City of Lawrence

Parks and Recreation

IPM Policy Manual

May 8, 2008

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Section I. - Preamble

On March 29, 2005, pesticide application within the Parks and Recreation Department was brought to the attention of the City Commission by concerned citizens. As a result, the City Commission directed Park and Recreation staff to begin development of a pesticide reduction plan for the city's parks. The commission also requested one high-profile park be selected and managed as pesticide-free. The park selected was Buford Watson, Jr. Park. In addition to Buford Watson, Jr. Park, 33 other lower profile city parks were also classified as pesticide-free. The next step taken was to eliminate category I and II pesticides from the Parks and Recreation's availability list allowing the purchase of only category III and IV pesticides. The availability list of pesticides was consolidated throughout the department and then made available to the public. A number of alternative products were also purchased to track their effectiveness and comparative costs. These were the initial steps taken at the request of the city commission to reduce pesticide use in city parks. In June 2007, a citizen group requested that the city commission make all remaining parks pesticide-free.

In the course of the pilot program with Buford Watson, Jr. Park, it has been found that immediately shifting parks to pesticide-free is not a feasible solution when attempting to reduce pesticide use. This program helped staff gain a better understanding of the increased workload and necessary budget adjustments needed to maintain the city's park properties with a reduction in the use of pesticides. Initially, volunteers were used to assist with the added work load associated with the reduction of pesticides. Buford Watson, Jr. Park was maintained as pesticide-free for two years. In the two years of the program at Buford Watson, Jr. Park, volunteer hours dropped over 86%, from 73 hours in 2005 to 10 hours in 2006. As we continued to manage this property pesticide free, we've found that managing such a large high-profile area without budgetary assistance to compensate for the extra workload is challenging. This policy will propose a different method to achieve the goal set forth by the city commission to reduce pesticide application in city parks. Through research of other successful programs in municipalities such as Santa Barbara, San Francisco and Chicago, the City of Lawrence Parks and Recreation department has developed an Integrated Pest Management Policy that replicates those programs. **Integrated Pest Management (IPM)** is a system of controlling pests. The main focus of IPM is usually insect pests, but it includes weeds, diseases, and any other naturally occurring threats. IPM uses a combination of methods to maximize the effectiveness of control, while minimizing pesticide applications and the potential hazards associated with their use. Integrated Pest Management focuses on control of pests, not eradication. It is designed around five basic components: monitoring, action threshold levels, preventive cultural practices, biological controls, and chemical controls. When staff monitoring of a site has discovers a pest problem and determines it to be above the threshold level, IPM implements the use of biological control and cultural control practices as a first response to a pest problem, and chemical control as a last resort.

Cultural control tactics are physical adjustments made to the landscape to alter pest activity, reproduction or survival. The adjustments can be made by hand or with mechanical devices. Cultural control tactics include, but are not limited to: mulching, pruning and removal of debris from landscape beds. This method has limited effect on non target organisms and the environment. Biological control is managing pests by using their natural enemies – predators, parasites, and pathogens. Biological control is often natural and maintains pest populations at a tolerable level. If pests are not naturally maintained the habitat of the landscape it may need to be altered to attract the natural enemies. Also, the predators, parasites or pathogens could be physically introduced into the landscape. These tactics can be effective in certain situations, but are much more time consuming and labor intensive.

IPM offers park district management and staff a system of managing parks without depending on pesticides. In turn, this provides a safer place for people to enjoy the outdoors, improves the health and vitality of the park's ecosystem, and ultimately reduces maintenance needs and costs.

The pesticide information and policy in this document pertain to areas designated as parks, cemeteries and athletic complexes. It will exclude city right-of-way locations, city-owned public buildings, and all other city maintained areas not designated as parks or future parks. This IPM policy will not include the city-owned Eagle Bend Golf Course, due to the economic risk of maintaining the course without the use of pesticides.

Section II. - Mission Statement

It is the mission of the Lawrence Parks and Recreation Department's IPM policy to sustain the beauty and recreation capabilities of its city's parks in an environmentally friendly, safe and responsible manner. In doing so, the department will take into account the health of the environment, the public and city staff. The following IPM policy describes the department's goals and explains how achievement of those goals will be attained.

Section III. – Purpose of IPM

Scientific research indicates over exposure to certain pesticides can cause health problems. This is an issue for the public, as well as staff. All citizens and staff have the right to protection from hazardous pesticide materials.

Pesticides can also pose an environmental hazard. The movement of pesticides into waterways, wetlands and water sources is of great concern.

The purpose of this IPM policy, instituted by the Parks and Recreation Department, is to:

- Create a unified Parks and Recreation policy to correlate pest management practices throughout the entire department.
- Decrease the use of pesticide products that create human health or environmental risks according to EPA standards.
- Produce estimates of budgetary adjustments to be made for IPM and pesticide reduction (staffing, bed modification, training……..).
- Establish an action threshold of pest tolerance based upon the site.
- Reduce the use of pesticides, where ever it is feasible and cause minimal environmental disturbances.
- Promote responsible application in order to protect natural resources, as well as public and staff health (protective equipment, signage, weather conditions).
- Encourage the use of effective, less-hazardous pest reduction alternatives.
- Establish a consistent pesticide record-keeping system throughout the department.
- Allocate workload, which includes; administering, implementing, and evaluating the IPM policy to current staff or new hires acquired to compensate for additional workload.
- Create a consistent public notification procedure on when and where pesticides will be applied.
- Conduct on-going training for staff, ensuring the newest IPM methods are being tested within the park system.

Section IV. – Impact to system

Integrated Pest Management as a general rule is a more expensive management system than the traditionally used chemical treatments to manage the parks. Therefore, budget adjustments will be essential in order to reach the long range goals set by this policy. These budgetary needs will develop from the increase in workload caused by the reducing pesticide application and increasing cultural and biological control tactics to solve pest problems. These control tactics can be effective but are often more time consuming and labor intensive. This is demonstrated by the annual labor hour report for Buford Watson, Jr. Park shown below.

Annual Labor Hour Report - Buford Watson, Jr. Park				
Years	2004	2005	2006	2007
Pruning/Landscape Bed Maintenance(Hours)	295.5	336.75	416.5	408
These hours include mulching, pruning, weed removal, flowers, and watering.				

This table shows almost a 30% increase in park labor hours from 2004 to 2006, after the implementation of the pesticide reduction plan. Alternative methods of pesticide control to regulate pests require a substantial commitment of labor resources. Alternative methods and products to pesticides generally require multiple attempts or applications to attain the same results as a single application standard for most pesticides.

The table below demonstrates the estimated increased labor, labor cost, materials cost, and total cost of managing a 1,000 square foot area with pesticides vs. hand weeding.

Cost for weed management in a 1,000 square foot area				
Method	Labor	Labor cost	Materials cost	**Total Cost**
Roundup Pro	1 hour	$21	$2	**$23**
Hand Weeding	12 hours	$252	$0	**$252**

The table above demonstrates the increase in labor workload and cost for maintaining a 1,000 square foot landscaped area in a park. This example is the estimated increase expected of an average park landscape area for the City of Lawrence. There are other examples where this increase is much more drastic. One example is city maintained cemeteries. Without the ability to apply pesticides around headstones, the workload would increase more than 400 percent. An example of this increase is shown in the table below.

Labor hours comparison for applying pesticides to headstones vs. weed trimming headstones				
Method	Laborers	Hours per day	Days	**Total labor hours**
Weed trimming	2	8	110	**1760**
Pesticide application	6	8	8	**384**

Section V. – Budgetary Impact

The Parks and Recreation Department recommends implementation of this IPM policy in 2008. The department can implement this policy and maintain operations at current levels with no additional funding. However, to move this program forward, the City will need to reinvest funds in Parks & Recreation to bring full-time staff numbers back to 2006 staffing levels. The recent reduction in work force, due to budget deductions, has significantly reduced our ability to move this program forward.

This policy recommends several staffing assignments to further develop and research IPM strategies for the Parks and Recreation Department. Some of these positions have the ability to be filled by existing staff by shifting their responsibilities and devoting a percentage of time to IPM tasks. The responsibilities of these staff positions and other staffing recommendations will be discussed in detail in section VI of the IPM policy manual.

In addition to staffing needs, sustainability of IPM strategies in the parks are items that will need budgetary considerations annually to improve areas that currently receive chemical treatments. Permanent landscape improvements including landscape boarders, retaining walls, concrete mow strips under fences, bed renovations and many other projects will be ongoing and essential to move areas from yellow to green zones. These projects will help reduce the areas in parks where pests can become a problem. For example, a concrete border around a landscape bed will create a barrier not allowing Bermuda grass to enter the bed. Funding these sustainability projects will allow this policy to achieve its goals of reducing areas of pesticide application.

It is important that these sustainability improvements have a dedicated funding source to assure funds are available for continuous improvement of the IPM strategies. It is estimated that an additional $20,000-$40,000 will need to be budgeted annually to make improvements and solve problems associated with the reduction of chemical treatments. The department will submit annual budget enhancements for consideration during the budget approval process. Annual funding will allow the department to maintain a high level of public approval in the park system and move forward with a quality IPM program.

The goals of the city's IPM policy to reduce the amount and toxicity of pesticides applied will require a substantial funding commitment. This policy will have a long-term implementation process. To be successful with instituting IPM techniques, the Parks and Recreation Department must increase the use of manual labor, purchase new equipment and renovate parks and landscapes. All of items will be necessary in order for this plan to move forward through the years.

Section VI. - City Parks

The City of Lawrence Parks and Recreation Department is in control of 44 parks and 10 future parks. This encompasses approximately 2828 acres of park land. In addition to this the city is responsible for 3 cemeteries totaling 86 acres, and 3 athletic complexes totaling 103 acres. This IPM plan will only be utilized for areas categorized as parks, athletic complexes, and cemeteries, and will uphold our policy of no pesticide application in wood chipped playground areas within our parks. This plan will exclude city right-of-way locations, including medians, city-owned public buildings and all other areas maintained by the city.

Each park, athletic complex, and cemetery is individually separated into zones designated by color. These zones are labeled either green or yellow. An area labeled as a **green zone** is park-land where pesticides are not applied in the management of the park. An area labeled a **yellow zone** is park-land where pesticides can be utilized as a maintenance tool to manage the park.

Pesticide applications made in yellow zone areas may include but are not limited to the following examples: In Park or Cemetery turf grass herbicides may be applied to control annual grassy weeds such as crabgrass and foxtail in addition to the control of perennial weeds such as dandelions, Yellow Nut Sedge, bindweed and Bermuda grass. Applications are typically made using a spot treatment method targeting the actual weed or the area where the weed may develop. A herbicide may also be applied to create a mowing strip and reduce the labor needed to trim or hand weed around utility poles, building foundations, grave markers, fences, landscape beds, tree trunks, etc.

