations of Gideon Glen.

Figure 13: Gideon Glen aerial map and priority categorizations provided by the City of Shorewood.

6 Site and Field Management Assessment for All Parks

Good Nature gathered vegetation quality and landscape management data for each Shorewood park by both visiting the parks and receiving information from City of Shorewood staff. This section (#6) groups records of irrigation, fertilization and mowing practices for all Shorewood parks together, because Good Nature observed the same or similar practices for each.

Good Nature discusses vegetation quality and density and weed pressure individually in Sections #7 through 9, since we observed variability between Shorewood parks.

Current Irrigation Practices for all Shorewood Parks

The City of Shorewood does not have an irrigation system in place at any of the parks and the City did not report irrigating by hand. Turfgrass performs best when irrigated at approximately 1 inch of water a week. This can be done all at once or split into two ½ inch waterings or three ⅓ inch waterings each week. Kentucky Blue and Perennial Rye (the two dominant grass types) can sustain with 1 inch of water a week during most of the year, but the city should increase watering in higher temperatures. The City can, also, consider watering the artificial turf to cool it down given that the turf can reach dangerous temperatures for athletic events in the summer months.

Current Fertility Practices for all Shorewood Parks

The City of Shorewood did not report any fertilization applications, overseeding or aeration at Shorewood parks in the past six years.

Current Mowing Practices for all Shorewood Parks

The City of Shorewood mows each park once a week at approximately three inches. Athletic fields are mowed twice a week at approximately three inches. Good Nature measured grass at three inches height during our park visits. The grass height was relatively uniform throughout all parks. Frequent and high mowing minimizes stress on the turf by avoiding the removal of too much of the grass blade at one time.

7 Badger Park Site and Field Assessment

Turf Quality and Density

Good Nature observed a mix of Kentucky Bluegrass and Perennial Ryegrass at Badger Park. Most of the grass seems to grow in a bunch-like pattern (see figure 14) suggesting that Perennial Ryegrass is the dominant species. The City of Shorewood reported not overseeding Badger Park recently. Seeding with a grass type that has rhizomes, or underground plant stems, Shorewood can fill in the bare areas observed around the park by seeding with a rhizomatous grass type that spreads laterally.

The park has a considerable amount of trees, forested areas and structures that shade the turf. Shorewood should consider more shade tolerant grass types such as fine fescue in these heavy shade areas, because Perennial Ryegrass and Kentucky Bluegrass grow better in full sun areas.

We observed many large bare turf areas surrounding the parking lot, shelter, and playground (see figures 14 through 19). The bare areas in the turf surrounding the shelter (inside the circular pathway) showed signs of cleat damage, heavy compaction and a lot of small stones (see figures 15 & 16). The park's many spaces for children to play and the large artificial athletic turf field likely brings in a lot of foot traffic causing these compacted and bare soil areas.

Bare areas around paved pathways are common (see figures 18 & 19), because foot traffic frequents near pathways and the pavement can increase temperatures near the ground in the summer. The added foot traffic and temperatures can stress the grass that lines the pavement and allow weeds to overtake the grass.

Figure 14: Bare areas that show bunch type growth in Badger Park.

Figure 15: Bare areas near shelter with cleat marks visible in Badger Park.

Figure 16: Bare areas between shelter and parking lot in Badger Park.

Figure 17: Bare areas near artificial field in Badger Park

Figure 18: Bare areas between parking lot and artificial field in Badger Park.

Figure 19: Bare areas near parking lot in Badger Park.

Current Weed Pressure

Badger Park is considered a Category A location. MGG suggests 15% or less tolerance for weeds in these areas. The current weed pressure seems to be between 16% and 30%. Proper cultural practices of fertilizations, mowing, irrigation, aerating and overseeding should help reduce the weed pressure to below 15%.

Good Nature observed weeds of broadleaf plantain, clover, chickweed, veronica, and dandelions. Unsurprisingly, most of these weeds are established in bare turfgrass areas. Most weeds are opportunistic. They will spread into dirt areas, because they face limited competition for resources. Thick turfgrass areas in the park observed low weed pressure.

Broadleaf weed control applications have been performed once a year since 2015, excluding 2018. The city's broadleaf weed control product is Armor Tech Threesome Selective Herbicide, which has the signal word "Danger". MGG recommended avoiding this product in future application in their Phase I sustainable landscaping audit, because this signal word indicates a product with the highest acute toxicity.

Figure 20: Veronica, chickweed, and clover in Badger Park.

Figure 21: Heavy clover area in Badger Park.

Figure 22: Badger Park Dandelion that looks like it was recently treated with a chemical spray.

Current Soil Properties

Good Nature inferred hard surface firmness at both the A & B sections of Badger Park, because it was very difficult to take soil cores at these sites. Staff could not obtain soil cores in the B sections of Badger Park due to the hardness of the surface.

Soil penetrometer tests confirmed that the majority of the park has compacted soil. The soil penetrometer showed levels of over 400 pounds per square inch (psi) when trying to test the soil. Please find further discussion of the soil penetrometer values on Page 43.

8 Cathcart Park Site and Field Assessment

Turf Quality & Density

Good nature observed a mix of Kentucky Bluegrass, Perennial Ryegrass, and Tall Fescue at Cathcart Park. Tall Fescue has excellent heat and wear tolerance but struggles over the winter in poorly drained soil. Good Nature observed significant turf damage from snow mold during the site assessment at the end of April (see figures 23 & 24). Large amounts of snow piling on the turf prevents airflow and can cause small heated pockets to form under the snow creating ideal conditions for snow mold. Snow mold infested turf will look brown and yellow in color and appear matted down once the snow melts. Shorewood can avoid future snow mold pressure by lightly raking the affected turf to improve the conditions. Some turfgrass discoloration could, also, be from dormancy over the winter.

Figure 23: Large area affected by snow mold in Cathcart Park.

Figure 24: Close up of snow mold in Cathcart Park.

Overall, Cathcart Park has very thin turfgrass (see figures 25 through 27). The park would greatly benefit from overseeding in the late summer or early fall. Good Nature observed most of bare soil in high foot traffic areas of the infield and outfield of the ballfield, the hockey rink and around the paved paths throughout the park. Heavy foot traffic, especially from cleats, can rip up the turfgrass and make it harder for grass to grow. Increased temperatures near pavements can, also, make a more inhospitable environment for most grass types.

Figure 25: Bare areas near the playground in Cathcart Park.

Figure 26: Bare areas in the infield of the ballfield in Cathcart Park.

Figure 27: Bare areas in the outfield of the ballfield in Cathcart Park.

Current Weed Pressure

Cathcart Park is considered a Category B location. MGG suggests 16% and 30% tolerance for weeds in these areas. The current weed pressure seems to be between 16% and 30%. Proper cultural practices of fertilizations, mowing, irrigation, aerating and overseeding should keep the weed pressure in the 16% to 30% range and maybe even below 15%.

Most of the weeds in Cathcart Park concentrate around the playground area. The borders around the paths leading to the playground have heavy clover and ground ivy presence (see figures 28 & 29).

Weeds have not taken over bare soil areas in and around the ballfield, despite the ballfield possessing the majority of the park's bare areas. About a dozen bunches of hairy bittercress were noted by the ballfields, but hairy bittercress is a winter annual and should disappear as the temperatures increase in spring each year.

Good Nature observed tall fescue grasses in Cathcart Park (see figure 30). Tall Fescue can sometimes look undesirable when it grows in areas with other grass types such as Perennial Ryegrass and Kentucky Bluegrass, because Tall Fescue's thick, coarse blades and patchy growth pattern can stand out compared to the other grass types. Tall Fescue, also, tends to not handle Minnesota winters very well.

Figure 28: Ground ivy and clover along paved paths in Cathcart Park.

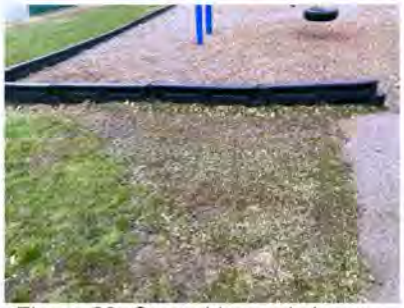


Figure 29: Ground ivy and clover by the playground in Cathcart Park.

Figure 30: Patches of tall fescue near the ballfield in Cathcart Park.

Current Soil Properties

Soil penetrometer testing showed that the majority of Cathcart Park had compacted and hard soil firmness. Overall, the soil firmness did not become nearly impenetrable for roots until about nine inches in depth, but the soil above the nine inches depth showed readings near or greater than 300 psi, which is considered root limiting for turfgrass.

As Good Nature expected, the hockey rink section of the park had the highest level of compaction. The weight of the ice and the rink's water freeze thaw cycles can easily compact soils. The ballfield and playground exhibited moderate compaction in comparison to the hockey field. The soil penetrometer values will be discussed further in the soil testing discussion section. Please find further discussion of the soil penetrometer results on page 43.

9 Freeman Park Site and Field Assessment

Due to Freeman Park's large size, this report will discuss each of the park's sections individually.

Freeman Park has six ballfields: three in the park's southern section (1-3) and three in the park's northern section (4-5).

Turf Quality & Density in the Southern Section

The park's southern section has two little league fields and one large field. Similar to Badger Park and other Shorewood Parks, Good Nature identified snow mold pressure on the section's southern little league field (see figures 31 & 33). Shorewood's heavy snowfall and lack of airflow in pockets under the heavy snow likely caused this snow mold problem.

The vast majority of this field's turfgrass has good density and color outside of the far outfield (see figure 32). The far outfield's proximity to shade from surrounding trees and poor drainage due to a slight grading issue are probably turf quality issues.

Figure 31: Snow mold in the outfield in the north ballfield in the southern section of Freeman Park.

Figure 32: Turf color and density in the north ballfield in the southern section of Freeman Park.

Figure 33: Snow mold in the infield in the north ballfield in the southern section of Freeman Park.

The southern portion's large baseball field has many bare areas due to heavy foot traffic from games and practices (see figure 34). The infield has expected wear, large bare areas and discoloration from cleats and heavy use (see figure 36). The outfield has great color and density (see figure 35). This field seems to have some of the best management practices. Overseeding on the bare areas should help manage the size of the bare spots.

Figure 34: Bare areas on the sidelines of the large southern ballfield in Freeman Park.

Figure 35: Turf color and density of the outfield for the large southern ballfield in Freeman Park.

Figure 36: Turf color and density of the infield for the large southern ballfield in Freeman Park.

The southern section's second little league field in the north experiences heavy bare areas on the sidelines because of spectator use (see figure 37). The far outfield of this little league field has low turf density similar to the first little league field (see figure 38). Heavy shade and grading issues probably caused these issues. The infield and outfield has a small snow mold issue, but otherwise has good color and density (see image 39).

Figure 37: Sideline of the southern ballfields in Freeman Park.

Figure 38: Bare areas and damage in the far back outfield of the southernmost ballfield in Freeman Park.

Figure 39: Color and density of the outfield in the southernmost ballfield in Freeman Park

This report prioritized the southern portion's parking lot as a Category B location. It has bare areas consistent with heavy foot traffic and stress from the pavement. As mentioned earlier in this report, increased pavement temperatures in the summer can overheat the soil and make it difficult for turf to grow, allowing an area for weeds to take over (see figure 52). Overseeding the bare areas where spectators congregate for games could help to increase the turf density (see figure 53).

Figure 52: Bare areas near the southern parking lot in Freeman Park.

Figure 53: More bare areas near the southern parking lot in Freeman Park.

Turf Quality & Density in the Northern Section

Freeman Park's northern section has an area dedicated to soccer fields, three large baseball fields and a concession area. The baseball fields have physical signs numbered 4-6. Outfield #4 had slightly discolored grass, but had good density. Dormant grasses seemed to cause the discoloration (see figure 40). Good Nature identified some disease issues (see figure 41), but proper fertilization should provide the nutrients needed for proper defense against disease. Field #4's infield is all sand. Heavy wear caused patchy grass in the border between the sand and turf (see figure 42). Overseeding should help increase the turf density in these border areas.

Figure 40: Color and density of the outfield for field 4 in Freeman Park.

Figure 41: Upclose photo of turn in the outfield for field 4 in Freeman Park.

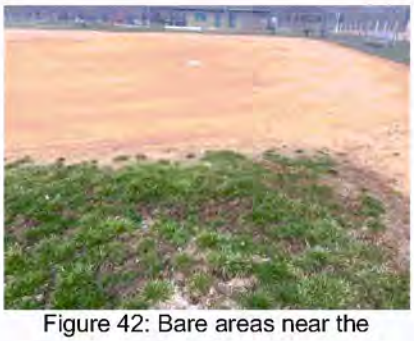


Figure 42: Bare areas near the diamond in field 4 in Freeman Park.

Field #5 has very large bare areas along the sidelines in the outfield (see figure 43 & 44). The density of the turfgrass looked healthy outside of these areas. The turfgrass had a slight yellow coloration similar to other fields dormancy (see figure 45). Field #5's infield is all sand. Good

Nature found patchy turfgrass when transitioning from sand to turf again, because of the change in soil availability and heavy wear.

Figure 43: Bare areas in the outfield of field 5 in Freeman Park.

Figure 44: Discoloration in the outfield of field 5 in Freeman Park.

Figure 45: Color and density of the outfield of field 5 in Freeman Park.

Snow mold appeared to cause a few bare spots along the border of the outfield of Field #6 (see image 46 & 47). Raking these matted areas of turf once the snow melts for the year can help bring oxygen back to the turfgrass and quicken the recovery process. Otherwise, most of the outfield had good density. The outfield had some discoloration that will likely recover once the turf exits dormancy (see figure 48). Good Nature found patchy turfgrass when transitioning from sand to turf again, because of the change in soil availability and heavy wear.

Figure 46: Bare areas in the outfield of field 6 in Freeman Park.

Figure 47: Snow mold in the outfield of field 6 in Freeman Park.

Figure 48: Color and density of turf in the outfield of field 6 in Freeman Park.

The area surrounding the concessions building has very thin and patchy turfgrass. The turfgrass that did successfully grow was severely discolored (see figures 49 through 51). Further inspection of these areas revealed extremely compacted soil and a lot of stone. This section's central location between fields 4, 5 & 6 and the small playground probably attracts the heaviest foot traffic in Freeman Park. This constant use has severely compacted the soil and made it

nearly impossible for turfgrass to properly form roots in some areas. Turfgrass visibly recovered further away from the concessions building. Shorewood should follow this report's cultural practice recommendations rigorously if they want to establish turfgrass in this area. Shorewood should, also, consider planting a more wear resistant grass type in this area.