In mulched landscaped beds, flower beds, and on trees and shrubs examples of pesticide applications may include the use of insecticides and miticides to control bagworms, spider mites, caterpillars and other insects with the potential to destroy a plant. A fungicide may be applied to prevent diseases on Austrian Pine trees, roses and annual flowers when weather conditions are favorable for their development. A weed prevention herbicide is used on some newly installed landscape beds and flower beds to reduce weed growth until the plants have had a chance to grow and fill in and shade out weeds. Spot herbicide treatments are made to control invasive weeds such as Bermuda grass, bindweed, Poison Ivy and Yellow Nut Sedge.

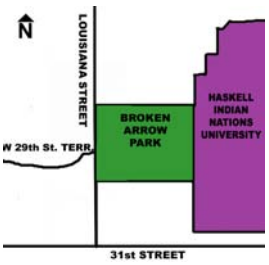
Athletic field turf requirements are different than those of Parks and Cemeteries. Different species of grass, high use along with different mowing heights required for play make these turf areas prone to development weeds, diseases and insects. Herbicides are applied to control both annual and perennial weeds. Insecticides are applied to control grub worms and other insects which have the potential to make the field unusable. A fungicide may be applied if weather conditions favor the development of certain fungal diseases.

These are examples of different types of application that take place within a designated yellow zone. There is a wide range of applications that can take place. These examples demonstrate that just because an area is zoned yellow does not mean the entire area has pesticide applied. In most cases these areas are just spot treated for invasive weeds and insects.

Following this section are individual photos of each park property selected to be involved in this IPM policy. Information of each park's pesticide application is also included. The information shows park acreage; areas of the park receiving pesticide applications; and the percentage of the park having pesticides applied vs. the percentage having no pesticides applied. Also identified on the park photos are the yellow zones and green zones. Yellow zones are denoted as yellow hatch marked areas.

Broken Arrow Park

Green Zone: 75.5% - 13.9 acres
Yellow Zone: 24.5% - 4.5 acres
Total Acreage of Park: 18.4 acres



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Brook Creek Park

N

Green Zone: 99.7% - 35.4 acres
Yellow Zone: .3% - .1 acres
Total Acreage of Park: 35.5 acres

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Brook Creek Park (detail)

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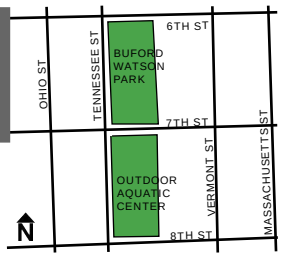
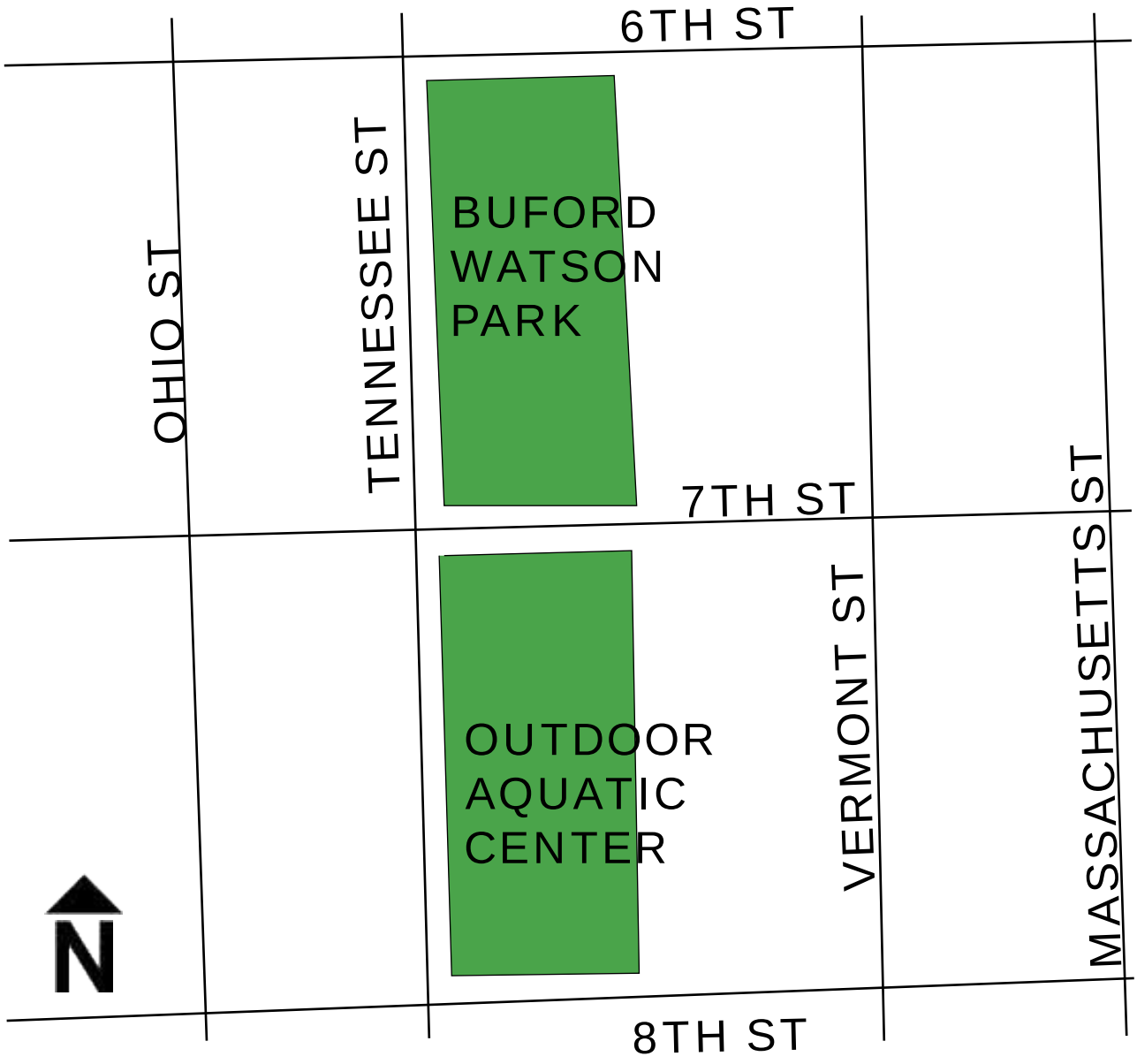
Buford Watson Park (See Additional Pages for Images)

Green Zone: 100% - 8.8 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 8.8 acres





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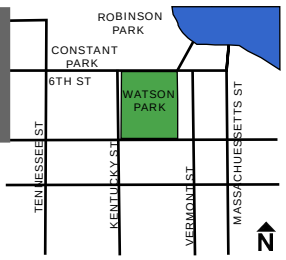
Buford Watson Park (detail 1)



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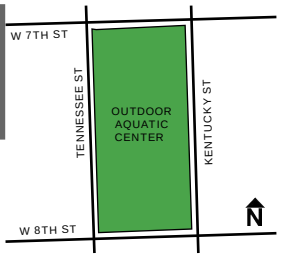
B uford Watson Park (detail 2)



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Burcham Park

Green Zone: 87.1% - 54 acres
Yellow Zone: 12.9% - 8 acres
Total Acreage of Park: 62 acres

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Burcham Park (detail)

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Centennial Park

Green Zone: 88% - 32.4 acres
Yellow Zone: 12% - 4.5 acres
Total Acreage of Park: 36.9 acres

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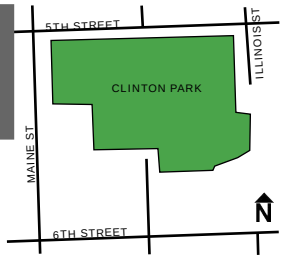
Chaparral Park

Green Zone: 100% - .9 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: .9 acres

City of Lawrence
PARKS AND RECREATION

Clinton Park



Green Zone: 100% - 51.9 acres
Yellow Zone: 0% - .1 acres
Total Acreage of Park: 52 acres

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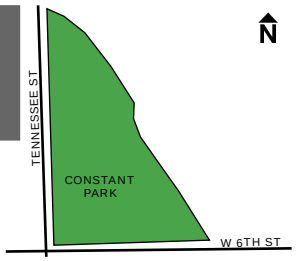
Constant Park

Green Zone: 0% - 0 acres
Yellow Zone: 100% - 3 acres
Total Acreage of Park: 3 acres



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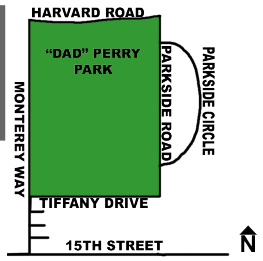
Dad Perry Park

Green Zone: 62.6% - 27.5 acres
Yellow Zone: 37.4% - 16.4 acres
Total Acreage of Park: 43.9 acres



City of Lawrence
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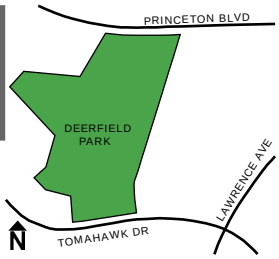
Deerfield Park

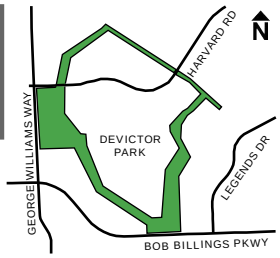
Green Zone: 100% - 9.6 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 9.6 acres



City of Lawrence
PARKS AND RECREATION

Devictor Park

Green Zone: 100% - 43.4 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 43.4 acres



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Edgewood Park

Green Zone: 82.9% - 14.5 acres
Yellow Zone: 17.1% - 3 acres
Total Acreage of Park: 17.5 acres

City of Lawrence
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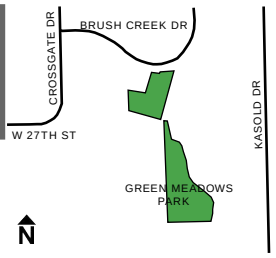
Green Meadows Park

Green Zone: 100% - 15.4 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 15.4 acres



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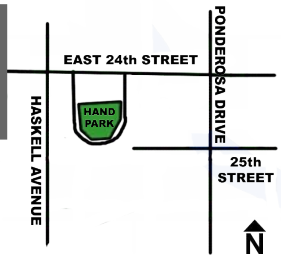
Hand Park

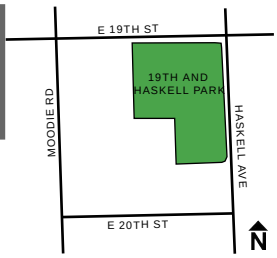
Green Zone: 100% - .8 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: .8 acres



City of Lawrence
PARKS AND RECREATION

Haskell Park

Green Zone: 100% - 3.2 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 3.2 acres



City of Lawrence
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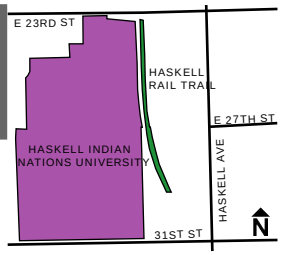
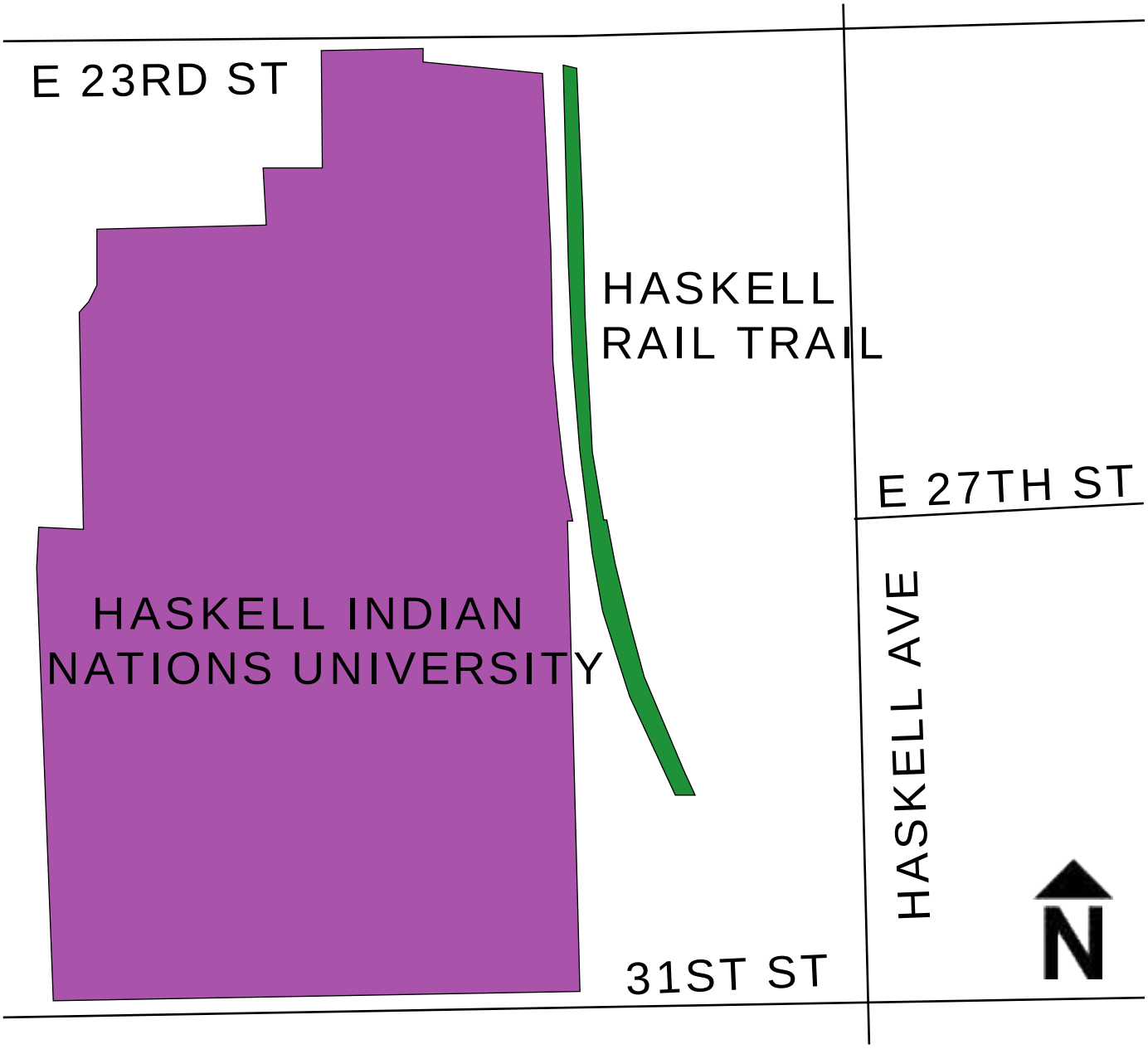
Haskell Rail Trail (See Additional Pages for Images)

Green Zone: 100% - 7.3 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 7.3 acres





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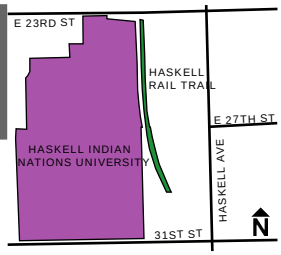
Haskell Rail Trail (detail 1)



23rd street

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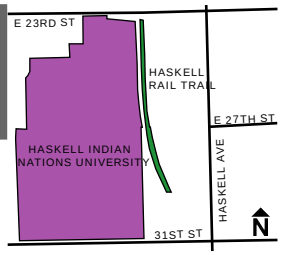
Haskell Rail Trail (detail 2)



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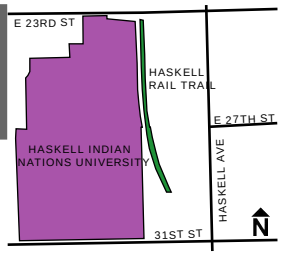
Haskell Rail Trail (detail 3)



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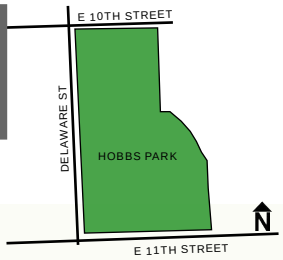
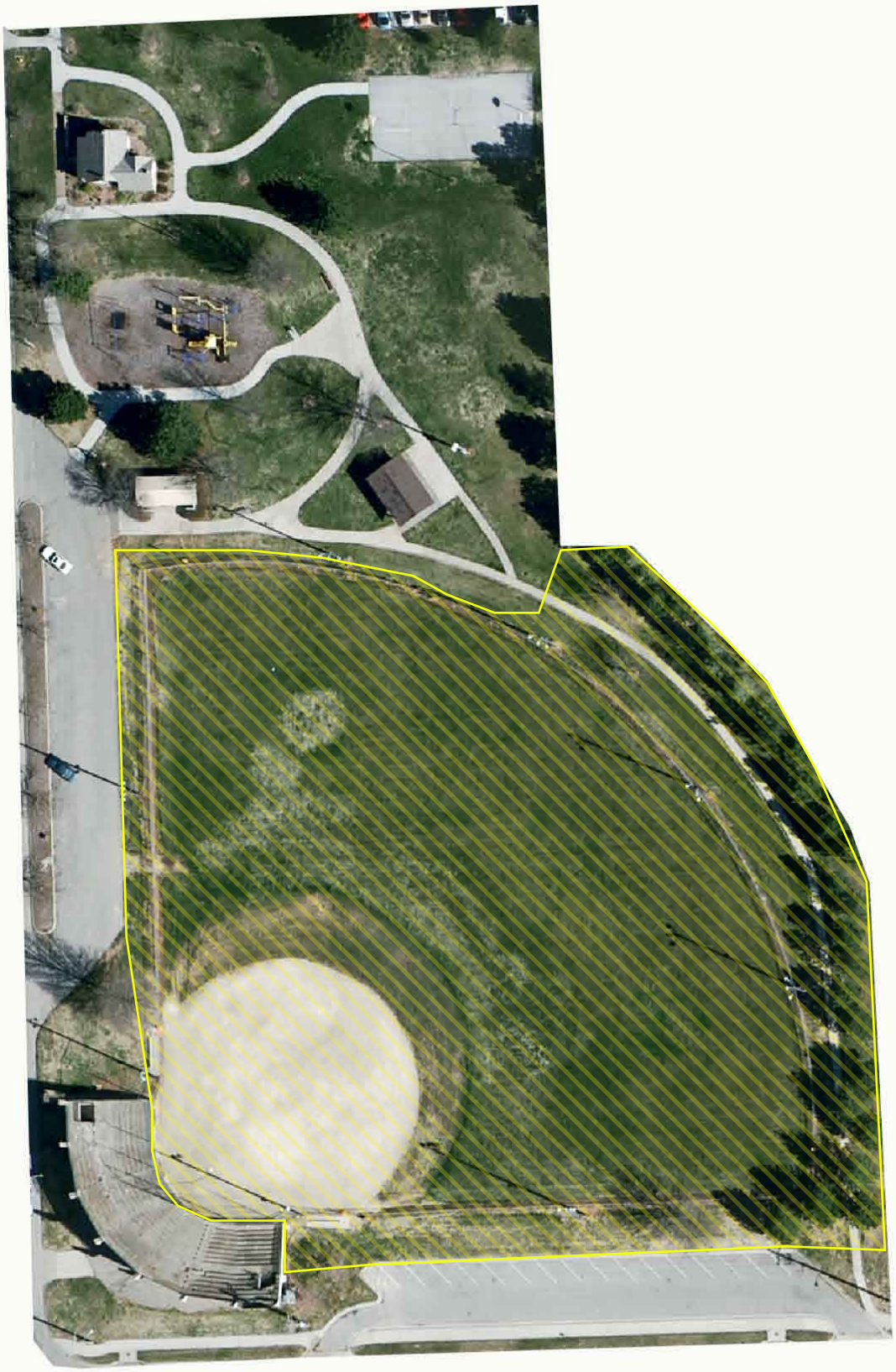
Hobbs Park



Green Zone: 53% - 2.5 acres
Yellow Zone: 47% - 2.2 acres
Total Acreage of Park: 4.7 acres



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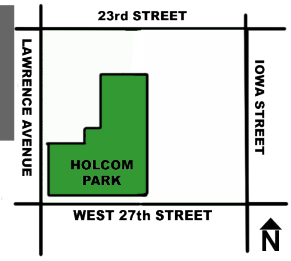
Holcom Park

Green Zone: 0% - 0 acres
Yellow Zone: 100% - 4.8 acres
Total Acreage of Park: 4.8 acres



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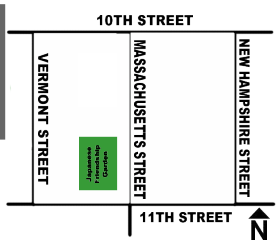
Japanese Friendship Garden



Green Zone: 0% - 0 acres
Yellow Zone: 100% - .2 acres
Total Acreage of Park: .2 acres

City of Lawrence
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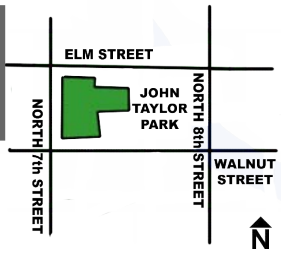
John Taylor Park

Green Zone: 100% - 3.3 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 3.3 acres