Figure 49: Turf color and density of the area surrounding the concessions building in Freeman Park.

Figure 50: Bare areas surrounding the concessions building in Freeman Park.

Figure 51: Turf color and density of the area surrounding the concessions building in Freeman Park.

The northern parking lot near the ballfields has been prioritized as a Category B location like the southern parking lot. This area has relatively dense turf, but discoloration caused by snow mold (see figures 54 & 55). Snow mold frequently establishes in locations that get heavy snowfall for extended periods of time. Shorewood can rake the matted sections to hasten the grass recovery from the snow mold.

Figure 54: Density and color of turf near northern parking late in Freeman Park.

Figure 55: Discoloration of turf near northern parking late in Freeman Park.

Freeman Park's soccer field section had several discoloration issues (see figures 56 through 60). A couple of factors contributed to discoloration. First, the constant running of soccer, lacrosse and other players and their cleats likely ripped up both turf roots and blades. Second, the grass may have stayed dormant during Good Nature's site visit in the spring. Finally, disease issues and irrigation problems caused the remaining discoloration.

Good Nature observed large sections of turf with distinct discoloration lines (see figure 58). The combination of poor drainage and regular tearing of the grass blades and roots likely caused fungi to enter and overtake the turf's internal systems. A lack of proper water drainage can, also, pull nutrients out of the soil disproportionately.

Some smaller sections in the soccer fields, mostly concentrated around goal posts and the midfield lines, struggled with heavy foot traffic. Overseeding these areas could help reduce the problem.

Figure 56: Color and density of the soccer fields in Freeman Park.

Figure 57: Close up of the discoloration on the soccer fields in Freeman Park.

Figure 58: Discoloration of the turf in the soccer fields in Freeman Park.

Figure 59: Snow mold near paths in Freeman Park.

Figure 60: Discolored patches in the soccer fields in Freeman Park.

The Category B playground in Freeman Park's northern section experienced low turf density and general discoloration likely due to the heavy shade provided by the trees and compacted soil (see figures 61 through 63). More shade tolerant grass types and aeration could help increase the turf density and overall health.

Figure 61: Color and density of the turf near the playground in Freeman Park.

Figure 62: Color and density of the turf near the playground in Freeman Park.

Figure 63: Up close photo of the color and density of the turf near the playground in Freeman Park.

Current Weed Pressure

Freeman Park's weed density varied between different sections. The thicker turf on most athletic fields seemed to result in less bare areas and relatively low weed densities. Some broadleaf weeds grew in the transition areas between the infield sand and the turf and, also, the exposed dirt around the borders of the fields. The overall weed density of the soccer fields and baseball fields fell within the weed tolerance level of less than 15%.

Good Nature observed higher weed density in the areas around the parking lots, the concession building and the playground. The parking lot and playground areas have a weed density of 16% to 30%. Weeds overtook more than 30% of the concessions area, due to the low density level of grass.

Good Nature found ground ivy and clover in each section of Freeman Park (see figures 64 & 65). Other weeds noted in smaller concentrations include ajuga, flatweed and the dried root systems of old crabgrass (see figures 66 through 68). Crabgrass is a summer annual and because the park assessment was performed in late April, it was not in season.

Figure 64: Ground ivy in Freeman Park.

Figure 65: Clover in Freeman Park.

Figure 66: Ajuga in Freeman Park.

Figure 67: Flatweed in Freeman Park.

Figure 68: Dead crabgrass in Freeman Park.

Current Soil Properties

Soil penetrometer testing indicated moderate surface firmness across the majority of Freeman Park. Good Nature staff only had difficulty pulling soil cores in the shelter and playground sections of the park. Please find further discussion of the soil penetrometer results on Page 44.

10 Manor Park Site and Field Assessment

Turf Quality & Density

Manor Park had higher turfgrass quality and density, a Category B location, compared to Badger, Cathcart and Freeman Parks most likely due to lower foot traffic. The extended spring

2022 cold temperatures likely caused the grass discoloration observed throughout the park (see figures 69 through 71).

Figure 69: Turf color and density on soccer fields in Manor Park.

Figure 70: Turf color and density on the playground area in Manor Park.

Figure 71: Turf color and density on the ballfield in Manor Park.

Concentrated foot traffic resulted in some bare soil areas throughout the park. The shelter area seemed to have the most bare areas, due to more use and the shade provided by the building (see figure 72). The ballfield and soccer fields, also, had obvious signs of damage from the cleats worn for games (see figures 73 and 74). Overseeding with appropriate grass types, fertilization and aerations would help to reduce these bare areas.

Figure 72: Bare areas near shelter at Manor Park.

Figure 73: Bare areas near the ballfield at Manor park.

Figure 74: Bare areas in the soccer field at Manor park.

Current Weed Pressure

Manor Park is considered a Category B location, MGG suggests 16% to 30% tolerance for weed density in these areas. Good Nature observed the weed density below 15% at the time of assessment. Identified weeds include ground ivy, clover, tall fescue (which is not necessarily a weed, but can look out of place when it grows in bunches) and some small patches of bentgrass (see figures 75 through 77). Shorewood should keep track of the small amount of bentgrass at Manor Park, because bentgrass spreads very rapidly and can get out of hand quickly.

The assessment only found one type of broadleaf weed in the ballfield area: Flatweed, more commonly known as cat's ear. Correct cultural practices should reduce weed density.

Figure 75: Ground ivy patches in Manor Park.

Figure 76: Clover patches in Manor Park.

Figure 77: Tall fescue patches in Manor Park.

Current Soil Properties

Manor Park has a relatively soft soil composition. The soil around the shelter has a higher compaction rate than the remainder of the park, probably due to a heavier concentration of foot traffic. The remainder of Manor Park has an ideal firmness for grass growth. Please find further discussion of the soil penetrometer results on page 46.

11 Silverwood Park Site and Field Assessment

Construction at Category C Silverwood Park prevented Good Nature from assessing the park. South Shore Community Park recommendations can be applied to Silverwood Park, since the parks have similar characteristics and issues with only a few differences. The parks are in different locations, so it is understood that the parks will have some differences, but it is clear that most of the parks in Shorewood have similar characteristics and issues.

12 South Shore Community Park Site and Field Assessment

Turf Quality & Density

Good Nature found a fairly dense mix of Kentucky Bluegrass and Perennial Ryegrass at Category C South Shore Community Park. Some of the grass was dormant and affected by snow mold at the time of assessment in late April. Most snow mold damage was concentrated around the parking lot (see figures 78 & 79), probably due to plowing the snow from the pavement onto the grass. Snow likely did not concentrate near the turf farther away from the parking lot that looked healthy and thick for that time of the year (see figure 80). The lower level of foot traffic at South Shore Community Park and lack of athletic activity results in less wear and tear on the turf and a higher quality and density. Turf density did thin a bit in the shaded areas under some of the trees where Kentucky Bluegrass and Perennial Ryegrass struggle to grow. Overseeding the bare soils with shade tolerant grass types such as Fine Fescue can help to increase density.

Figure 78: Density and color of the turf in South Shore Community Park.

Figure 79: Snow mold in South Shore Community Park.

Figure 80: Density and color of the turf in South Shore Community Park

Current Weed Pressure

MGG recommends exercising no tolerance thresholds for weed pressure in Category C parks such as South Shore Community Park. Overall, South Shore had limited weed pressure. Ground ivy and clover invaded the bare areas in turf (see figures 83 & 84). A handful of dandelions established throughout the park as well (see figure 85). Cultural practices of seeding, aerating and fertilizations should manage the weed pressure in the park.

Figure 81: Bare areas near the parking lot of South Shore Community Park.

Figure 82: Ground ivy invading bare areas of South Shore Community Park.

Figure 83: Clover in a low turf density area of South Shore Community Park.

Figure 84: More clover in a low turf density area of South Shore Community Park.

Figure 85: Dandelions in a low turf density area of South Shore Community Park.

Current Soil Properties

South Shore Community Park has a relatively soft soil composition. The many trees in the park and their roots stopped the penetrometer reading completely. These roots will do the same for grass roots. The heavy shade and increased availability for organic matter provided by the trees makes the soil more susceptible to fungus, disease and moss growth. Manor Park has an ideal

firmness for grass growth. Please find further discussion of the soil penetrometer results on Page 47.

13 Gideon Glen Site and Field Assessment

Gideon Glen has been classified as a Category C field by the City of Shorewood. After performing the assessment, Good Nature agrees that this is a Category C location. The location is mostly natural, with tall grass surrounding the pond. No treatment seems necessary for Gideon Glen.

14 Soil Testing Analysis

This analysis lists soil test figures in parenthesis and the specific order of soil tests will be listed at the top of each section.

Badger Park:

- **Exchange Capacity**: (24.20) Exchange capacity is indicative of a loam soil with relatively normal levels of organic matter .
- **Water pH**: (7.6) pH is **higher** than the desired level of 6.8. This is due to the excessively **high levels of calcium**. Our recommendation is to add a pH reducer to help with this.
- **Organic Material**: (5.89%) the percentage of organic matter is **within the desired range**.
- **Soluble Sulfur**: (133ppm) the level of soluble sulfur is **above the desired range,** but not so high that we need to attempt to reduce the sulfur level.
- **Phosphorus**: (78lbs/ac easily extractable & 284lbs/ac Bray II) These two numbers are both considered to determine the available phosphorus. The Bray II level we consider slightly more important than the easily available. This shows that the park is **deficient in phosphorus** and some will need to be added to reach the desired amount.
- **Calcium**: (7684lbs/ac) **Calcium levels are high**, and we recommend a pH reducer to try to break up the excess calcium.
- **Magnesium**: (838lbs/ac) Magnesium is **within the desired range.**
- **Potassium**: (180lbs/ac) Potassium is about **13 lbs per 1000 sqft deficient** in the soil. This is a major concern as Potassium is particularly important for wear tolerance, and will be one of the main focuses of the soil balancing recommendations.
- **Sodium**: (158lbs/ac) Sodium is **above the desired range,** in order to combat this, we suggest focusing on potassium applications. Potassium and sodium are close to the

same molecular size and have the same charge. Adding potassium to the soil will help to push the excess sodium out.

- **Boron**: (1.04ppm) Boron is **within the desired range**.
- **Iron**: (513ppm) Iron is **higher than desired**. Past experience has shown that balancing the major elements in the soil corrects Iron levels.
- **Manganese**: (47ppm) Manganese is **slightly lower than desired**. Past experience has shown that balancing the major elements in the soil allows for the Manganese level to correct itself.
- **Copper**: (2.57ppm) Copper is **slightly lower than desired.** Past experience has shown that balancing the major elements in the soil allows for the Copper level to correct itself.
- **Zinc**: (7.04ppm) Zinc is within the **desired range**.
- **Aluminum**: (67ppm) Aluminum levels are **lower than desired**. Past experience has shown that balancing the major elements in the soil corrects Aluminum levels.

Cathcart Park:

This analysis lists soil test figures in parenthesis with the following format *(hockey figure / infield figure / outfields figure / other figure)*

- **Exchange Capacity**: (16.89 / 17.65 / 16.37 / 18.22) Exchange capacity is indicative of a loam soil with relatively normal levels of organic matter .
- **Water pH**: (7.8 / 7.7 / 7.5 / 7.6) pH is **higher** than the desired level of 6.8. This is due to the excessively **high levels of calcium**. Our recommendation is to add a pH reducer to help with this.
- **Organic Material**: (3.46% / 4.00% / 4.37% / 3.95%) the percentage of organic matter is **slightly lower than the desired range**. Adding organic matter should help to increase the exchange capacity as well as reduce compaction by introducing more soil biota.
- **Soluble Sulfur**: (5ppm / 6ppm / 7ppm / 4ppm) the level of soluble sulfur is **below the desired range.**
- **Phosphorus**: (110lbs/ac easily extractable & 298lbs/ac Bray II / 82lbs/ac easily extractable & 179lbs/ac Bray II / 119lbs/ac easily extractable & 215lbs/ac Bray II / 82lbs/ac easily extractable & 270lbs/ac Bray II) These two numbers are both considered to determine the available phosphorus. The Bray II level we consider slightly more important than the easily available. This shows that the park is **deficient in phosphorus** and some will need to be added to reach the desired amount.

- **Calcium**: (5310lbs/ac / 4796lbs/ac / 4476lbs/ac / 5264lbs/ac) **Calcium levels are high**, and we recommend a pH reducer to try to break up the excess calcium.
- **Magnesium**: (628lbs/ac / 1096lbs/ac / 994lbs/ac / 934lbs/ac) Magnesium is **above the desired range** and we recommend a pH reducer or aeration to try to break up the excess magnesium.
- **Potassium**: (200lbs/ac / 226lbs/ac / 204lbs/ac / 268lbs/ac) Potassium is about **7 lbs per 1000sqft deficient** in the soil. This is a major concern as Potassium is particularly important for wear tolerance, and will be one of the main focuses of the soil balancing recommendations.
- **Sodium**: (62lbs/ac / 68lbs/ac / 62lbs/ac / 60lbs/ac) Sodium is **within the desired range.**
- **Boron**: (0.73ppm / 0.79ppm / 0.73ppm / 0.64ppm) Boron is **slightly below the desired range**. Past experience has shown that balancing the major elements in the soil corrects Boron levels.
- **Iron**: (202ppm / 172ppm / 173ppm / 135ppm) Iron is **slightly below the desired range**. Past experience has shown that balancing the major elements in the soil corrects Iron levels.
- **Manganese**: (145ppm / 92ppm / 89ppm / 110ppm) Manganese is **slightly lower than desired**. Past experience has shown that balancing the major elements in the soil allows for the Manganese level to correct itself.
- **Copper**: (1.83ppm / 1.83ppm / 1.67ppm / 3.18ppm) Copper is **lower than desired**. Past experience has shown that balancing the major elements in the soil allows for the Copper level to correct itself.
- **Zinc**: (2.38ppm / 1.66ppm / 2.47ppm / 2.69ppm) Zinc is **lower than desired**. Past experience has shown that balancing the major elements in the soil allows for the Copper level to correct itself.
- **Aluminum**: (273ppm / 365ppm / 319ppm / 332ppm) Aluminum levels are **lower than desired**. Past experience has shown that balancing the major elements in the soil corrects Aluminum levels.