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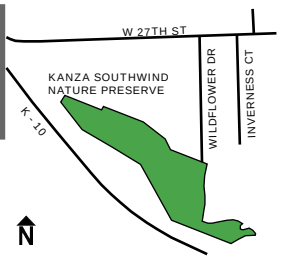
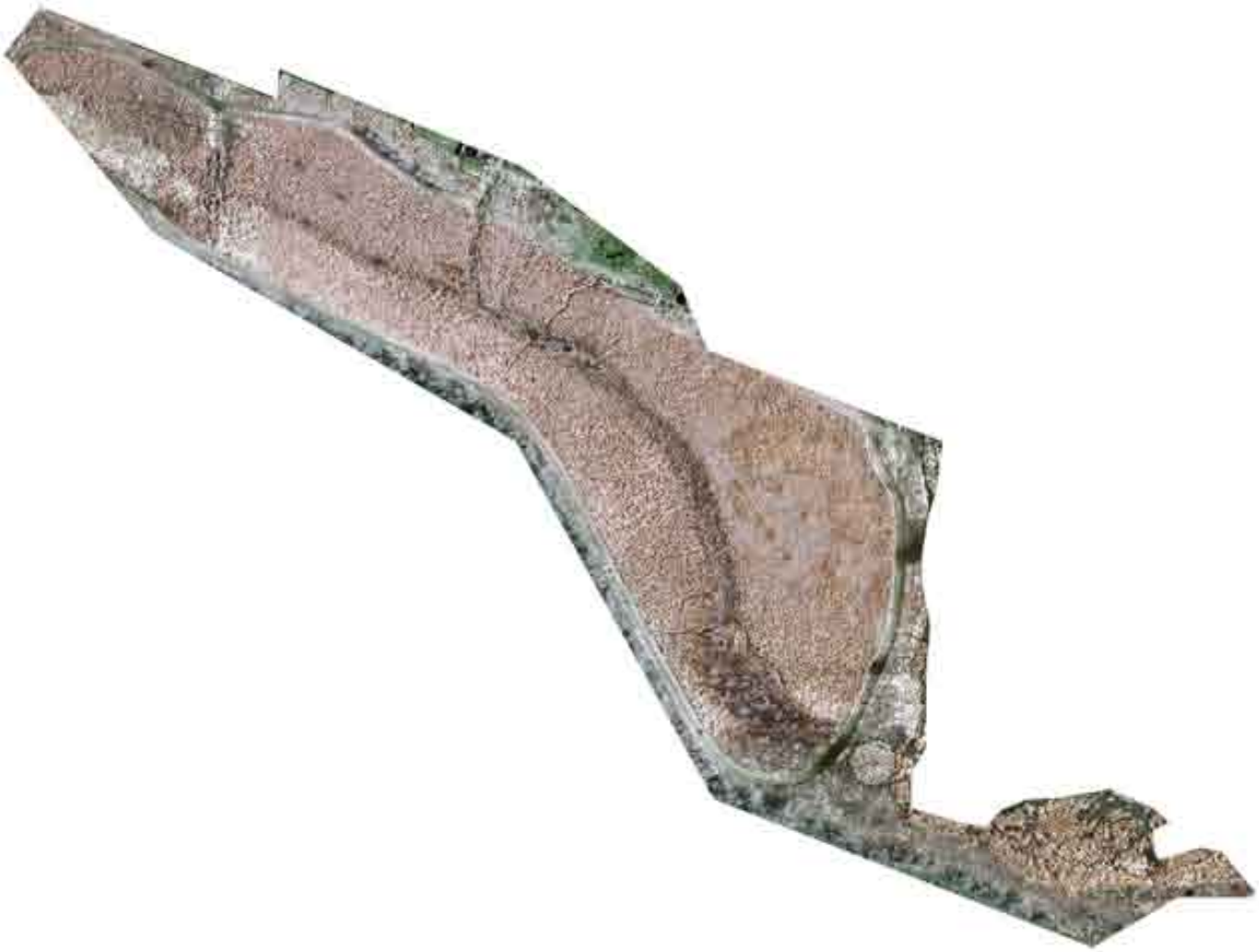
Kanza Southwind Nature Preserve Park



Green Zone: 100% - 13.8 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 13.8 acres



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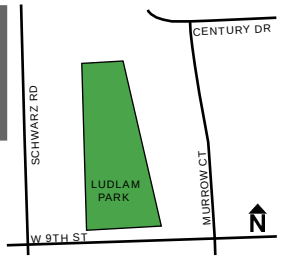
Ludlam Park

Green Zone: 100% - 1.5 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 1.5 acres



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Lyons Street Park

Green Zone: 42% - 4 acres
Yellow Zone: 58% - 5.5 acres
Total Acreage of Park: 9.5 acres

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Martin Park

Green Zone: 100% - 20.7 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 20.7 acres

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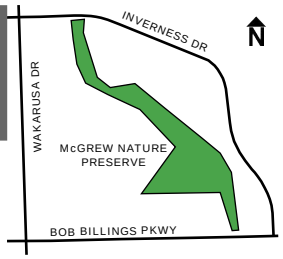
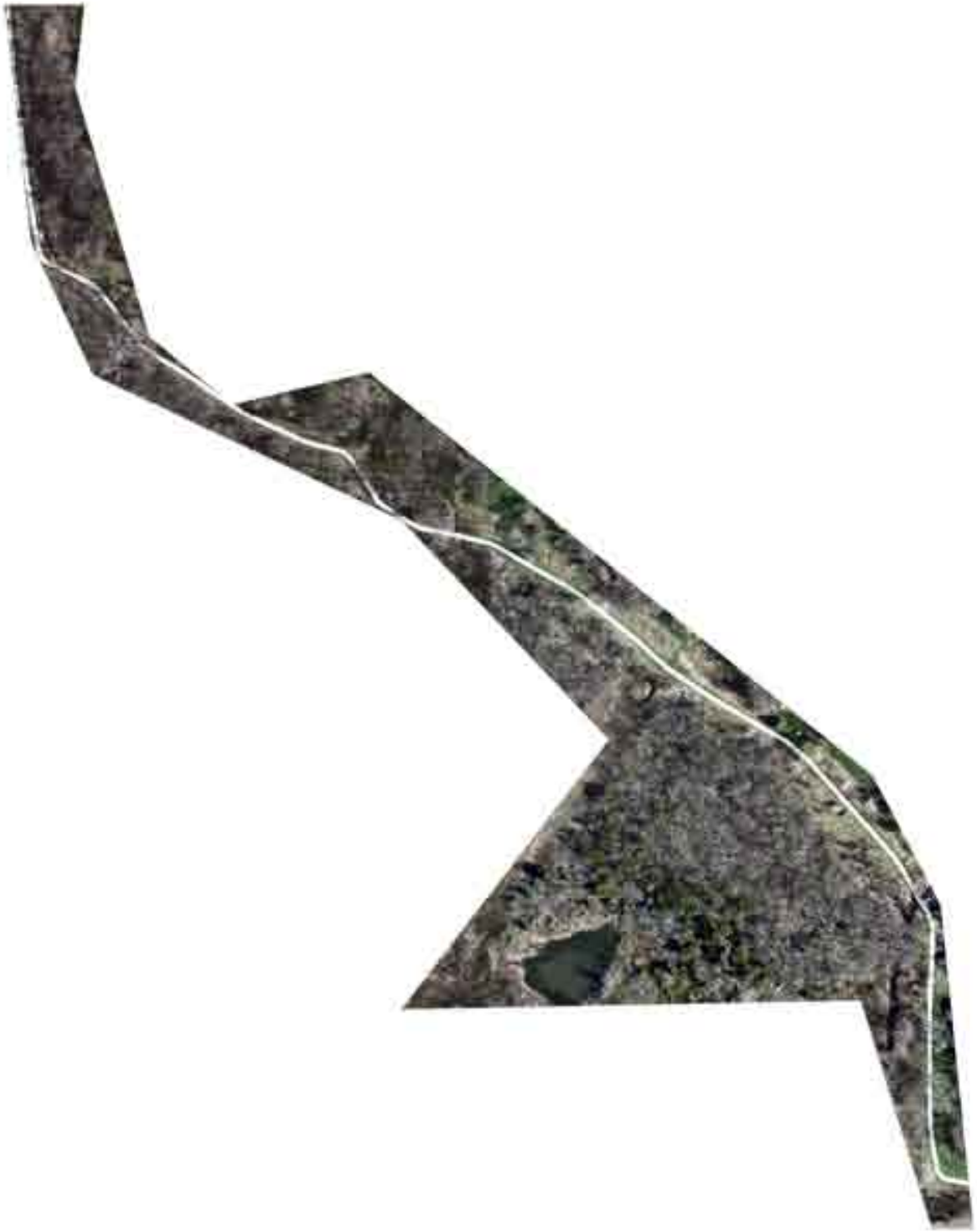
McGrew Nature Preserve

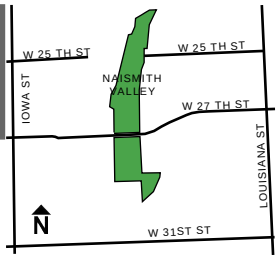
Green Zone: 100% - 13.8 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 13.8 acres





City of Lawrence
PARKS AND RECREATION

Naismith Valley Park

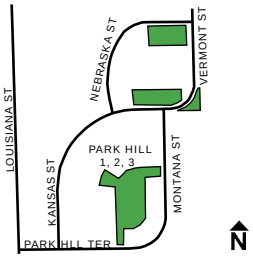


Green Zone: 100% - 39.6? acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 39.6 acres

City of Lawrence
PARKS AND RECREATION

Park Hill Park

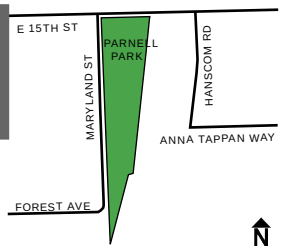
Green Zone: 100% - 6.2 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 6.2 acres



City of Lawrence
PARKS AND RECREATION

Parnell Park

Green Zone: 100% - 3 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 3 acres



City of Lawrence
PARKS AND RECREATION

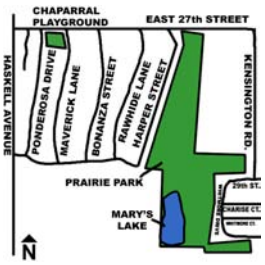
Pat Dawson Billings Nature Peserve

Green Zone: 100% - 42.6 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 42.6 acres

City of Lawrence
PARKS AND RECREATION

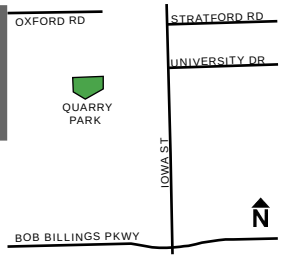
Prairie Park

Green Zone: 85.2% - 67 acres
Yellow Zone: 14.8% - 11.6 acres
Total Acreage of Park: 78.6 acres



City of Lawrence
PARKS AND RECREATION

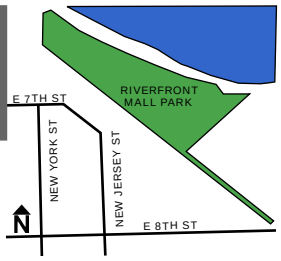
Quarry Park



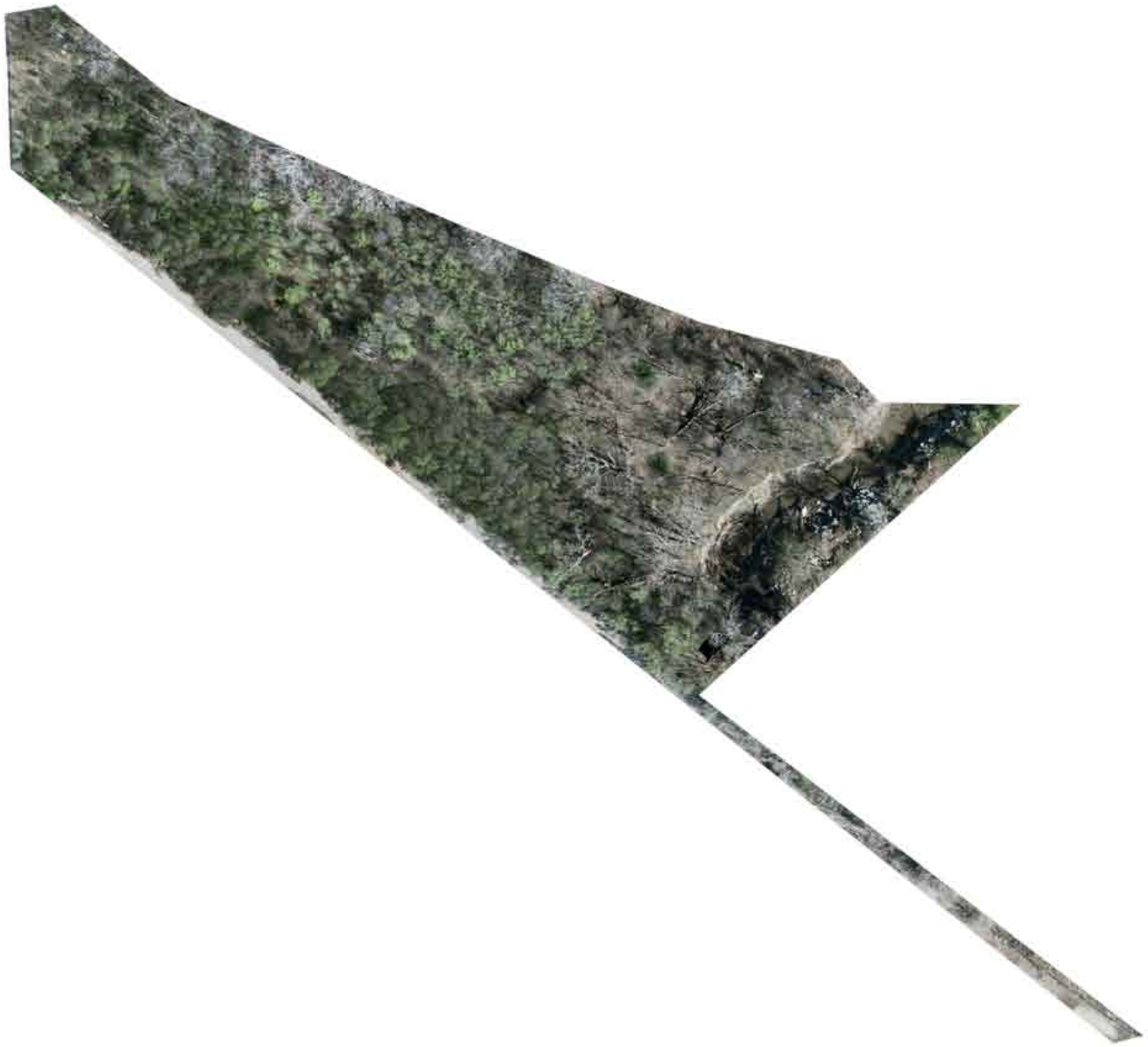
Green Zone: 100% - .7 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: .7 acres

City of Lawrence
PARKS AND RECREATION

Riverfront Mall Park



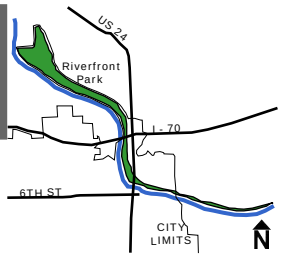
Green Zone: 100% - 6 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 6 acres

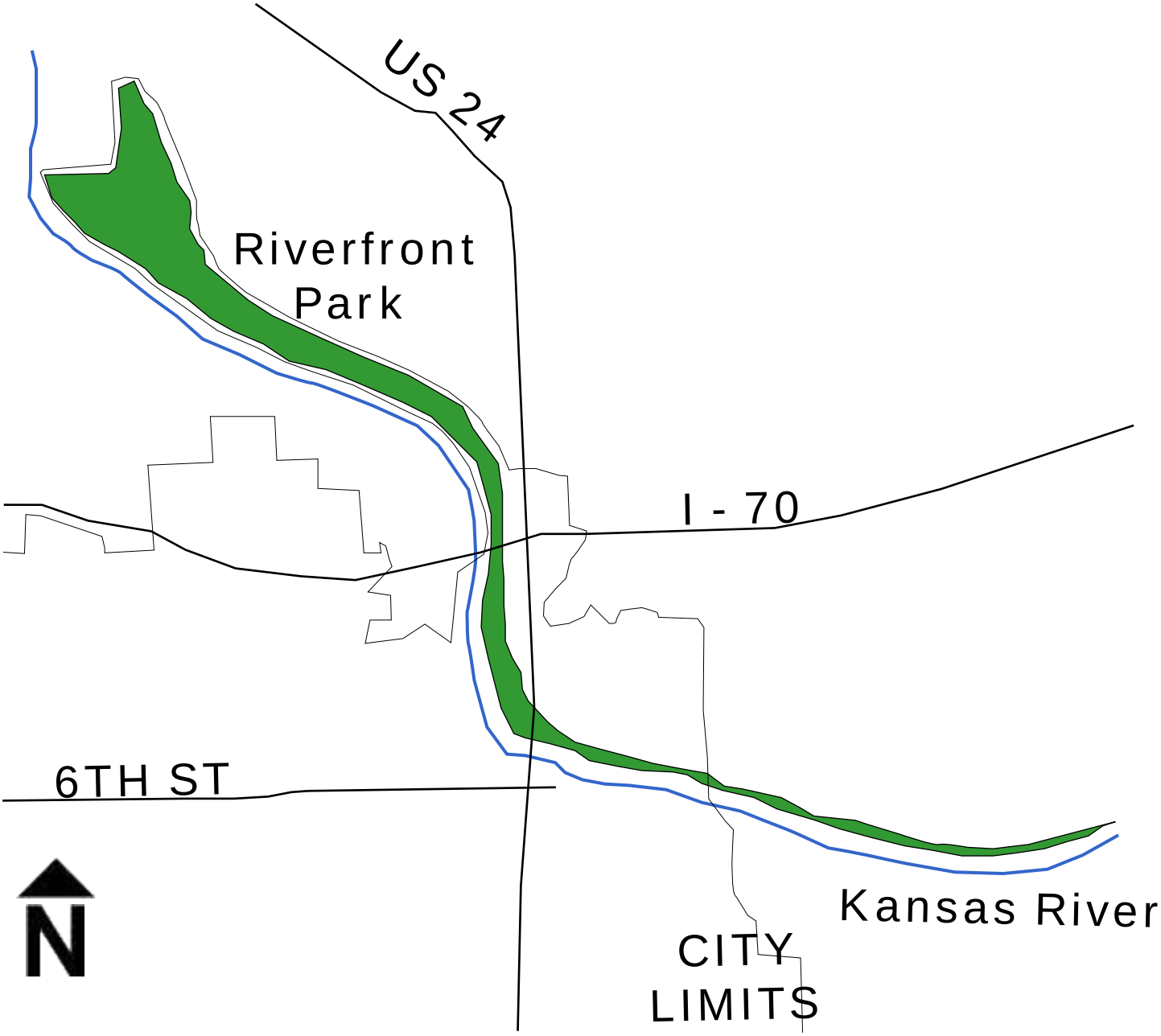


City of Lawrence
PARKS AND RECREATION

Riverfront Park (see additional pages for images)

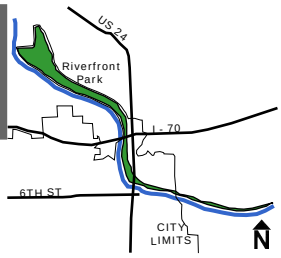
Green Zone: 96% - 815 acres
Yellow Zone: 4% - 30 acres
Total Acreage of Park: 845 acres

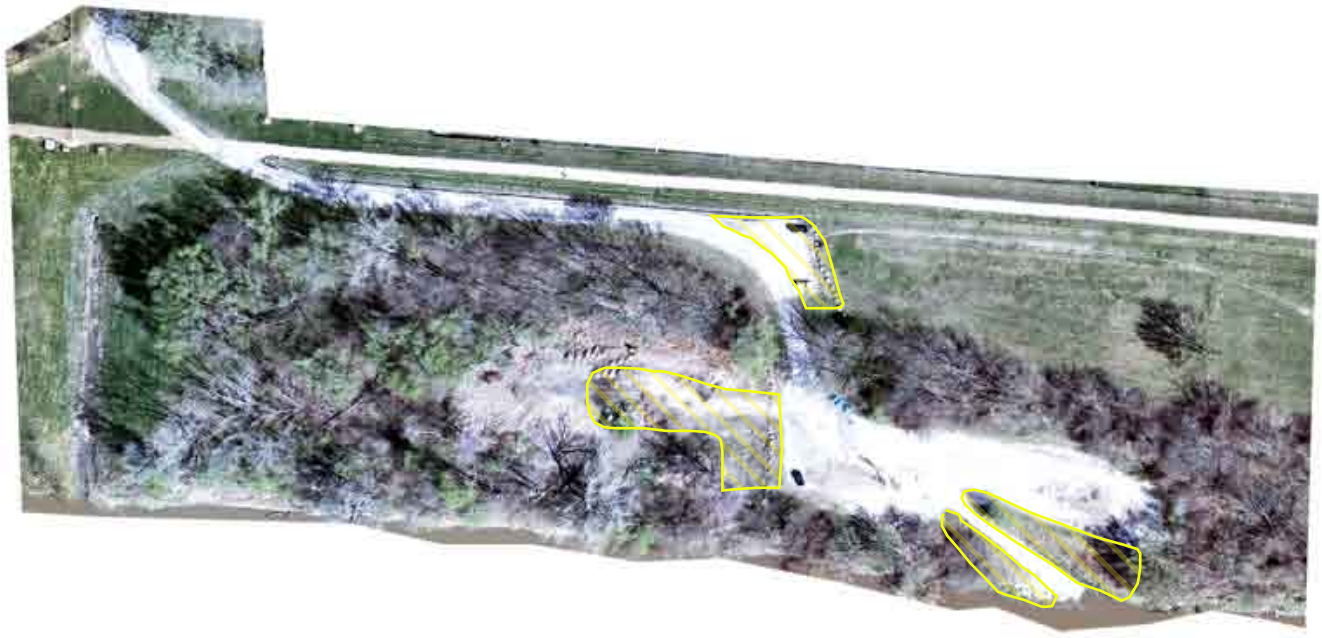




City of Lawrence
PARKS AND RECREATION

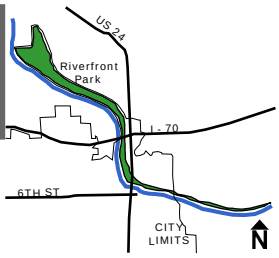
R iverfront Park Boat Ramp (detail 1)