Freeman Park:

This analysis lists soil test figures in parenthesis with the following format *(shelter figure/ baseball infields 1-3 figure/ baseball outfields 1-3 figure/ baseball infields 4-6 figure/ baseball outfields 4-6 figure/ soccer figure/ B fields figure)*

- **Exchange Capacity**: (26.37 / 24.37 / 20.96 / 25.00 / 22.28 / 25.69 / 28.71) Exchange capacity is indicative of a loam soil with relatively normal levels of organic matter .
- **Water pH**: (7.9 / 7.7 / 7.6 / 7.9 / 7.9 / 7.7 / 7.7) pH is **higher** than the desired level of 6.8. This is due to the excessively **high levels of calcium and magnesium**. Our recommendation is to add a pH reducer to help with this.
- **Organic Material**: (4.91% / 5.43% / 3.91% / 4.03% / 4.44% / 5.11% / 5.21%) the percentage of organic matter is **slightly lower than the desired range**. Adding organic matter should help to increase the exchange capacity as well as reduce compaction by introducing more soil biota.
- **Soluble Sulfur**: (8ppm / 9ppm / 6ppm / 6ppm / 7ppm / 6ppm / 8ppm) the level of soluble sulfur is **below the desired range.**
- **Phosphorus**: (92lbs/ac easily extractable & 256lbs/ac Bray II / 78lbs/ac easily extractable & 224lbs/ac Bray II / 92lbs/ac easily extractable & 252lbs/ac Bray II / 50lbs/ac easily extractable & 224lbs/ac Bray II / 73lbs/ac easily extractable & 234lbs/ac Bray II / 60lbs/ac easily extractable & 206lbs/ac Bray II / 78lbs/ac easily extractable & 151lbs/ac Bray II) These two numbers are both considered to determine the available phosphorus. The Bray II level we consider slightly more important than the easily available. This shows that the park is **deficient in phosphorus** and some will need to be added to reach the desired amount.
- **Calcium**: (7880lbs/ac / 7224lbs/ac / 6068lbs/ac / 7224lbs/ac / 6384lbs/ac / 7664lbs/ac / 5986lbs/ac) **Calcium levels are high**, and we recommend a pH reducer to try to break up the excess calcium.
- **Magnesium**: (1262lbs/ac / 1162lbs/ac / 1098lbs/ac / 1336lbs/ac / 1224lbs/ac / 1238lbs/ac / 1080lbs/ac) **Magnesium levels are high** and we recommend a pH reducer or aeration to try to break up the excess magnesium.
- **Potassium**: (270lbs/ac / 316lbs/ac / 228lbs/ac / 272lbs/ac / 246lbs/ac / 208lbs/ac / 266lbs/ac) Potassium is about **9 to 13 lbs per 1000sqft deficient** in the soil. This is a major concern as Potassium is particularly important for wear tolerance, and will be one of the main focuses of the soil balancing recommendations.
- **Sodium**: (64lbs/ac / 66lbs/ac / 60lbs/ac / 68lbs/ac / 58lbs/ac / 70lbs/ac / 64lbs/ac) Sodium is **within the desired range.**
- **Boron**: (0.74ppm / 1.11ppm / 0.67ppm / 0.72ppm / 0.77ppm / 0.74ppm / 0.76ppm) Boron is **below the desired range.** Past experience has shown that balancing the major elements in the soil corrects Boron levels.

- **Iron**: (135ppm / 201ppm / 172ppm / 155ppm / 169ppm / 151ppm / 129ppm) Iron is **below the desired range**. Past experience has shown that balancing the major elements in the soil corrects Iron levels.
- **Manganese**: (62ppm / 94ppm / 839ppm / 87ppm / 71ppm / 62ppm / 111ppm) Manganese is **lower than desired**. Past experience has shown that balancing the major elements in the soil allows for the Manganese level to correct itself.
- **Copper**: (2.63ppm / 2.34ppm / 2.07ppm / 2.59ppm / 6.8ppm / 2.6ppm / 1.95ppm) Copper is **lower than desired**. Past experience has shown that balancing the major elements in the soil allows for the Copper level to correct itself.
- **Zinc**: (2.57ppm / 2.79ppm / 2.20ppm / 1.61ppm / 2.38pm / 2.26ppm / 3.56ppm) Zinc is **lower than desired**. Past experience has shown that balancing the major elements in the soil allows for the Copper level to correct itself.
- **Aluminum**: (139ppm / 123ppm / 319ppm / 142ppm / 270ppm / 213ppm / 277ppm) Aluminum levels are **lower than desired**. Past experience has shown that balancing the major elements in the soil corrects Aluminum levels.

Manor Park:

This analysis lists soil test figures in parenthesis with the following format *(soccer figure / outfield figure / playground figure)*

- **Exchange Capacity**: (16.41 / 16.78 / 17.68) Exchange capacity is indicative of a loam soil with relatively normal levels of organic matter .
- **Water pH**: (7.5 / 7.7 / 7.5) pH is **higher** than the desired level of 6.8. This is due to the excessively **high levels of calcium**. Our recommendation is to add a pH reducer to help with this.
- **Organic Material**: (3.61% / 3.97% / 3.80%) the percentage of organic matter is **lower than the desired range**. Adding organic matter should help to increase the exchange capacity as well as reduce compaction by introducing more soil biota.
- **Soluble Sulfur**: (7ppm / 6ppm / 9ppm) the level of soluble sulfur is **below the desired range.**
- **Phosphorus**: (156lbs/ac easily extractable & 270lbs/ac Bray II / 179lbs/ac easily extractable & 307lbs/ac Bray II / 124lbs/ac easily extractable & 238lbs/ac Bray II) These two numbers are both considered to determine the available phosphorus. The Bray II level we consider slightly more important than the easily available. This shows that the

park is **deficient in phosphorus** and some will need to be added to reach the desired amount.

- **Calcium**: (4530lbs/ac / 4458lbs/ac / 5378lbs/ac) **Calcium levels are high**, and we recommend a pH reducer to try to break up the excess calcium.
- **Magnesium**: (960lbs/ac / 1082lbs/ac / 754lbs/ac) Magnesium is **above the desired range** and we recommend a pH reducer or aeration to try to break up the excess magnesium.
- **Potassium**: (250lbs/ac / 324lbs/ac / 210lbs/ac) Potassium is about **5 to 8 lbs per 1000sqft deficient** in the soil. This is a major concern as Potassium is particularly important for wear tolerance, and will be one of the main focuses of the soil balancing recommendations.
- **Sodium**: (56lbs/ac / 42lbs/ac / 62lbs/ac) Sodium is **within the desired range.**
- **Boron**: (0.84ppm / 0.60ppm / 0.66ppm) Boron is **slightly below the desired range**. Past experience has shown that balancing the major elements in the soil corrects Boron levels.
- **Iron**: (144ppm / 144ppm / 231ppm) Iron is **below the desired range**. Past experience has shown that balancing the major elements in the soil corrects Iron levels.
- **Manganese**: (135ppm / 168ppm / 103ppm) Manganese is **lower than desired**. Past experience has shown that balancing the major elements in the soil allows for the Manganese level to correct itself.
- **Copper**: (2.17ppm / 1.69ppm / 2.31ppm) Copper is **lower than desired**. Past experience has shown that balancing the major elements in the soil allows for the Copper level to correct itself.
- **Zinc**: (4.33ppm / 3.91ppm / 3.12ppm) Zinc is **lower than desired**. Past experience has shown that balancing the major elements in the soil allows for the Copper level to correct itself.
- **Aluminum**: (406ppm / 337ppm / 257ppm) Aluminum levels are **lower than desired**. Past experience has shown that balancing the major elements in the soil corrects Aluminum levels.

South Shore Community Park:

- **Exchange Capacity**: (17.21) Exchange capacity is indicative of a sandy loam soil with relatively normal levels of organic matter .

- **Water pH**: (8.0) pH is **higher** than the desired level of 6.8. This is due to the excessively **high levels of calcium**. Our recommendation is to add a pH reducer to help with this.
- **Organic Material**: (3.95%) the percentage of organic matter is **within the desired range**.
- **Soluble Sulfur**: (13ppm) the level of soluble sulfur is **below the desired range.**
- **Phosphorus**: (78lbs/ac easily extractable & 261lbs/ac Bray II) These two numbers are both considered to determine the available phosphorus. The Bray II level we consider slightly more important than the easily available. This shows that the park is **deficient in phosphorus** and some will need to be added to reach the desired amount.
- **Calcium**: (5216lbs/ac) **Calcium levels are high**, and we recommend a pH reducer to try to break up the excess calcium.
- **Magnesium**: (762lbs/ac) Magnesium is **above the desired range.**
- **Potassium**: (192lbs/ac) Potassium is about **8 lbs per 1000sqft deficient** in the soil. This is a major concern as Potassium is particularly important for wear tolerance, and will be one of the main focuses of the soil balancing recommendations.
- **Sodium**: (74lbs/ac) Sodium is **above the desired range,** in order to combat this, we suggest focusing on potassium applications. Potassium and sodium are close to the same molecular size and have the same charge. Adding potassium to the soil will help to push the excess sodium out.
- **Boron**: (0.76ppm) Boron is **below the desired range**.
- **Iron**: (128ppm) Iron is **lower than desired**. Past experience has shown that balancing the major elements in the soil corrects Iron levels.
- **Manganese**: (138ppm) Manganese is **higher than desired**. Past experience has shown that balancing the major elements in the soil allows for the Manganese level to correct itself.
- **Copper**: (2.65ppm) Copper is **lower than desired.** Past experience has shown that balancing the major elements in the soil allows for the Copper level to correct itself.
- **Zinc**: (6.35ppm) Zinc is **lower than desired**. Past experience has shown that balancing the major elements in the soil allows for the Copper level to correct itself.
- **Aluminum**: (239ppm) Aluminum levels are **lower than desired**. Past experience has shown that balancing the major elements in the soil corrects Aluminum levels.

15 Soil Physical Properties

Good Nature performed Physical Analysis tests on each park to determined each soil's categorization based on the percentages of sand, silt, and clay for each sample.

BROOKSIDE LABORATORIES, INC.
** PHYSICAL ANALYSIS REPORT **

Badger Park
5745 Country Club Rd
Shorewood, MN 55331

File Number: 88042
Date Received: 08/18/2022
Date Reported: 08/22/2022

Submitted By: A C Zander, Inc. - Good Nature

SAMPLE LOCATION: LAWN

NBR	FIELD	DESCRIPTION	Clay (%)	Silt (%)	Sand (%)
003	WHOLE	51	18.74	29.82	51.44

Figure 101 (above): Badger Park Physical Analysis from Brookside Labs.

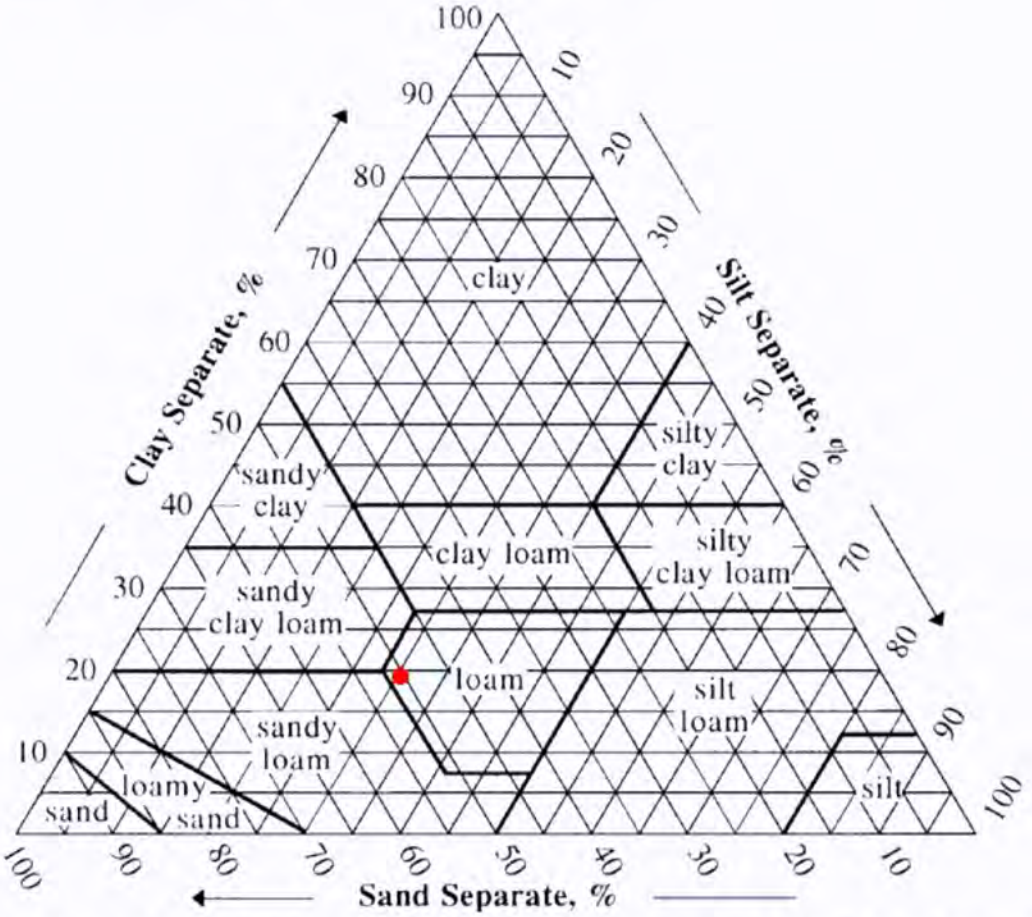


Figure 102 (above): Badger Park Sand-Silt-Clay triangle derived from Physical Analysis Results. This shows that Badger Park is classified as a loam soil.

BROOKSIDE LABORATORIES, INC.

** PHYSICAL ANALYSIS REPORT **

Cathcart Park
26716 W 62nd St.
Shorewood, MN 55331

File Number: 88044
Date Received: 08/18/2022
Date Reported: 08/22/2022

Submitted By: A C Zander, Inc. - Good Nature

SAMPLE LOCATION: LAWN

NBR	FIELD	DESCRIPTION	Clay (%)	Silt (%)	Sand (%)
004	WHOLE	111	21.40	30.84	47.76

Figure 103 (above): Cathcart Park Physical Analysis from Brookside Labs.