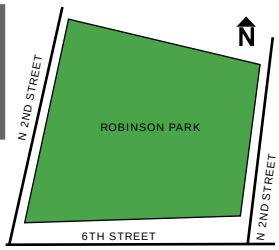
City *of* Lawrence
PARKS AND RECREATION

Riverfront Park Frisbee Golf Area (detail 2)



City of Lawrence
PARKS AND RECREATION

Robinson Park

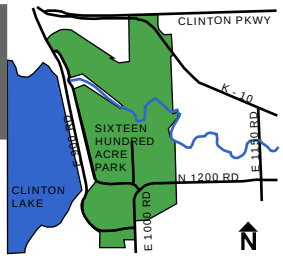


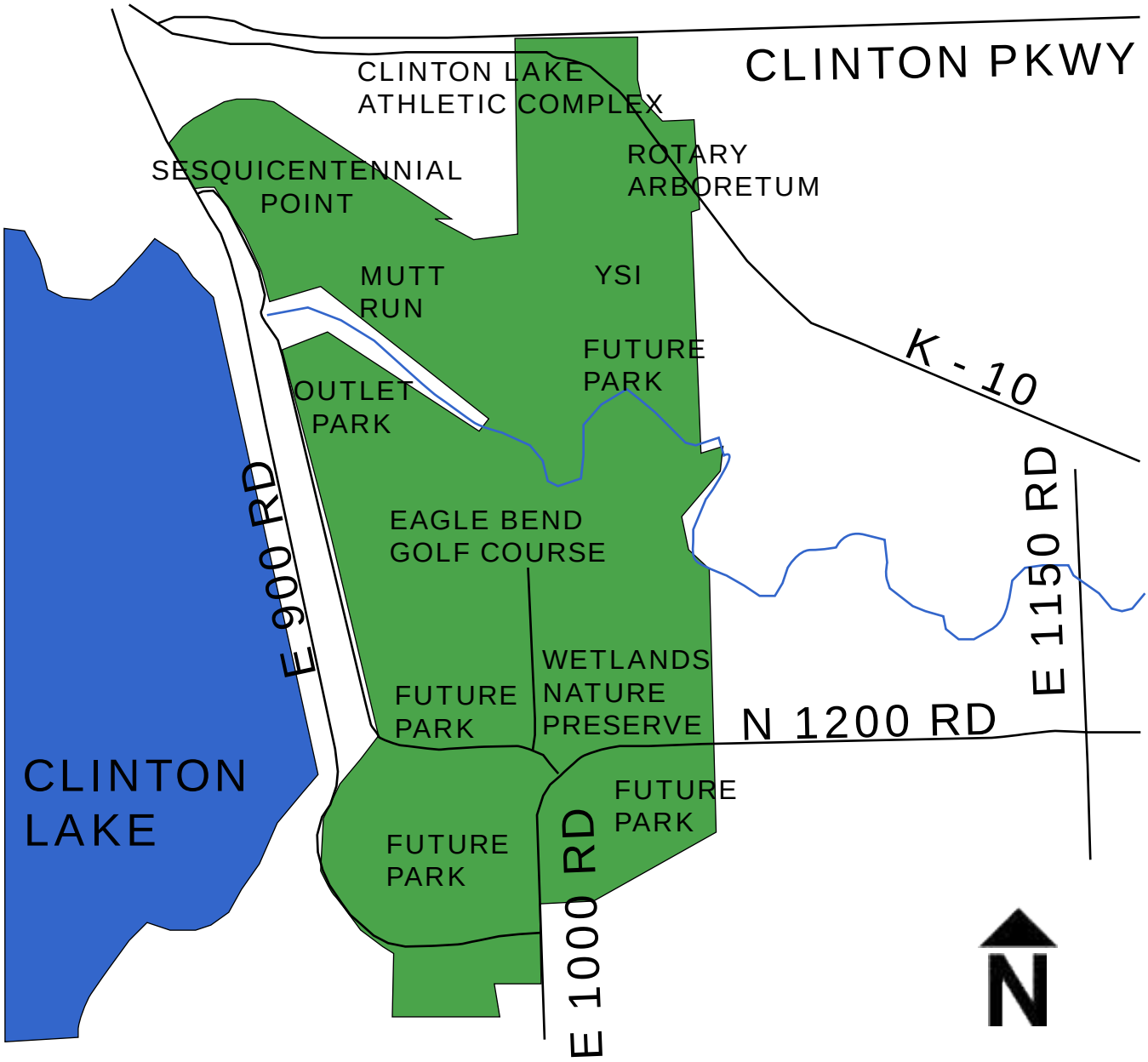
Green Zone: 0% - 0 acres
Yellow Zone: 100% - .8 acres
Total Acreage of Park: .8 acres

City of Lawrence
PARKS AND RECREATION

Sixteen Hundred Acre Park (see additional pages for images)

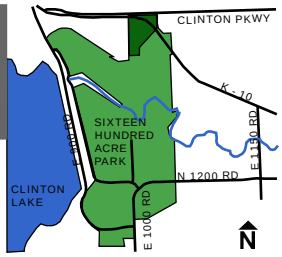
Green Zone: 71.7% - 1148 acres
Yellow Zone: 28.3% - 452 acres
Total Acreage of Park: 1600 acres





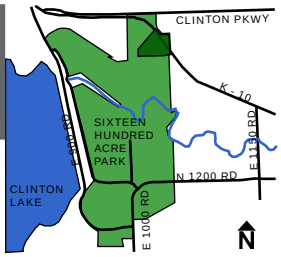
City of Lawrence
PARKS AND RECREATION

Sixteen Hundred Acre Park (Clinton Lake Athletic Complex)



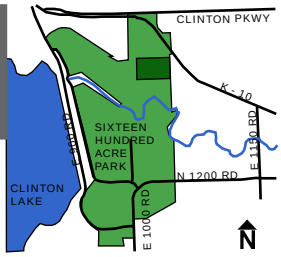
City of Lawrence
PARKS AND RECREATION

Sixteen Hundred Acre Park (Rotary Arboretum)



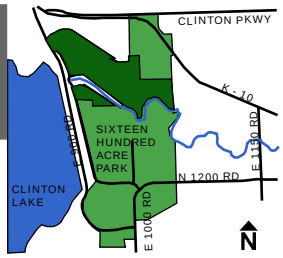
City of Lawrence
PARKS AND RECREATION

Sixteen Hundred Acre Park (YSI Athletic Complex)



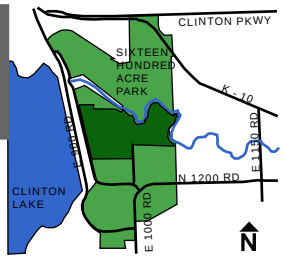
City of Lawrence
PARKS AND RECREATION

Sixteen Hundred Acre Park (Mutt Run, Oultlet Park, Sesq. pt.)



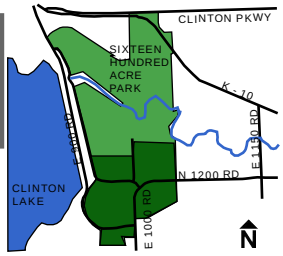
City of Lawrence
PARKS AND RECREATION

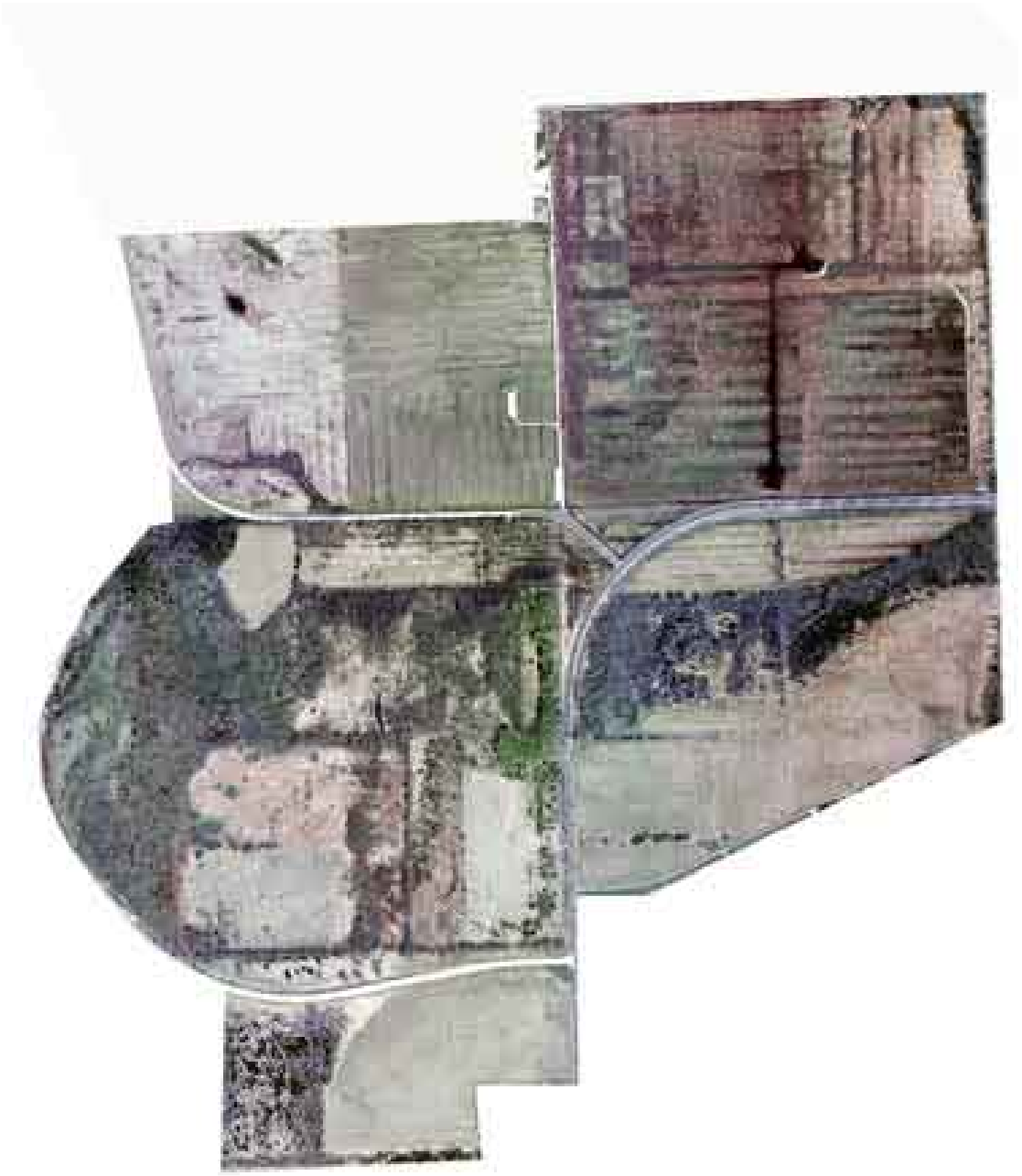
Sixteen Hundred Acre Park (Eagle Bend Golf Course)



City of Lawrence
PARKS AND RECREATION

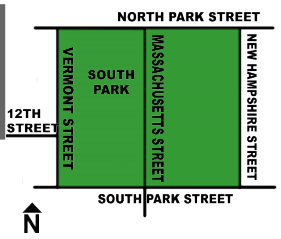
Sixteen Hundred Acre Park (Future Parks, Wetlands Preserve)



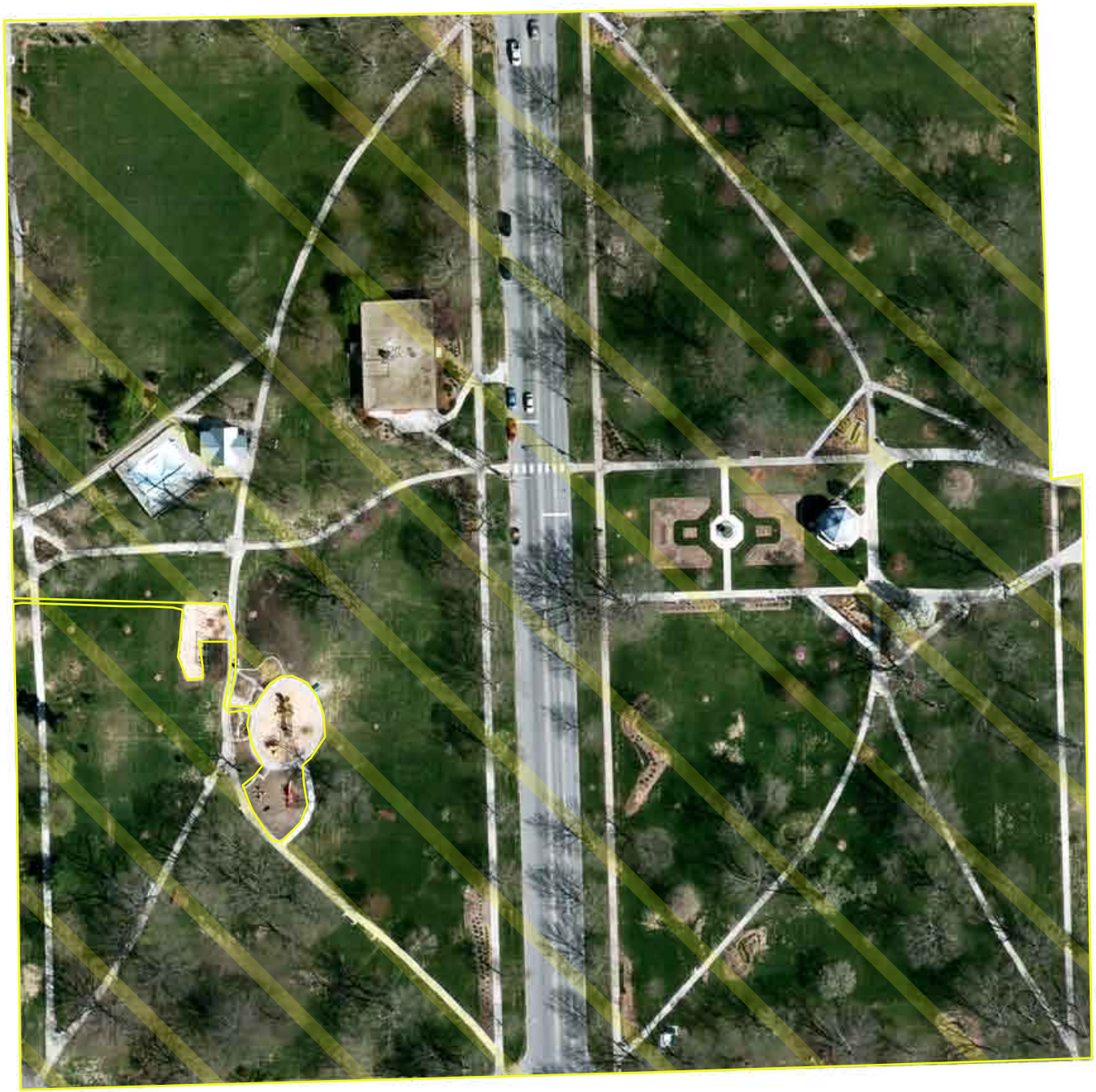


City of Lawrence
PARKS AND RECREATION

South Park

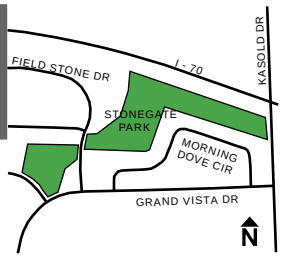


Green Zone: 0% - 0 acres
Yellow Zone: 100% - 14.7 acres
Total Acreage of Park: 14.7 acres



City of Lawrence
PARKS AND RECREATION

Stonegate Park

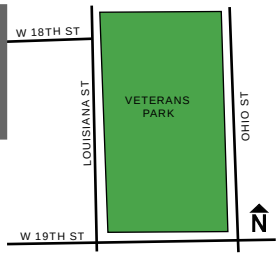


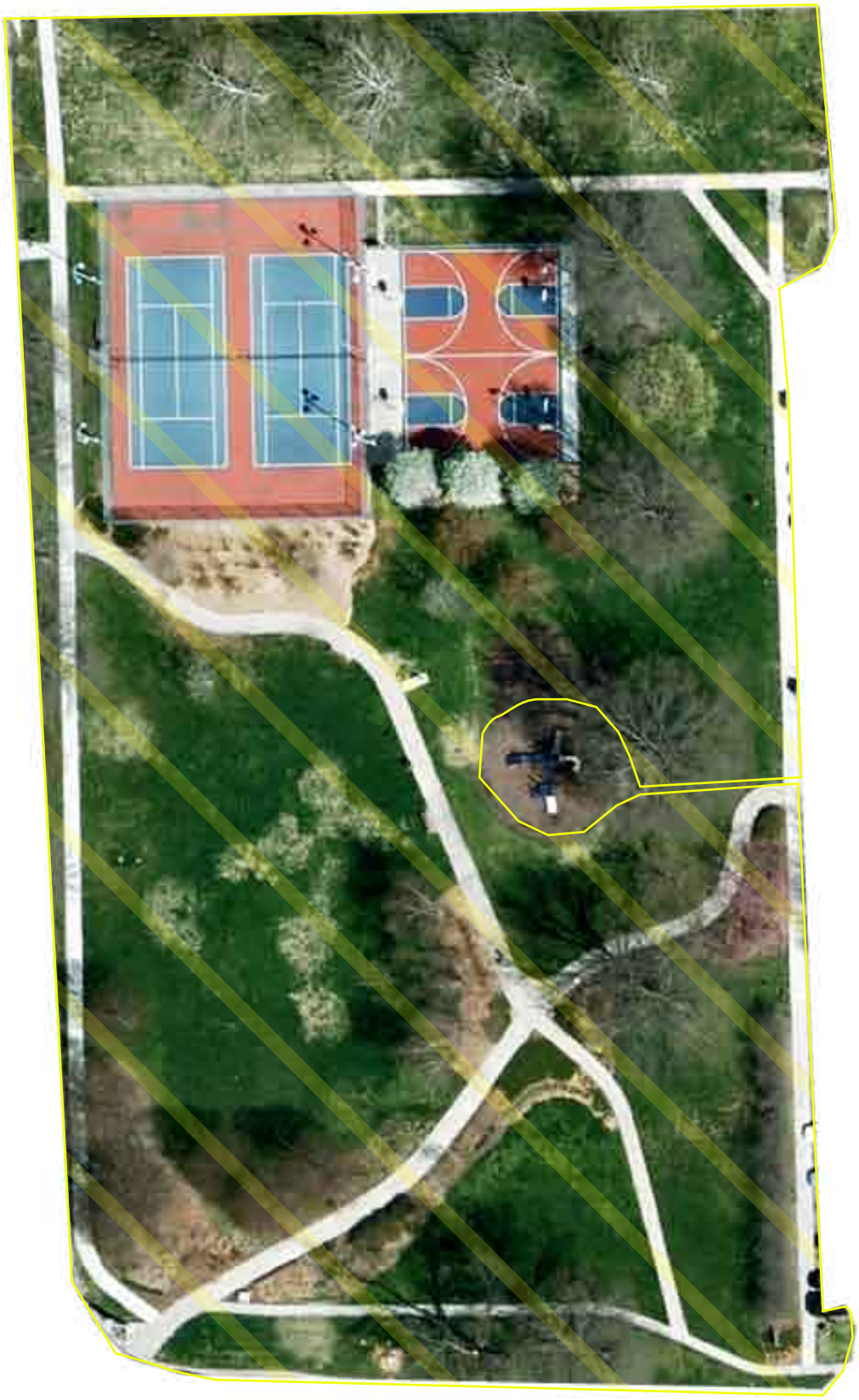
Green Zone: 100% - 15.7 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 15.7 acres

City of Lawrence
PARKS AND RECREATION

Veterans Park

Green Zone: 100% - 3.3 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 3.3 acres





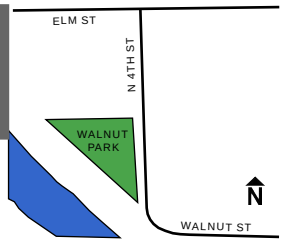
City of Lawrence
PARKS AND RECREATION

Villo Woods Park

Green Zone: 100% - 3.8 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 3.8 acres

City of Lawrence
PARKS AND RECREATION

Walnut Park

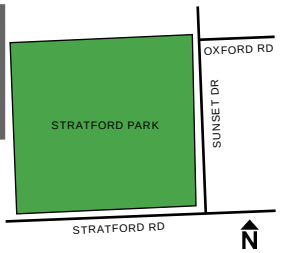


Green Zone: 100% - .8 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: .8 acres

City of Lawrence
PARKS AND RECREATION

Water Tower Park

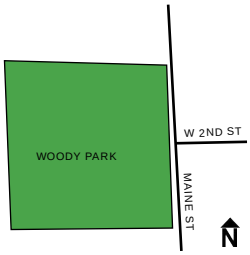
Green Zone: 67% - 1.6 acres
Yellow Zone: 33% - .8 acres
Total Acreage of Park: 2.4 acres



City of Lawrence
PARKS AND RECREATION

Woody Park

Green Zone: 33% - 1 acres
Yellow Zone: 67% - 2 acres
Total Acreage of Park: 3 acres