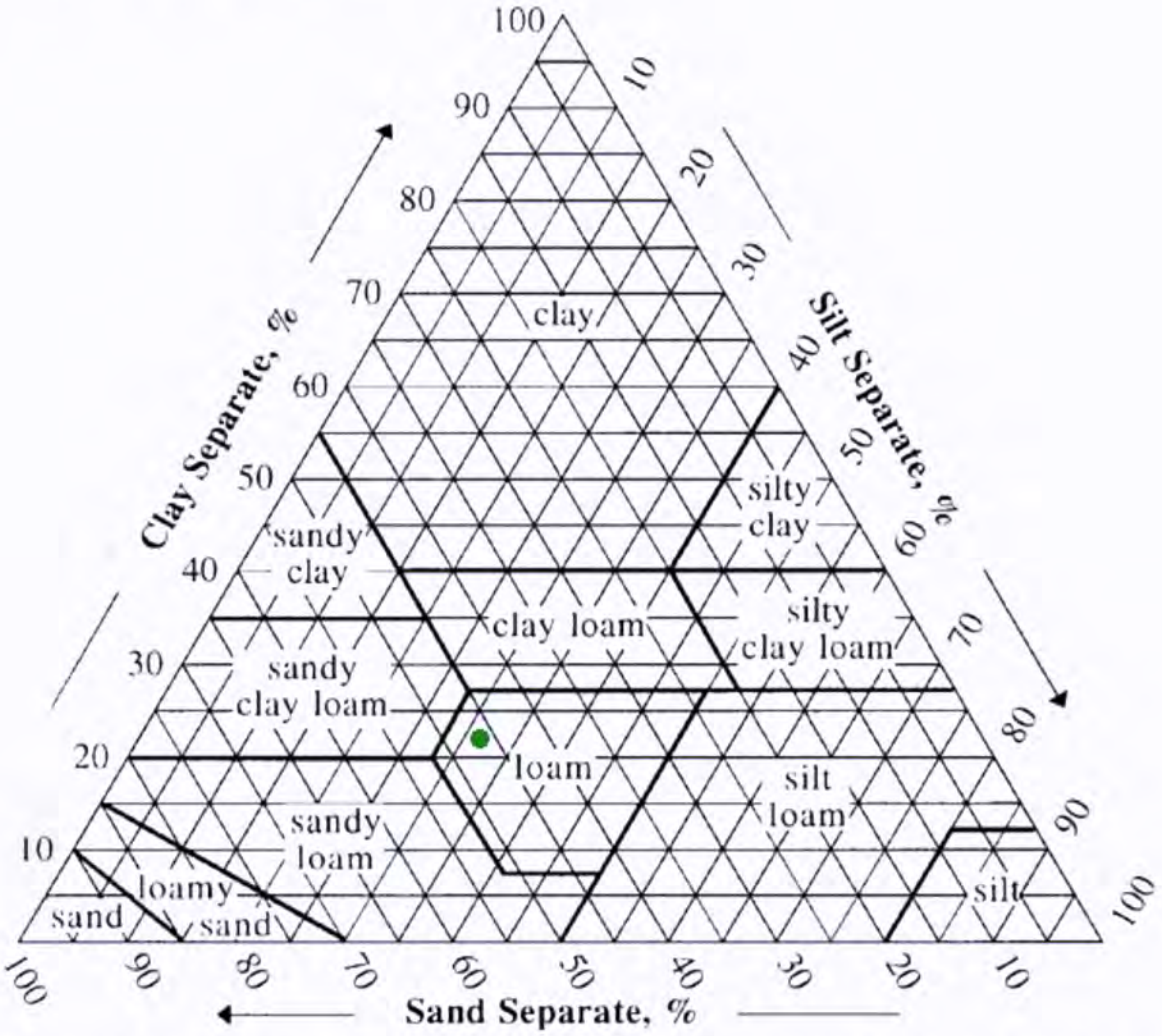


Figure 104 (above): Cathcart Park Sand-Silt-Clay triangle derived from Physical Analysis Results. This shows that Cathcart Park is classified as a loam soil.

BROOKSIDE LABORATORIES, INC.

** PHYSICAL ANALYSIS REPORT **

Freeman Park
6000 Eureka Road
Shorewood, MN 55331

File Number: 88045
Date Received: 08/18/2022
Date Reported: 08/22/2022

Submitted By: A C Zander, Inc. - Good Nature

SAMPLE LOCATION: LAWN

NBR	FIELD	DESCRIPTION	Clay (%)	Silt (%)	Sand (%)
001	WHOLE	835	25.50	44.93	29.57

Figure 105 (above): Freeman Park Physical Analysis from Brookside Labs.

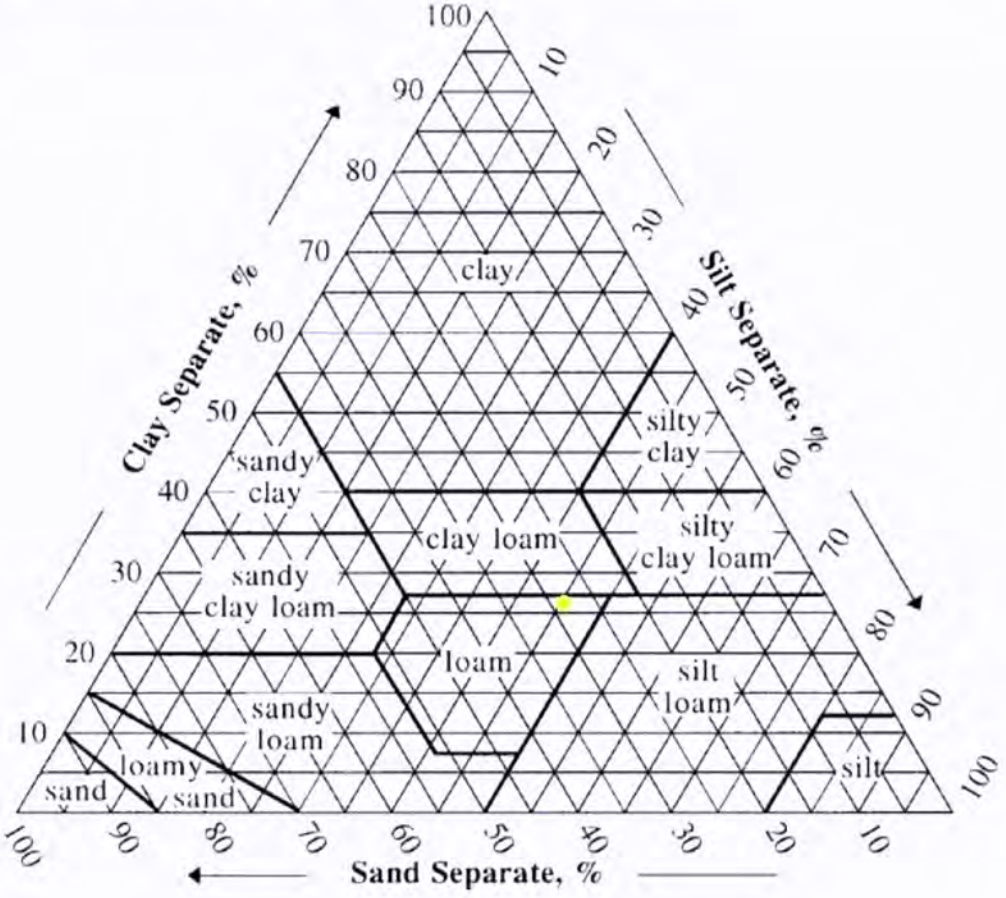


Figure 106 (above): Freeman Park Sand-Silt-Clay triangle derived from Physical Analysis Results. This shows that Freeman Park is classified as a loam soil.

BROOKSIDE LABORATORIES, INC.

** PHYSICAL ANALYSIS REPORT **

Manor Park
20600 Manor Park Rd.
Shorewood, MN 55331

File Number: 88043
Date Received: 08/18/2022
Date Reported: 08/22/2022

Submitted By: A C Zander, Inc. - Good Nature

SAMPLE LOCATION: LAWN

NBR	FIELD	DESCRIPTION	Clay (%)	Silt (%)	Sand (%)
002	WHOLE	172	22.08	33.19	44.73

Figure 107 (above): Manor Park Physical Analysis from Brookside Labs.

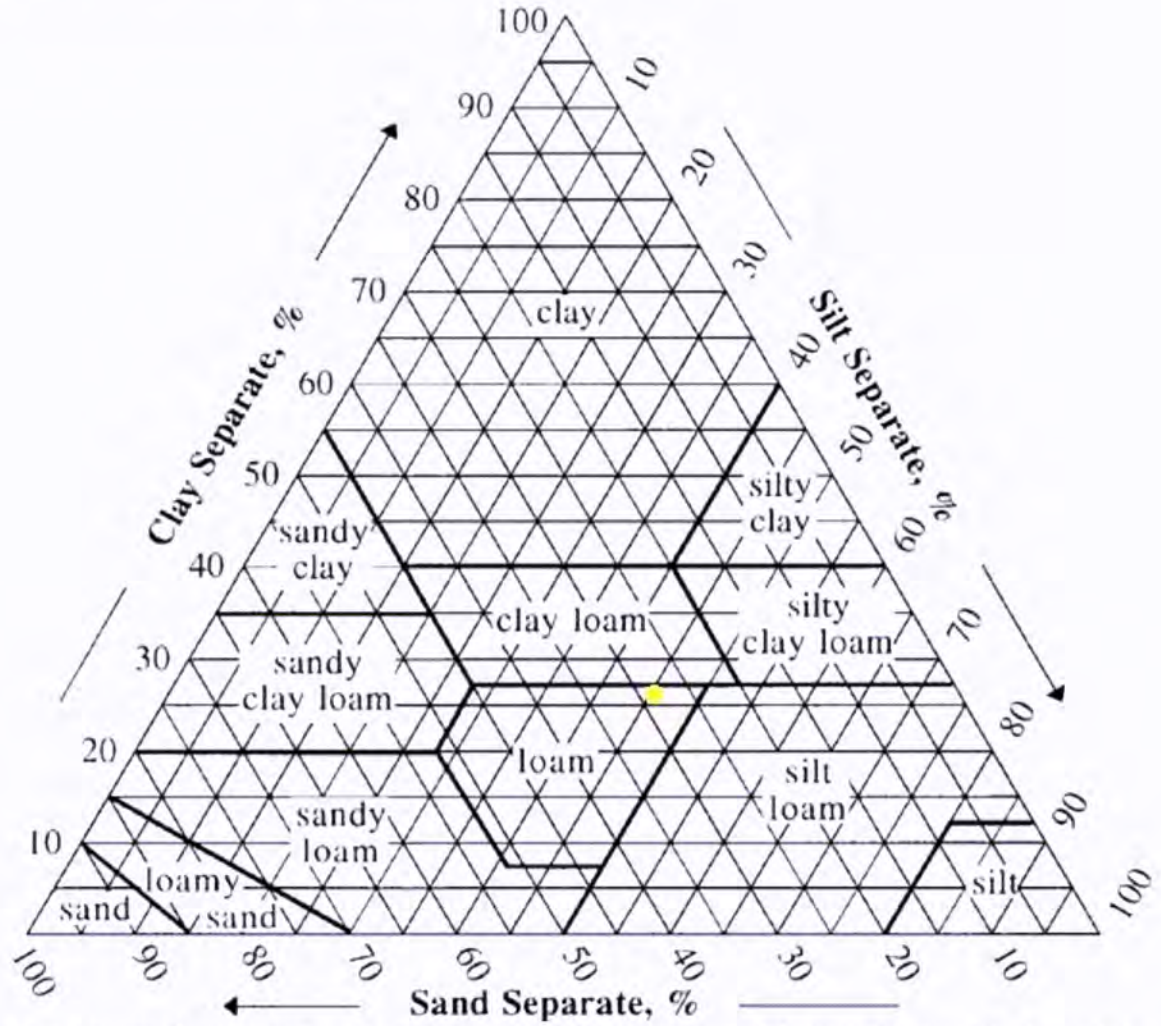


Figure 108 (above): Manor Park Sand-Silt-Clay triangle derived from Physical Analysis Results. This shows that Manor Park is classified as a loam soil.

BROOKSIDE LABORATORIES, INC.

** PHYSICAL ANALYSIS REPORT **

Southshore Park
5355 St. Albans Bay Rd.
Shorewood, MN 55331

File Number: 88041
Date Received: 08/22/2022
Date Reported: 08/25/2022

Submitted By: A C Zander, Inc. - Good Nature

SAMPLE LOCATION: LAWN

NBR	FIELD	DESCRIPTION	Clay (%)	Silt (%)	Sand (%)
003	WHOLE	89	16.81	21.08	62.11

Figure 109: South Shore Community Park Physical Analysis from Brookside Labs.

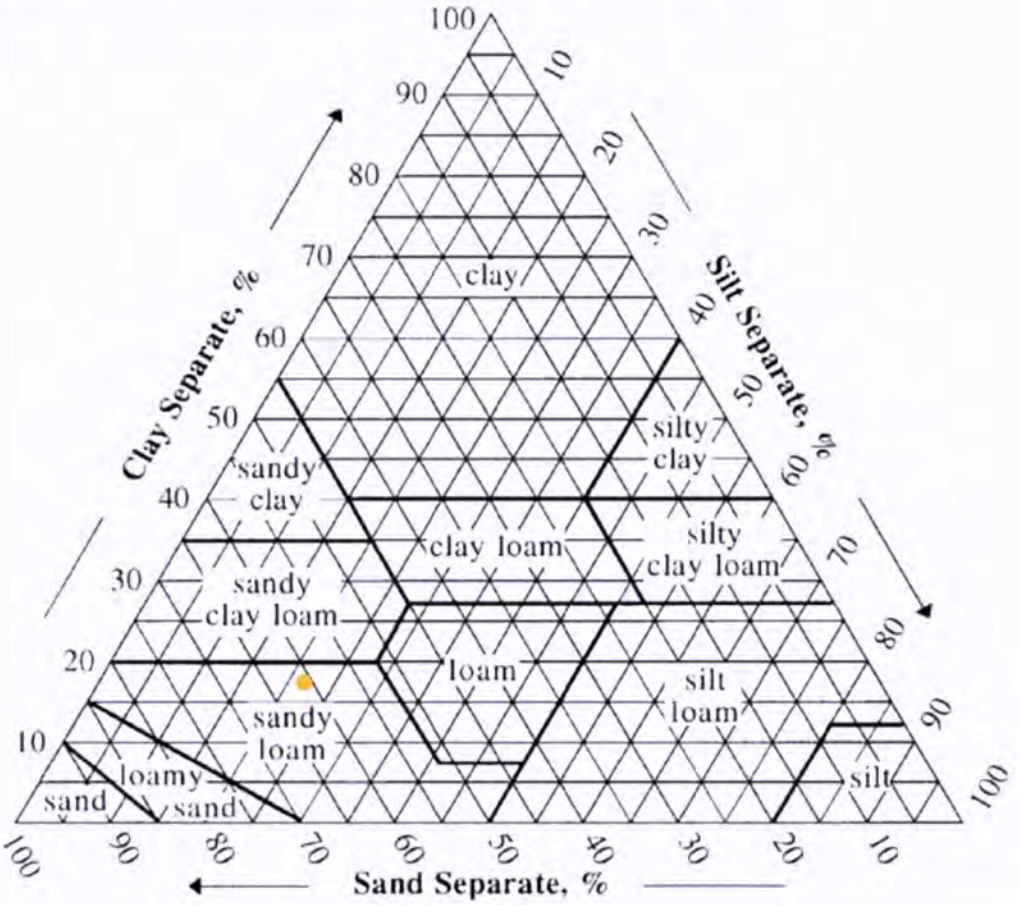


Figure 110: South Shore Community Park Sand-Silt-Clay triangle derived from Physical Analysis Results. This shows that South Shore Community Park is classified as sandy loam.

16 Soil Penetrometer Results

Badger Park

Figure 112 shows that the soil compaction in A areas of Badger Park exceed levels considered limiting to turf root growth (>300 psi). Two inches into the soil will only allow about 35% to 10% of root growth. Figure 113 indicates further compaction in the B areas of Badger Park, with some sections not allowing root penetration. Aerating the soil should help increase root infiltration and overall turf density and health.

Badger Park A Areas	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6
2 inches	275	275	250	200	200	200
4 inches	275	275	250	250	250	250
6 inches	300	275	250	300	300	300
12 inches	>300	275	300	>300	>300	>300

Figure 112 (above): Soil penetrometer results at 2, 4, 6, and 12 inches for the A areas in Badger Park. The locations were randomly selected to get an accurate mapping of the park.

Badger Park B Areas	Location 1	Location 2	Location 3	Location 4
2 inches	250	300	300	250
4 inches	300	>300	>300	300
6 inches	>300	>300	>300	>300
12 inches	>300	>300	>300	>300

Figure 113 (above): Soil penetrometer results at 2, 4, 6, and 12 inches for the B areas in Badger Park. The locations were randomly selected to get an accurate mapping of the park.

Cathcart Park

Figure 114 shows that the soil compaction level in the infield and outfield in Cathcart Park range from moderate to high enough compaction to cause a significant decrease in turf root growth. Two inches into the soil will only allow about 50% to 25% of root growth. Figure 115, also, shows compaction in the hockey field and playground areas of Cathcart Park, only allowing 40% to 15% of grass roots to penetrate the soil at 2 inches. Aerating the soil should help increase root infiltration and overall turf density and health.

Cathcart Infield	Location 1	Location 2	Location 3	Cathcart Outfield	Location 1	Location 2	Location 3
2 inches	200	225	175	2 inches	150	200	200
4 inches	250	275	200	4 inches	200	250	250
6 inches	300	300	250	6 inches	275	275	300
12 inches	>300	>300	250	12 inches	300	300	>300

Figure 114 (above): Soil penetrometer results at 2, 4, 6, and 12 inches for the infield and outfield in Cathcart Park. The locations were randomly selected to get an accurate mapping of the park.

Cathcart Playground	Location 1	Location 2	Location 3	Cathcart Hockey	Location 1	Location 2	Location 3
2 inches	200	175	175	2 inches	200	250	200
4 inches	300	275	275	4 inches	275	300	275
6 inches	>300	275	300	6 inches	300	>300	300
12 inches	>300	275	>300	12 inches	>300	>300	>300

Figure 115 (above): Soil penetrometer results at 2, 4, 6, and 12 inches for the playground area and hockey rink area in Cathcart Park. The locations were randomly selected to get an accurate mapping of the park.

Freeman Park

Figures 116 through 118 show moderate soil compaction levels in the infield and outfield of fields 1-3 in Freeman Park. This compaction will minorly affect turf root growth rate. Two inches into the soil will allow about 80% to 35% of root growth.

Figures 119 through 121 show moderate soil compaction levels in the infield and outfield of fields 4-6 in Freeman Park and will minorly affect the rate of turf root growth. Two inches into the soil will allow about 80% to 45% of root growth.

The concessions area has higher levels of compaction, only allowing for about 45% of root penetration at two inches. The soccer fields only have mild compaction, allowing 70% to 40% root penetration at two inches. Aerating the soil should help increase root infiltration and overall turf density and health in all areas of Freeman Park.

Freeman Infield 1	Location 1	Location 2	Location 3	Freeman Outfield 1	Location 1	Location 2	Location 3
2 inches	150	200	175	2 inches	100	125	50

4 inches	150	200	200	4 inches	150	175	75
6 inches	200	225	250	6 inches	200	200	75
12 inches	200	250	250	12 inches	250	200	100

Figure 116 (above): Soil penetrometer results at 2, 4, 6, and 12 inches for the infield and outfield of field 1 in Freeman Park. The locations were randomly selected to get an accurate mapping of the park.

Freeman Infield 2	Location 1	Location 2	Location 3	**Freeman Outfield 2**	Location 1	Location 2	Location 3
2 inches	100	200	150	2 inches	100	50	50
4 inches	250	225	250	4 inches	250	200	125
6 inches	300	300	300	6 inches	300	300	200
12 inches	>300	>300	>300	12 inches	>300	>300	250

Figure 117 (above): Soil penetrometer results at 2, 4, 6, and 12 inches for the infield and outfield of field 2 in Freeman Park. The locations were randomly selected to get an accurate mapping of the park.

Freeman Infield 3	Location 1	Location 2	Location 3	**Freeman Outfield 3**	Location 1	Location 2	Location 3
2 inches	175	200	200	2 inches	100	100	150
4 inches	275	300	275	4 inches	200	200	150
6 inches	300	>300	300	6 inches	250	225	175
12 inches	>300	>300	>300	12 inches	300	250	250

Figure 118 (above): Soil penetrometer results at 2, 4, 6, and 12 inches for the infield and outfield of field 3 in Freeman Park. The locations were randomly selected to get an accurate mapping of the park.

Freeman Infield 4	Location 1	Location 2	Location 3	**Freeman Outfield 4**	Location 1	Location 2	Location 3
2 inches	225	175	200	2 inches	200	225	200
4 inches	275	225	250	4 inches	250	300	235
6 inches	300	250	275	6 inches	300	>300	275
12 inches	>300	300	300	12 inches	>300	>300	300

Figure 119 (above): Soil penetrometer results at 2, 4, 6, and 12 inches for the infield and outfield of field 4 in Freeman Park. The locations were randomly selected to get an accurate mapping of the park.

Freeman Infield 5	Location 1	Location 2	Location 3	**Freeman Outfield 5**	Location 1	Location 2	Location 3
2 inches	100	100	175	2 inches	100	150	100

4 inches	200	100	200	4 inches	150	200	175
6 inches	250	200	250	6 inches	200	250	300
12 inches	275	250	300	12 inches	275	300	>300

Figure 120 (above): Soil penetrometer results at 2, 4, 6, and 12 inches for the infield and outfield of field 5 in Freeman Park. The locations were randomly selected to get an accurate mapping of the park.

Freeman Infield 6	Location 1	Location 2	Location 3	**Freeman Outfield 6**	Location 1	Location 2	Location 3
2 inches	100	100	200	2 inches	150	175	200
4 inches	200	200	200	4 inches	175	200	250
6 inches	275	300	250	6 inches	250	225	300
12 inches	300	>300	250	12 inches	300	275	>300

Figure 121 (above): Soil penetrometer results at 2, 4, 6, and 12 inches for the infield and outfield of field 6 in Freeman Park. The locations were randomly selected to get an accurate mapping of the park.

Freeman Concessions	Location 1	Location 2	Location 3	**Freeman Playground**	Location 1	Location 2	Location 3
2 inches	200	200	175	2 inches	175	200	175
4 inches	225	275	250	4 inches	200	200	200
6 inches	275	300	275	6 inches	275	225	250
12 inches	300	>300	300	12 inches	300	225	275

Figure 122 (above): Soil penetrometer results at 2, 4, 6, and 12 inches for the concessions area and the playground area in Freeman Park. The locations were randomly selected to get an accurate mapping of the park.

Freeman Park Soccer	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6
2 inches	100	175	100	100	175	175
4 inches	175	200	200	200	200	225
6 inches	200	225	275	275	225	250
12 inches	250	250	300	300	275	250

Figure 123 (above): Soil penetrometer results at 2, 4, 6, and 12 inches for the soccer field area in Freeman Park. The locations were randomly selected to get an accurate mapping of the park.

Manor Park Soil Penetrometer Results:

Manor Park has minor compaction issues. Compaction is heavy near the shelter area, so focusing on that area for aeration is all that Manor Park needs.

Manor Playground	Playground	Tennis Courts	Shelter	Soccer 1	Soccer 2
2 inches	100	100	200	75	125
4 inches	125	150	200	250	175
6 inches	150	150	>300	300	275
12 inches	175	175	>300	>300	>300

Figure 124 (above): Soil penetrometer results at 2, 4, 6, and 12 inches for Manor Park. The locations were randomly selected to get an accurate mapping of the park.

South Shore Community Park:

South Shore Community Park does not have compaction issues like some of the other parks in Shorewood. Aeration does not seem necessary.

South Shore Community Park	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6	Location 7
2 inches	75	100	100	75	100	100	75
4 inches	125	175	175	75	150	100	100
6 inches	150	200	175	125	175	150	100
12 inches	175	250	250	225	250	150	150

Figure 125 (above): Soil penetrometer results at 2, 4, 6, and 12 inches for South Shore Community Park. The locations were randomly selected to get an accurate mapping of the park.

17 Cultural Practices Recommendations

Shorewood should implement the following recommendations to adhere to their Bee Safe City Resolution and adopt a more organic landscaping approach. First and foremost, Shorewood should minimize pesticide use on the fields where children play by balancing the soil and applying less toxic weed and pest control strategies. This assessment recommends fully organic fertilizers, but understands these products can far exceed constrained city budgets. So, the assessment, also, recommends a mix of organic and traditional fertilizers. The recommended "traditional" or synthetic fertilizer materials will help balance the soil and not affect it negatively. The recommendations below are a starting point, but we can help advise you on how to best work within your budget.

Mowing

The City of Shorewood mows its parks once a week at three inches and twice a week at three inches for their athletic fields. We recommend continuing this excellent practice for athletic fields. Longer blades help grass roots grow deeper into the soil. Longer roots absorb more water and nutrients and outcompete weeds with shallower roots. Also, taller turfgrass shades small weed seeds preventing germination. Taller turf will help the lawn to look less thin and bare as well. There is a common misconception that you start the season at a two inch mowing height and gradually increase it to three inches. We highly recommend that you start mowing slightly higher than your sports programs would prefer (3-4") in the Spring to encourage roots to move deeper into the soil prior to the heat of Summer.

We recommend that the city follows the ⅓ rule that states: mowing should never cut more than ⅓ of the grassblade at a time. Cutting a significant part of the grass blade causes the grass to discolor and wilt, because the plant needs to rapidly readjust to a lack of chlorophyll supply. The ⅓ rule applies to the frequency of mowing as well. Turfgrass grows at different rates throughout the year. Turf tends to grow faster in the spring while slowing down in the summer. Shorewood's mowing schedule should factor the rate at which grass grows. Mowing twice per week at three inches should work well for the spring and fall. The City may be able to decrease mowing frequency in the summer, because turf grows slower in the heat and under drought stress. Also, the City should cut shorter (two inches) as the grass stops growing in the fall to prevent winter diseases such as Snow Mold. This mowing schedule removes warm pockets for diseases to incubate when the snow begins to fall and cover the grass.

Irrigation

Irrigation levels and schedules vary depending on many factors such as soil type, tree roots, shade levels, slopes and organic matter levels. Each park has different features and may subsequently need different watering schedules. Generally, turfgrass only needs one inch of water each week during spring and fall, but may need as much as two inches in the summer to fight drought and heat stress. Currently, Shorewood reports not irrigating any of their parks.

In general, the less frequently you can water, the better. Frequent watering contributes to increased weed and disease pressure and decreased turf quality. Frequent watering is necessary in sandy soils, but the loam soil should be able to do well with less frequent irrigation.

We would recommend irrigating early in the morning and choosing days that will have the least traffic on them that afternoon.

Ideally, installing sprinkler systems in each park would make watering the turf easier and faster to manage, but we understand that the costs for such a project would be very expensive. Overall, Shorewood should observe a visible increase in turf health and density if they can allocate the time and labor to water each park once a week. If impractical to irrigate all fields, Shorewood can help keep the grass from suffering drought stress by watering the class A parks (Freeman, Manor, & Badger) once a week in the summer.

Core Aeration

The City of Shorewood has reported that they have not aerated their parks for the past 6 years. Badger Park, Cathcart Park, Freeman Park, and Manor Park would all benefit from some form of core aeration. Compaction in most areas may not limit turf density significantly. However, aeration increases both root density and player safety by reducing tripping hazards making the soil surface softer for falls.

Compaction has reached turf growth limiting levels in some locations such as the area surrounding the concession stand in Freeman Park. A mixture of liquid and core aerations can prevent other areas in the parks from facing these same compaction issues.

The Physical Analysis (see figures 101 through 110) test results from Brookside Laboratories identified loam soils at all parks. Loam soils contain ideal proportions of sand, silt and clay particles for turfgrass root growth. Despite the desirable soil, the athletic fields and the surrounding areas have a higher probability of compaction because of their frequency of use. Aerating the soil before severe compaction should keep the turfgrass healthy and dense.

Core or hollow-tine aerators effectively break-up the upper layers of soil and obtain an immediate result. Aeration, also, better incorporates soil amendments, fertilizers and seeds into the soil. Liquid aeration reaches deeper into the soil when properly watered into the turf, requires less labor and does not harm underground equipment like sprinkler systems and underground cables.

We suggest that Shorewood aerates its Category A athletic fields at least twice a year to keep soil at a reasonable level of hardness and compaction. Shorewood should liquid aerate as often as possible. Hollow-tine core aeration should be performed at least once per season in the Fall and or Late Fall and works best when combined with seeding. Slicing aeration or shatter tine aeration can reduce compaction with minimal impact on playability during the season.

Overseeding

The City of Shorewood reported no overseeding for any of their parks from 2015 to 2021. Most of the parks have some thin or bare areas in the turf on the athletic fields, around the paved paths and along any other areas that have concentrated heavy foot traffic. To fill these areas, we recommend seeding every year. Shorewood should focus overseeding on the athletic fields in particular.

There are 3 ways to introduce seed to your parks:

1. Broadcast Overseeding with Spreader (Allow Players to Cleat in - Ok)
2. Core Aeration and Broadcast Seeding with Spreader (Better)
3. Core Aeration and Slice Seeding (Very Good)
4. Aer A Vator Power Seeding (Very Good)

Slit Seeding in addition to core aeration improves the effectiveness of the seeding. An alternative would be to use a power seeder such as the Aeravator from First Products.

Shorewood can seed its fields as often as desired. Ideally, Shorewood can schedule a dormant slit seeding in conjunction with a core aeration at the end of each season. This dormant seeding will ensure quicker germination than seeding in the spring alone. If labor and budget allow, Shorewood can improve athletic field performance by broadcast or slice seeding Perennial Ryegrass into high wear areas in April, May, September, and October.

Seeding entire parks would get expensive. To reduce costs, this report highly suggests only seeding athletic fields and the struggling grass areas at Badger Park. Implementation of proper cultural practices should strengthen and thicken the turf and reduce small bare spots. We recommend focusing seeding on athletic fields, and in Badger Park. Introducing microclover (see section below), into your seeding practices would, also, help to make the fields appear thicker and greener.

Seed Selection

The parks in Shorewood currently consist mainly of Kentucky Bluegrass and Perennial Ryegrass. These grass types best fit the locations, foot traffic stress and Shorewood field maintenance program. Continuing to seed with a high quality Kentucky Bluegrass seed will maintain the uniform turf appearance and limit labor and product costs. If Dormant Seeding, choose a mix of Kentucky Bluegrass and Perennial Ryegrass. Seed with Perennial Ryegrass in the Spring.

Microclover

Microclover is an excellent addition to low maintenance or athletic field turf. Microclover fixes nitrogen and helps feed the grass while keeping the overall appearance greener. Shorewood should broadcast microclover seed in the early spring every 2-3 years for best results. No special seeding equipment required. A starter fertilizer such as Earthworks 3-4-3 will help the microclover establish. Once established, Shorewood can reduce fertilizer rates by 50%. MGG recommends microclover as a viable option for some of Shorewood's fields that struggle with bare areas and thin turf. Microclover will feed the turf naturally and decrease long term maintenance costs and manpower needs that come with regular fertilization. Microclover tolerates lower mowing than turfgrass and flowers less than traditional clover. It will keep Shorewood's fields looking greener and healthier too.

Figure 126: Test areas showing the difference in density and color of turf using microclover.

18 Fertility Recommendations & Calendar

Fertility

The following applications are divided into two options: the fully organic approach and the pesticide free approach. The fully organic approach only uses Organic Materials Review Institute listed products. Implementing a fully organic program on all parks can lead to a very high fertilization budget. To keep costs down, Good Nature developed an additional pesticide free approach calendar that avoids harsh additives found in chemical applications. Some of these fertility recommendations include custom blended mixes that the Parks and Recreation department can source locally.

Reducing the size of Category A & B areas can further reduce costs. The maintenance calendar and the budget calculator on page 55 visualizes how Shorewood can cost-effectively implement this report's fertility recommendations and calendar on all parks.

Fully Organic Approach:

Early Spring (April):
Corn Gluten Meal (A, B, & C areas)
- 450 lbs per acre
- Approximately $390 per acre

Late Spring (Late May/ Early June):
Sustane 9-0-2 (A areas)
- 450 lbs per acre
- Approximately $340 per acre

Early Fall (September):
Sustane 8-0-4 (A & B areas)
- 450 lbs per acre
- Approximately $340 per acre

Late Fall (October):
Sustane 4-6-4 (A & B areas)
- 675 lbs per acre
- Approximately $320 per acre

Pesticide Free Approach:

Early Spring (April):
Custom Blend 10-15-15 (A areas)
- 450 lbs per acre

- Approximately $325 per acre

Late Spring (Late May/ Early June):
Corn Gluten Meal (A & B areas)
- 450 lbs per acre
- Approximately $390 per acre

Early Fall (September):
Custom Blend 10-15-15 (A areas)
- 450 lbs per acre
- Approximately $325 per acre

Late Fall (October):
Custom Blend 16-2-9 (A, B & C areas)
- 360 lbs per acre
- Approximately $260 per acre

Liquid Aeration & Biological Mix:

If Shorewood balances its soil chemistry, the biology will start to follow. For Category A Fields, adding beneficial biological treatments will help to improve things faster and reduce disease pressure. The following mix will improve water infiltration and mitigate the effects of the compacted soil. The Oaysis Ultra and Thatch Relief act as a liquid aeration while the Turf Tech Bio supplies beneficial microorganisms to feed your soil. This mix can be added to the chelated iron and applied at the same time. We recommend applications of these products in April, June, and September if possible.

Recommended Biological Mix

Oasys Ultra & Thatch Relief (Soil Technologies Corp)
- 3 Gallons / Acre of Each Product (25 gallons of each product per application)
- 55 gal drum is $2,211.00

Turf Tech Bio
- 4 Ounces / Acre (32 ounces per application)
- 4 lb case is $839.00

19 Weed Suppression Recommendations and Calendar

Growing healthy and dense turfgrass through fertility, overseeding and aeration will best suppress weeds. If weeds persist, however, the following applications can help minimize the appearance of some weeds and keep the turf at a generally acceptable standard.

Early April - Chelated Iron Product (Class A & B)

- 20 ounces concentrate per 1000 s.f. In 2 gallons of water (50 Gallons Concentrate)
- Fiesta: $0.47 / Ounce. Chelated Iron: $0.28 / Ounce

Mid to Late April - Chelated Iron Product (Class A & B)

- 20 ounces concentrate per 1000 s.f. In 2 gallons of water (50 Gallons Concentrate)
- Fiesta: $0.47 / Ounce. Chelated Iron: $0.28 / Ounce

Early May - Chelated Iron Product - Baseball Infield & Dugout Areas Priority (Class A)

- 20 ounces concentrate per 1000 s.f. In 2 gallons of water (50 Gallons Concentrate)
- Fiesta: $0.47 / Ounce. Chelated Iron: $0.28 / Ounce

Late Fall - Consider Chemical Spot Treatment If Needed (Class A athletic areas)

The City can consider spot treating the reduced-risk herbicide Tenacity on areas with high weed pressure if they remain unsatisfied with greenspace performance. Tenacity applications should occur in October, or as soon as the playing season ends, to minimize the chance of contact with young athletes. This is a last resort option.

20 Natural Pest Suppression

It may make sense to avoid any pest suppression treatments and plan to solve any pest issues that arise with grass seed. During the time of the assessment, it was difficult to find any pest damage. There were some small areas that had animal digging marks, which can indicate an elevated presence of grubs. If you can core aerate in September, you will likely physically kill a number of grubs and reduce their populations to below soil damaging levels. Natural grub control products are expensive and would likely be uneconomical to apply as a blanket preventative, so core aeration makes a lot of sense to do in September as weather permits to both loosen the soil and act as a physical grub control. Often the soil cores left on the surface do not cause an issue with playability for long. If that is a concern though perhaps you can core aerate, overseed, and use a drag mat or slice seeder to break up the cores.

GrubGone by Phyllom BioProducts applied at 10 lbs per 4,000 square feet provides effective prevention if budget is no issue. If budget is an issue, we recommend applying this product in areas where a grub problem is suspected. In general, it is probably more cost effective to seed any areas damaged by grubs than to use a grub treatment.

Organic Neem Oil would be effective in helping to minimize grub activity as well as turf disease but it would require monthly applications over the summer which is likely more effort and higher cost than manageable for such a large collection of land. If you are interested, we will provide more details.

21 Maintenance Calendar

Shorewood Monthly Calendar

This spreadsheet can be used as a general calendar for when Shorewood can perform the aforementioned maintenance recommendations. This calendar accounts for fertilizations, aerations, seedings, and weed treatments.

22 Budget Calculator

Shorewood Budget Calculator

This spreadsheet can be used to adjust the size of A, B, and C treatment areas to better fit the City's budget. The first page of the spreadsheet gives pricing for the City's categorizations and the second gives a reduced price for Good Nature's recommended categorizations.

Good Nature considers A areas as athletic fields and the immediate surrounding areas. Then, Good Nature recommends reprioritizing the remaining Category A areas as Category B areas. Good Nature recommends eliminating fertilization and weed treatments to any Category B and C areas. This reprioritization should reduce costs and focus on the high traffic areas. See figures 2, 4, 6, 8, & 10 for diagrams of our reduced budget treatment suggestions.

23 Additional Reading Material

Kentucky Bluegrass Maintenance:
All You Need to Know About Kentucky Bluegrass

Perennial Ryegrass Maintenance:

All You Need to Know About Perennial Ryegrass

Microclover:

Microclover

24 Key Takeaways

- Shorewood can reduce the need for chemical weed treatments by investing the correct cultural practices, particularly on seeding and fertilization practices.
- One fertilization schedule applied to all locations can effectively grow turfgrass, since all Shorewood parks have similar nutrient needs. The frequency of applications depends on the prioritization of each location.
- Reducing prioritization of "Category A" areas to athletic fields and their immediate areas can help to reduce costs.
- Shorewood should consider incorporating Microclover into your seeding schedule. It will help to both thicken and green struggling turfgrass areas. Microclover will, also, outcompete broadleaf weeds for space.
- Focus seeding on areas that Shorewood considers unsightly. For example, Badger Park could benefit from seeding and aeration.
- Good Nature can set aside time to discuss any questions that Shorewood may have and adjust the proposed treatment plan to better fit the City's budget.

Appendix A: Soil Testing Results

Badger Park

GoodNature™

Badger Park
5745 Country Club Rd
Shorewood, MN 55331

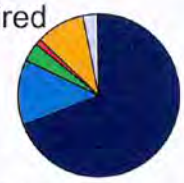
Soil Test Results

Sample Location: WHOLE PARK -- LAWN **Report Date: 6/9/2022** **Area: 50.87**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	24.20				
Water pH (1:1)	7.6	6.5	+1.1		Very Low Low Desired Excess
Organic Matter (%)	5.89	6.0	-0.11		Very Low Low Desired Excess
Soluble Sulfur (ppm)	133	37.5	+95.5	4.39	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	78.0	200.0	-122	-2.80	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	284	400.0	-116	-2.67	Very Low Low Desired Excess
Calcium (lbs/ac)	7684	6582.0	+1102	25.33	Very Low Low Desired Excess
Magnesium (lbs/ac)	838	755.0	+83	1.91	Very Low Low Desired Excess
Potassium (lbs/ac)	180.0	755.0	-575	-13.22	Very Low Low Desired Excess
Sodium (lbs/ac)	158	111.3	+46.7	+1.07	Good Ok Alert Problem

Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual

Element	Actual Result
Calcium%	79.4
Magnesium%	14.4
Potassium%	0.9
Sodium%	1.4
Hydrogen%	0.0
Other%	3.8

Minor Elements

Boron (ppm)	1.04	1.5	-0.46	-0.02	Very Low Low Desired Excess
Iron (ppm)	513	225.0	+288	13.24	Very Low Low Desired Excess
Manganese (ppm)	47	112.5	-65.5	-3.01	Very Low Low Desired Excess
Copper (ppm)	2.57	3.5	-0.93	-0.04	Very Low Low Desired Excess
Zinc (ppm)	7.04	8.0	-0.96	-0.04	Very Low Low Desired Excess
Aluminum (ppm)	67	600.0	-533	-24.51	Very Low Low Desired Excess

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Analytical Services By
BROOKSIDE LABORATORIES, INC.

Figure 86 (above): Soil test results for Badger Park.

Cathcart Park - Hockey Rink

GoodNature™

Cathcart Park
26716 W 62nd St.
Shorewood, MN 55331

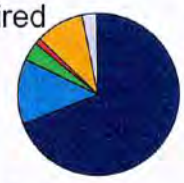
Soil Test Results

Sample Location: HOCKEY -- LAWN **Report Date: 6/9/2022** **Area: 16.96**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	16.89				
Water pH (1:1)	7.8	6.5	+1.3		Very Low Low Desired Excess
Organic Matter (%)	3.46	6.0	-2.54		Very Low Low Desired Excess
Soluble Sulfur (ppm)	5	37.5	-32.5	-1.49	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	110.0	200.0	-90	-2.07	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	298	400.0	-102	-2.34	Very Low Low Desired Excess
Calcium (lbs/ac)	5310	4594.0	+716	16.46	Very Low Low Desired Excess
Magnesium (lbs/ac)	628	527.0	+101	2.32	Very Low Low Desired Excess
Potassium (lbs/ac)	200.0	527.0	-327	-7.52	Very Low Low Desired Excess
Sodium (lbs/ac)	62	77.7			Good Ok Alert Problem

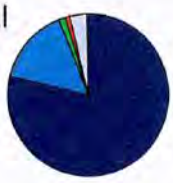
Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual



Element	Actual Result
Calcium%	78.6
Magnesium%	15.5
Potassium%	1.5
Sodium%	0.8
Hydrogen%	0.0
Other%	3.6

Minor Elements

Boron (ppm)	0.73	1.5	-0.77	-0.04	Very Low Low Desired Excess
Iron (ppm)	202	225.0	-23	-1.06	Very Low Low Desired Excess
Manganese (ppm)	145	112.5	+32.5	1.49	Very Low Low Desired Excess
Copper (ppm)	1.83	3.5	-1.67	-0.08	Very Low Low Desired Excess
Zinc (ppm)	2.38	8.0	-5.62	-0.26	Very Low Low Desired Excess
Aluminum (ppm)	273	600.0	-327	-15.03	Very Low Low Desired Excess

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Figure 87 (above): Soil test results for hockey rink section of Cathcart Park.

Cathcart Park - Infield

GoodNature™

Cathcart Park
26716 W 62nd St
Shorewood, MN 55331

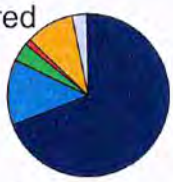
Soil Test Results

Sample Location: INFIELD -- LAWN **Report Date: 6/9/2022** **Area: 2.65**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	17.65				
Water pH (1:1)	7.7	6.5	+1.2		Very Low Low Desired Excess
Organic Matter (%)	4.00	6.0	-2		Very Low Low Desired Excess
Soluble Sulfur (ppm)	6	37.5	-31.5	-1.45	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	82.0	200.0	-118	-2.71	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	179	400.0	-221	-5.08	Very Low Low Desired Excess
Calcium (lbs/ac)	4796	4801.0	-5	-0.11	Very Low Low Desired Excess
Magnesium (lbs/ac)	1096	551.0	+545	12.53	Very Low Low Desired Excess
Potassium (lbs/ac)	226.0	551.0	-325	-7.47	Very Low Low Desired Excess
Sodium (lbs/ac)	68	81.2			Good Ok Alert Problem

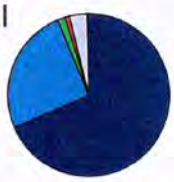
Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual



Element	Actual Result
Calcium%	67.9
Magnesium%	25.9
Potassium%	1.6
Sodium%	0.8
Hydrogen%	0.0
Other%	3.7

Minor Elements

Boron (ppm)	0.79	1.5	-0.71	-0.03	Very Low Low Desired Excess
Iron (ppm)	172	225.0	-53	-2.44	Very Low Low Desired Excess
Manganese (ppm)	92	112.5	-20.5	-0.94	Very Low Low Desired Excess
Copper (ppm)	1.83	3.5	-1.67	-0.08	Very Low Low Desired Excess
Zinc (ppm)	1.66	8.0	-6.34	-0.29	Very Low Low Desired Excess
Aluminum (ppm)	365	600.0	-235	-10.80	Very Low Low Desired Excess

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BROOKSIDE

Figure 88 (above): Soil test results for infield section of Cathcart Park.

Cathcart Park - Outfield

GoodNature™

Cathcart Park
26716 W 62nd St.
Shorewood, MN 55331

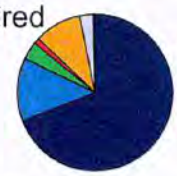
Soil Test Results

Sample Location: OUTFIELD -- LAWN **Report Date: 6/9/2022** **Area: 29.91**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	16.37				
Water pH (1:1)	7.5	6.5	+1		Very Low Low Desired Excess
Organic Matter (%)	4.37	6.0	-1.63		Very Low Low Desired Excess
Soluble Sulfur (ppm)	7	37.5	-30.5	-1.40	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	119.0	200.0	-81	-1.86	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	215	400.0	-185	-4.25	Very Low Low Desired Excess
Calcium (lbs/ac)	4476	4453.0	+23	0.53	Very Low Low Desired Excess
Magnesium (lbs/ac)	994	511.0	+483	11.10	Very Low Low Desired Excess
Potassium (lbs/ac)	204.0	511.0	-307	-7.06	Very Low Low Desired Excess
Sodium (lbs/ac)	62	75.3			Good Ok Alert Problem

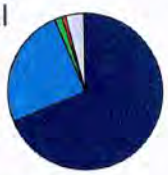
Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual



Element	Actual Result
Calcium%	68.4
Magnesium%	25.3
Potassium%	1.6
Sodium%	0.8
Hydrogen%	0.0
Other%	3.9

Minor Elements

Boron (ppm)	0.73	1.5	-0.77	-0.04	Very Low Low Desired Excess
Iron (ppm)	173	225.0	-52	-2.39	Very Low Low Desired Excess
Manganese (ppm)	89	112.5	-23.5	-1.08	Very Low Low Desired Excess
Copper (ppm)	1.67	3.5	-1.83	-0.08	Very Low Low Desired Excess
Zinc (ppm)	2.47	8.0	-5.53	-0.25	Very Low Low Desired Excess
Aluminum (ppm)	319	600.0	-281	-12.92	Very Low Low Desired Excess

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BROOKSIDE

Figure 89 (above): Soil test results for outfield section of Cathcart Park.

Cathcart Park - Playground

GoodNature™

Cathcart Park
26716 W 62nd St.
Shorewood, MN 55331

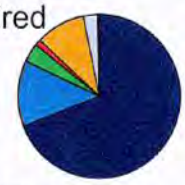
Soil Test Results

Sample Location: OTHER -- LAWN **Report Date: 6/9/2022** **Area: 61.26**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	18.22				
Water pH (1:1)	7.6	6.5	+1.1		Very Low Low Desired Excess
Organic Matter (%)	3.95	6.0	-2.05		Very Low Low Desired Excess
Soluble Sulfur (ppm)	4	37.5	-33.5	-1.54	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	82.0	200.0	-118	-2.71	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	270	400.0	-130	-2.99	Very Low Low Desired Excess
Calcium (lbs/ac)	5264	4956.0	+308	7.08	Very Low Low Desired Excess
Magnesium (lbs/ac)	934	568.0	+366	8.41	Very Low Low Desired Excess
Potassium (lbs/ac)	268.0	568.0	-300	-6.90	Very Low Low Desired Excess
Sodium (lbs/ac)	60	83.8			Good Ok Alert Problem

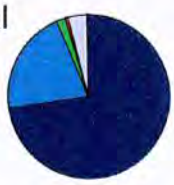
Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual



Element	Actual Result
Calcium%	72.2
Magnesium%	21.4
Potassium%	1.9
Sodium%	0.7
Hydrogen%	0.0
Other%	3.8

Minor Elements

Boron (ppm)	0.64	1.5	-0.86	-0.04	Very Low Low Desired Excess
Iron (ppm)	135	225.0	-90	-4.14	Very Low Low Desired Excess
Manganese (ppm)	110	112.5	-2.5	-0.11	Very Low Low Desired Excess
Copper (ppm)	3.18	3.5	-0.32	-0.01	Very Low Low Desired Excess
Zinc (ppm)	2.69	8.0	-5.31	-0.24	Very Low Low Desired Excess
Aluminum (ppm)	332	600.0	-268	-12.32	Very Low Low Desired Excess

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Analytical Services By:

Figure 90 (above): Soil test results for playground section of Cathcart Park.

Freeman Park - Shelter and areas surrounding upper ballfields

GoodNature™

Freeman Park
6000 Eureka Road
Shorewood, MN 55331

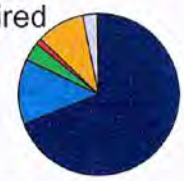
Soil Test Results

Sample Location: SHELTER -- LAWN **Report Date: 6/9/2022** **Area: 100**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	26.37				
Water pH (1:1)	7.9	6.5	+1.4		Very Low Low Desired Excess
Organic Matter (%)	4.91	6.0	-1.09		Very Low Low Desired Excess
Soluble Sulfur (ppm)	8	37.5	-29.5	-1.36	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	92.0	200.0	-108	-2.48	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	256	400.0	-144	-3.31	Very Low Low Desired Excess
Calcium (lbs/ac)	7880	7173.0	+707	16.25	Very Low Low Desired Excess
Magnesium (lbs/ac)	1262	823.0	+439	10.09	Very Low Low Desired Excess
Potassium (lbs/ac)	270.0	823.0	-553	-12.71	Very Low Low Desired Excess
Sodium (lbs/ac)	64	121.3			Good Ok Alert Problem

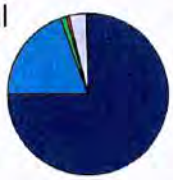
Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual



Element	Actual Result
Calcium%	74.7
Magnesium%	19.9
Potassium%	1.3
Sodium%	0.5
Hydrogen%	0.0
Other%	3.5

Minor Elements

Boron (ppm)	0.74	1.5	-0.76	-0.03	Very Low Low Desired Excess
Iron (ppm)	135	225.0	-90	-4.14	Very Low Low Desired Excess
Manganese (ppm)	62	112.5	-50.5	-2.32	Very Low Low Desired Excess
Copper (ppm)	2.63	3.5	-0.87	-0.04	Very Low Low Desired Excess
Zinc (ppm)	2.57	8.0	-5.43	-0.25	Very Low Low Desired Excess
Aluminum (ppm)	139	600.0	-461	-21.20	Very Low Low Desired Excess

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Figure 91 (above): Soil test results for shelter section of Freeman Park.

Freeman Park - Ballfields 1-3 infields

GoodNature™

Freeman Park
6000 Eureka Road
Shorewood, MN 55331

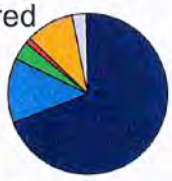
Soil Test Results

Sample Location: BASEBALL INFLD 1-3 -- LA **Report Date: 6/9/2022** **Area: 11.7**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	24.35				
Water pH (1:1)	7.7	6.5	+1.2		Very Low Low Desired Excess
Organic Matter (%)	5.43	6.0	-0.57		Very Low Low Desired Excess
Soluble Sulfur (ppm)	9	37.5	-28.5	-1.31	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	78.0	200.0	-122	-2.80	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	224	400.0	-176	-4.05	Very Low Low Desired Excess
Calcium (lbs/ac)	7224	6623.0	+601	13.82	Very Low Low Desired Excess
Magnesium (lbs/ac)	1162	760.0	+402	9.24	Very Low Low Desired Excess
Potassium (lbs/ac)	316.0	760.0	-444	-10.21	Very Low Low Desired Excess
Sodium (lbs/ac)	66	112.0			Good Ok Alert Problem

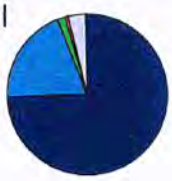
Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual



Element	Actual Result
Calcium%	74.2
Magnesium%	19.9
Potassium%	1.7
Sodium%	0.6
Hydrogen%	0.0
Other%	3.7

Minor Elements

Boron (ppm)	1.11	1.5	-0.39	-0.02	Very Low Low Desired Excess
Iron (ppm)	201	225.0	-24	-1.10	Very Low Low Desired Excess
Manganese (ppm)	94	112.5	-18.5	-0.85	Very Low Low Desired Excess
Copper (ppm)	2.34	3.5	-1.16	-0.05	Very Low Low Desired Excess
Zinc (ppm)	2.79	8.0	-5.21	-0.24	Very Low Low Desired Excess
Aluminum (ppm)	123	600.0	-477	-21.93	Very Low Low Desired Excess

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Figure 91 (above): Soil test results for infields of fields 1-3 of Freeman Park.

Freeman Park - Ballfields 1-3 outfields

GoodNature™

Freeman Park
6000 Eureka Road
Shorewood, MN 55331

Soil Test Results

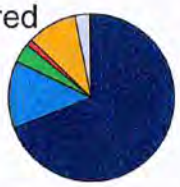
Sample Location: BASEBALL OUTFLD 1-3 -- L **Report Date: 6/9/2022** **Area: 129**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	20.96				
Water pH (1:1)	7.6	6.5	+1.1		Very Low Low Desired Excess
Organic Matter (%)	3.91	6.0	-2.09		Very Low Low Desired Excess
Soluble Sulfur (ppm)	6	37.5	-31.5	-1.45	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	92.0	200.0	-108	-2.48	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	252	400.0	-148	-3.40	Very Low Low Desired Excess
Calcium (lbs/ac)	6068	5701.0	+367	8.44	Very Low Low Desired Excess
Magnesium (lbs/ac)	1098	654.0	+444	10.21	Very Low Low Desired Excess
Potassium (lbs/ac)	228.0	654.0	-426	-9.79	Very Low Low Desired Excess
Sodium (lbs/ac)	60	96.4			Good Ok Alert Problem

Base Saturation

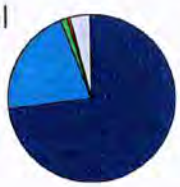
Desired

Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0



Actual

Element	Actual Result
Calcium%	72.4
Magnesium%	21.8
Potassium%	1.4
Sodium%	0.6
Hydrogen%	0.0
Other%	3.8



Minor Elements

Boron (ppm)	0.67	1.5	-0.83	-0.04	Very Low Low Desired Excess
Iron (ppm)	172	225.0	-53	-2.44	Very Low Low Desired Excess
Manganese (ppm)	83	112.5	-29.5	-1.36	Very Low Low Desired Excess
Copper (ppm)	2.07	3.5	-1.43	-0.07	Very Low Low Desired Excess
Zinc (ppm)	2.20	8.0	-5.8	-0.27	Very Low Low Desired Excess
Aluminum (ppm)	319	600.0	-281	-12.92	Very Low Low Desired Excess

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Figure 92 (above): Soil test results for outfields of fields 1-3 of Freeman Park.

Freeman Park - Ballfields 4-6 infields

GoodNature™

Freeman Park
6000 Eureka Road
Shorewood, MN 55331

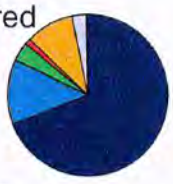
Soil Test Results

Sample Location: BASEBALL INFLD 4-6 -- LA **Report Date: 6/9/2022** **Area: 22.5**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	25.00				
Water pH (1:1)	7.9	6.5	+1.4		Very Low Low Desired Excess
Organic Matter (%)	4.03	6.0	-1.97		Very Low Low Desired Excess
Soluble Sulfur (ppm)	6	37.5	-31.5	-1.45	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	50.0	200.0	-150	-3.45	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	224	400.0	-176	-4.05	Very Low Low Desired Excess
Calcium (lbs/ac)	7224	6800.0	+424	9.75	Very Low Low Desired Excess
Magnesium (lbs/ac)	1336	780.0	+556	12.78	Very Low Low Desired Excess
Potassium (lbs/ac)	272.0	780.0	-508	-11.68	Very Low Low Desired Excess
Sodium (lbs/ac)	68	115.0			Good Ok Alert Problem

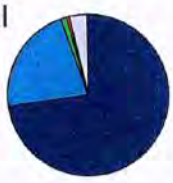
Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual



Element	Actual Result
Calcium%	72.2
Magnesium%	22.3
Potassium%	1.4
Sodium%	0.6
Hydrogen%	0.0
Other%	3.5

Minor Elements

Boron (ppm)	0.72	1.5	-0.78	-0.04	Very Low Low Desired Excess
Iron (ppm)	155	225.0	-70	-3.22	Very Low Low Desired Excess
Manganese (ppm)	87	112.5	-25.5	-1.17	Very Low Low Desired Excess
Copper (ppm)	2.59	3.5	-0.91	-0.04	Very Low Low Desired Excess
Zinc (ppm)	1.61	8.0	-6.39	-0.29	Very Low Low Desired Excess
Aluminum (ppm)	142	600.0	-458	-21.06	Very Low Low Desired Excess

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Figure 93 (above): Soil test results for infields of fields 4-6 of Freeman Park.

Freeman Park - Ballfields 4-6 outfields

GoodNature™

Freeman Park
6000 Eureka Road
Shorewood, MN 55331

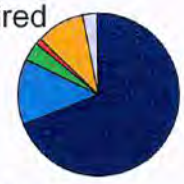
Soil Test Results

Sample Location: BASEBALL OUTFLD 4-6 -- L **Report Date: 6/9/2022** **Area: 155.5**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	22.28				
Water pH (1:1)	7.9	6.5	+1.4		Very Low Low Desired Excess
Organic Matter (%)	4.44	6.0	-1.56		Very Low Low Desired Excess
Soluble Sulfur (ppm)	7	37.5	-30.5	-1.40	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	73.0	200.0	-127	-2.92	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	234	400.0	-166	-3.82	Very Low Low Desired Excess
Calcium (lbs/ac)	6384	6060.0	+324	7.45	Very Low Low Desired Excess
Magnesium (lbs/ac)	1224	695.0	+529	12.16	Very Low Low Desired Excess
Potassium (lbs/ac)	246.0	695.0	-449	-10.32	Very Low Low Desired Excess
Sodium (lbs/ac)	58	102.5			Good Ok Alert Problem

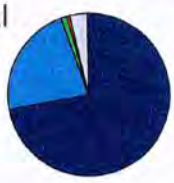
Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual



Element	Actual Result
Calcium%	71.6
Magnesium%	22.9
Potassium%	1.4
Sodium%	0.6
Hydrogen%	0.0
Other%	3.5

Minor Elements

Boron (ppm)	0.77	1.5	-0.73	-0.03	Very Low Low Desired Excess
Iron (ppm)	169	225.0	-56	-2.57	Very Low Low Desired Excess
Manganese (ppm)	71	112.5	-41.5	-1.91	Very Low Low Desired Excess
Copper (ppm)	6.80	3.5	+3.3	0.15	Very Low Low Desired Excess
Zinc (ppm)	2.38	8.0	-5.62	-0.26	Very Low Low Desired Excess
Aluminum (ppm)	270	600.0	-330	-15.17	Very Low Low Desired Excess

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Figure 94 (above): Soil test results for outfields of fields 4-6 of Freeman Park.

Freeman Park - Soccer fields

GoodNature™

Freeman Park
6000 Eureka Road
Shorewood, MN 55331

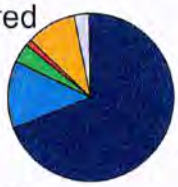
Soil Test Results

Sample Location: SOCCER -- LAWN **Report Date: 6/9/2022** **Area: 267**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	25.69				
Water pH (1:1)	7.7	6.5	+1.2		Very Low Low Desired Excess
Organic Matter (%)	5.11	6.0	-0.89		Very Low Low Desired Excess
Soluble Sulfur (ppm)	6	37.5	-31.5	-1.45	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	60.0	200.0	-140	-3.22	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	206	400.0	-194	-4.46	Very Low Low Desired Excess
Calcium (lbs/ac)	7664	6988.0	+676	15.54	Very Low Low Desired Excess
Magnesium (lbs/ac)	1238	802.0	+436	10.02	Very Low Low Desired Excess
Potassium (lbs/ac)	208.0	802.0	-594	-13.66	Very Low Low Desired Excess
Sodium (lbs/ac)	70	118.2			Good Ok Alert Problem

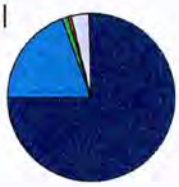
Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual



Element	Actual Result
Calcium%	74.6
Magnesium%	20.1
Potassium%	1.0
Sodium%	0.6
Hydrogen%	0.0
Other%	3.7

Minor Elements

Boron (ppm)	0.74	1.5	-0.76	-0.03	Very Low Low Desired Excess
Iron (ppm)	151	225.0	-74	-3.40	Very Low Low Desired Excess
Manganese (ppm)	62	112.5	-50.5	-2.32	Very Low Low Desired Excess
Copper (ppm)	2.60	3.5	-0.9	-0.04	Very Low Low Desired Excess
Zinc (ppm)	2.26	8.0	-5.74	-0.26	Very Low Low Desired Excess
Aluminum (ppm)	213	600.0	-387	-17.79	Very Low Low Desired Excess

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Figure 95 (above): Soil test results for soccer field section of Freeman Park.

Freeman Park - B Fields (areas outlined in yellow on images provided by the City of Shorewood)

GoodNature™

Freeman Park
6000 Eureka Road
Shorewood, MN 55331

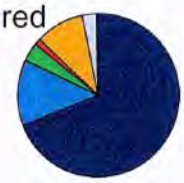
Soil Test Results

Sample Location: OTHER -- LAWN **Report Date: 6/9/2022** **Area: 150**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	20.71				
Water pH (1:1)	7.7	6.5	+1.2		Very Low Low Desired Excess
Organic Matter (%)	5.21	6.0	-0.79		Very Low Low Desired Excess
Soluble Sulfur (ppm)	8	37.5	-29.5	-1.36	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	78.0	200.0	-122	-2.80	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	151	400.0	-249	-5.72	Very Low Low Desired Excess
Calcium (lbs/ac)	5986	5633.0	+353	8.11	Very Low Low Desired Excess
Magnesium (lbs/ac)	1080	646.0	+434	9.98	Very Low Low Desired Excess
Potassium (lbs/ac)	266.0	646.0	-380	-8.74	Very Low Low Desired Excess
Sodium (lbs/ac)	64	95.3			Good Ok Alert Problem

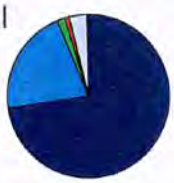
Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual



Element	Actual Result
Calcium%	72.3
Magnesium%	21.7
Potassium%	1.6
Sodium%	0.7
Hydrogen%	0.0
Other%	3.7

Minor Elements

Boron (ppm)	0.76	1.5	-0.74	-0.03	Very Low Low Desired Excess
Iron (ppm)	129	225.0	-96	-4.41	Very Low Low Desired Excess
Manganese (ppm)	111	112.5	-1.5	-0.07	Very Low Low Desired Excess
Copper (ppm)	1.95	3.5	-1.55	-0.07	Very Low Low Desired Excess
Zinc (ppm)	3.56	8.0	-4.44	-0.20	Very Low Low Desired Excess
Aluminum (ppm)	277	600.0	-323	-14.85	Very Low Low Desired Excess

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Figure 96 (above): Soil test results for B sections of Freeman Park.

Manor Park - Soccer

GoodNature™

Manor Park
20600 Manor Park Rd.
Shorewood, MN 55331

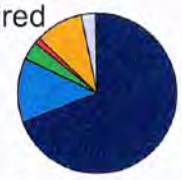
Soil Test Results

Sample Location: SOCCER -- LAWN **Report Date: 6/9/2022** **Area: 38**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	16.41				
Water pH (1:1)	7.5	6.5	+1		Very Low Low Desired Excess
Organic Matter (%)	3.61	6.0	-2.39		Very Low Low Desired Excess
Soluble Sulfur (ppm)	7	37.5	-30.5	-1.40	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	156.0	200.0	-44	-1.01	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	270	400.0	-130	-2.99	Very Low Low Desired Excess
Calcium (lbs/ac)	4530	4464.0	+66	1.52	Very Low Low Desired Excess
Magnesium (lbs/ac)	960	512.0	+448	10.30	Very Low Low Desired Excess
Potassium (lbs/ac)	250.0	512.0	-262	-6.02	Very Low Low Desired Excess
Sodium (lbs/ac)	56	75.5			Good Ok Alert Problem

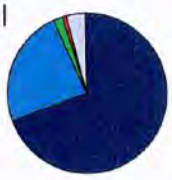
Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual



Element	Actual Result
Calcium%	69.0
Magnesium%	24.4
Potassium%	2.0
Sodium%	0.7
Hydrogen%	0.0
Other%	3.9

Minor Elements

Boron (ppm)	0.84	1.5	-0.66	-0.03	Very Low Low Desired Excess
Iron (ppm)	144	225.0	-81	-3.72	Very Low Low Desired Excess
Manganese (ppm)	135	112.5	+22.5	1.03	Very Low Low Desired Excess
Copper (ppm)	2.17	3.5	-1.33	-0.06	Very Low Low Desired Excess
Zinc (ppm)	4.33	8.0	-3.67	-0.17	Very Low Low Desired Excess
Aluminum (ppm)	406	600.0	-194	-8.92	Very Low Low Desired Excess

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BROOKSIDE

Figure 97 (above): Soil test results for soccer field section of Manor Park.

Manor Park - Outfield

GoodNature™

Manor Park
20600 Manor Park Rd.
Shorewood, MN 55331

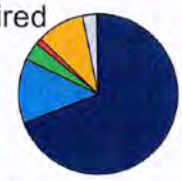
Soil Test Results

Sample Location: OUTFIELD -- LAWN **Report Date: 6/9/2022** **Area: 65.5**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	16.78				
Water pH (1:1)	7.7	6.5	+1.2		Very Low Low Desired Excess
Organic Matter (%)	3.97	6.0	-2.03		Very Low Low Desired Excess
Soluble Sulfur (ppm)	6	37.5	-31.5	-1.45	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	179.0	200.0	-21	-0.48	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	307	400.0	-93	-2.14	Very Low Low Desired Excess
Calcium (lbs/ac)	4458	4564.0	-106	-2.44	Very Low Low Desired Excess
Magnesium (lbs/ac)	1082	524.0	+558	12.83	Very Low Low Desired Excess
Potassium (lbs/ac)	324.0	524.0	-200	-4.60	Very Low Low Desired Excess
Sodium (lbs/ac)	42	77.2			Good Ok Alert Problem

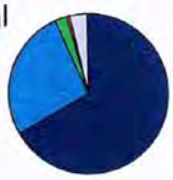
Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual



Element	Actual Result
Calcium%	66.4
Magnesium%	26.9
Potassium%	2.5
Sodium%	0.5
Hydrogen%	0.0
Other%	3.7

Minor Elements

Boron (ppm)	0.60	1.5	-0.9	-0.04	Very Low Low Desired Excess
Iron (ppm)	144	225.0	-81	-3.72	Very Low Low Desired Excess
Manganese (ppm)	168	112.5	+55.5	2.55	Very Low Low Desired Excess
Copper (ppm)	1.69	3.5	-1.81	-0.08	Very Low Low Desired Excess
Zinc (ppm)	3.91	8.0	-4.09	-0.19	Very Low Low Desired Excess
Aluminum (ppm)	337	600.0	-263	-12.09	Very Low Low Desired Excess

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Figure 98 (above): Soil test results for outfield section of Manor Park.

Manor Park - Playground

GoodNature™

Manor Park
20600 Manor Park Rd.
Shorewood, MN 55331

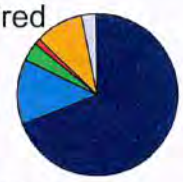
Soil Test Results

Sample Location: PLAYGROUND -- LAWN **Report Date: 6/9/2022** **Area: 68.5**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	17.68				
Water pH (1:1)	7.5	6.5	+1		Very Low Low Desired Excess
Organic Matter (%)	3.80	6.0	-2.2		Very Low Low Desired Excess
Soluble Sulfur (ppm)	9	37.5	-28.5	-1.31	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	124.0	200.0	-76	-1.75	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	238	400.0	-162	-3.72	Very Low Low Desired Excess
Calcium (lbs/ac)	5378	4809.0	+569	13.08	Very Low Low Desired Excess
Magnesium (lbs/ac)	754	552.0	+202	4.64	Very Low Low Desired Excess
Potassium (lbs/ac)	210.0	552.0	-342	-7.86	Very Low Low Desired Excess
Sodium (lbs/ac)	62	81.3			Good Ok Alert Problem

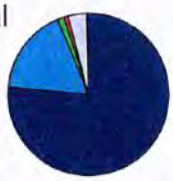
Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual



Element	Actual Result
Calcium%	76.1
Magnesium%	17.8
Potassium%	1.5
Sodium%	0.8
Hydrogen%	0.0
Other%	3.9

Minor Elements

Boron (ppm)	0.66	1.5	-0.84	-0.04	Very Low Low Desired Excess
Iron (ppm)	231	225.0	+6	0.28	Very Low Low Desired Excess
Manganese (ppm)	103	112.5	-9.5	-0.44	Very Low Low Desired Excess
Copper (ppm)	2.31	3.5	-1.19	-0.05	Very Low Low Desired Excess
Zinc (ppm)	3.12	8.0	-4.88	-0.22	Very Low Low Desired Excess
Aluminum (ppm)	257	600.0	-343	-15.77	Very Low Low Desired Excess

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Figure 99 (above): Soil test results for the playground section of Manor Park.

South Shore Community Park

GoodNature™

Southshore Park
5355 St. Albans Bay Rd.
Shorewood, MN 55331

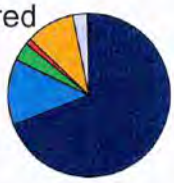
Soil Test Results

Sample Location: WHOLE PARK -- LAWN **Report Date: 6/9/2022** **Area: 88.7**

	Result	Desired Result	Deficit-Sufficiency	Deficit-Sufficiency lbs/1000 sq ft	Graphical Result
Exchange Capacity	17.21				
Water pH (1:1)	8.0	6.5	+1.5		Very Low Low Desired Excess
Organic Matter (%)	3.95	6.0	-2.05		Very Low Low Desired Excess
Soluble Sulfur (ppm)	13	37.5	-24.5	-1.13	Very Low Low Desired Excess
Easily Extractable P as P2O5 (lbs/ac)	78.0	200.0	-122	-2.80	Very Low Low Desired Excess
Bray II P as P2O5 (lbs/ac)	261	400.0	-139	-3.20	Very Low Low Desired Excess
Calcium (lbs/ac)	5216	4681.0	+535	12.30	Very Low Low Desired Excess
Magnesium (lbs/ac)	762	537.0	+225	5.17	Very Low Low Desired Excess
Potassium (lbs/ac)	192.0	537.0	-345	-7.93	Very Low Low Desired Excess
Sodium (lbs/ac)	74	79.2			Good Ok Alert Problem

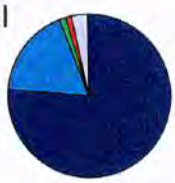
Base Saturation

Desired



Element	Desired Result
Calcium%	68.0
Magnesium%	13.0
Potassium%	4.0
Sodium%	<1.0
Hydrogen%	10.0
Other%	3.0

Actual



Element	Actual Result
Calcium%	75.8
Magnesium%	18.5
Potassium%	1.4
Sodium%	0.9
Hydrogen%	0.0
Other%	3.4

Minor Elements

Boron (ppm)	0.76	1.5	-0.74	-0.03	Very Low Low Desired Excess
Iron (ppm)	128	225.0	-97	-4.46	Very Low Low Desired Excess
Manganese (ppm)	138	112.5	+25.5	1.17	Very Low Low Desired Excess
Copper (ppm)	2.65	3.5	-0.85	-0.04	Very Low Low Desired Excess
Zinc (ppm)	6.35	8.0	-1.65	-0.08	Very Low Low Desired Excess
Aluminum (ppm)	239	600.0	-361	-16.60	Very Low Low Desired Excess

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Figure 100 (above): Soil test results for South Shore Community Park.

Gideon Glen

No samples were collected for this natural location.

Silverwood Park

No samples were collected. The park was closed for construction while in Shorewood to perform the assessment and we were unable to reach anyone from the Parks and Recreation department to get permission to enter the location.