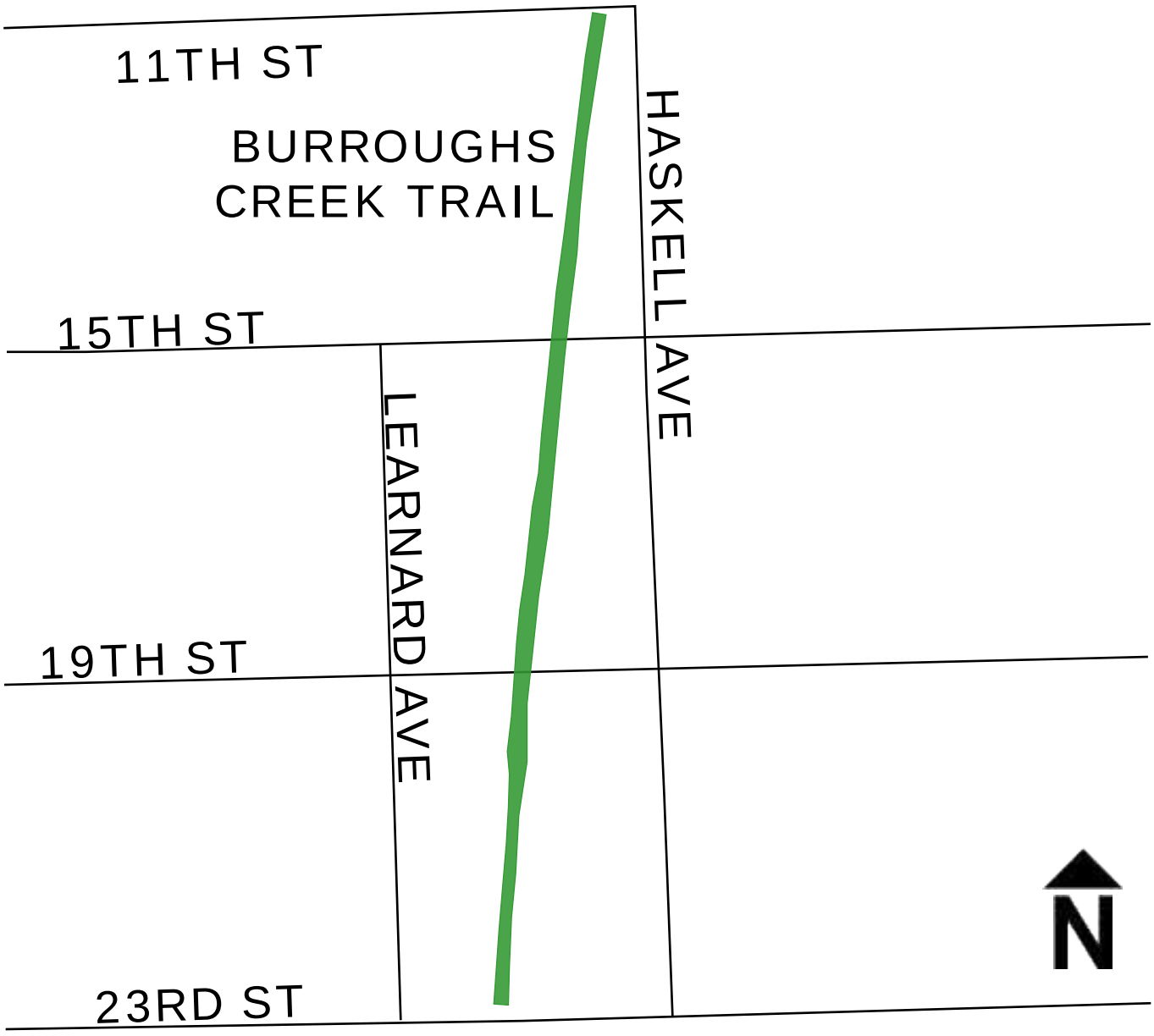


City of Lawrence
PARKS AND RECREATION

Burroughs Creek Trail (Future Park)

(See Additoinal Pages for Images)

Green Zone: 94% - 16 acres
Yellow Zone: 6% - 1 acres
Total Acreage of Park: 17 acres



City of Lawrence
PARKS AND RECREATION

Burroughs Creek Trail (Future Park) (detail 1)

11th street

13th street

City of Lawrence
PARKS AND RECREATION

Burroughs Creek Trail (Future Park) (detail 2)

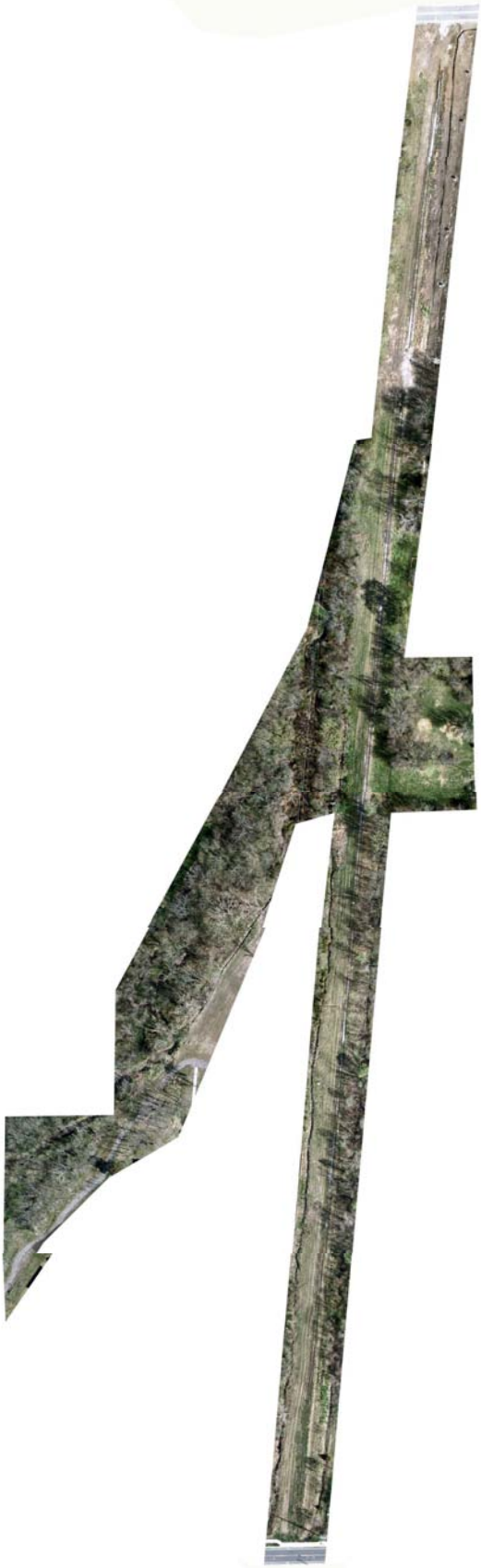
13th street

15th street

City of Lawrence
PARKS AND RECREATION

Burroughs Creek Trail (Future Park) (detail 3)

15th street



19th street

City of Lawrence
PARKS AND RECREATION

Burroughs Creek Trail (Future Park) (detail 4)

19th street

City of Lawrence
PARKS AND RECREATION

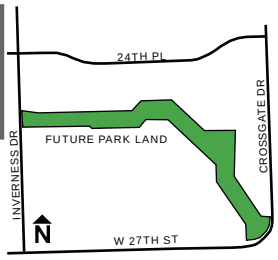
Burroughs Creek Trail (Future Park) (detail 5)

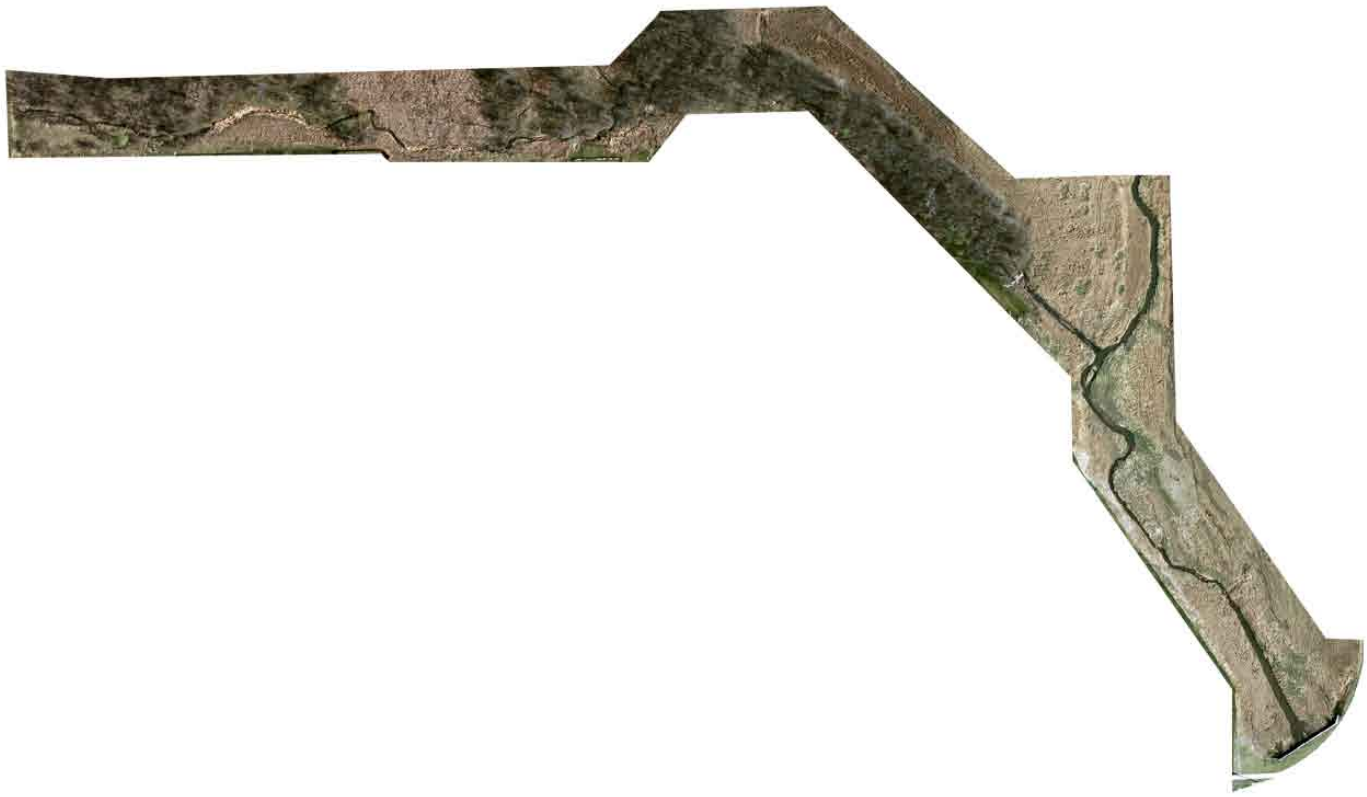
23rd street

City of Lawrence
PARKS AND RECREATION

Crossgate Dr & 27th St (Future Park)

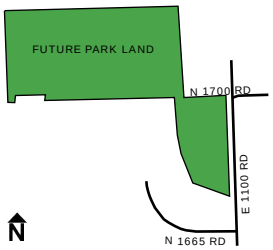
Green Zone: 100% - 14.5 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 14.5 acres





City of Lawrence
PARKS AND RECREATION

F olks Rd & Peterson Rd (Future Park)



Green Zone: 100% - 96 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 96 acres

City of Lawrence
PARKS AND RECREATION

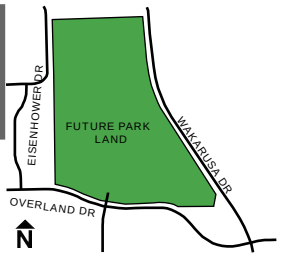
Oregon Trail Park (Future Park)

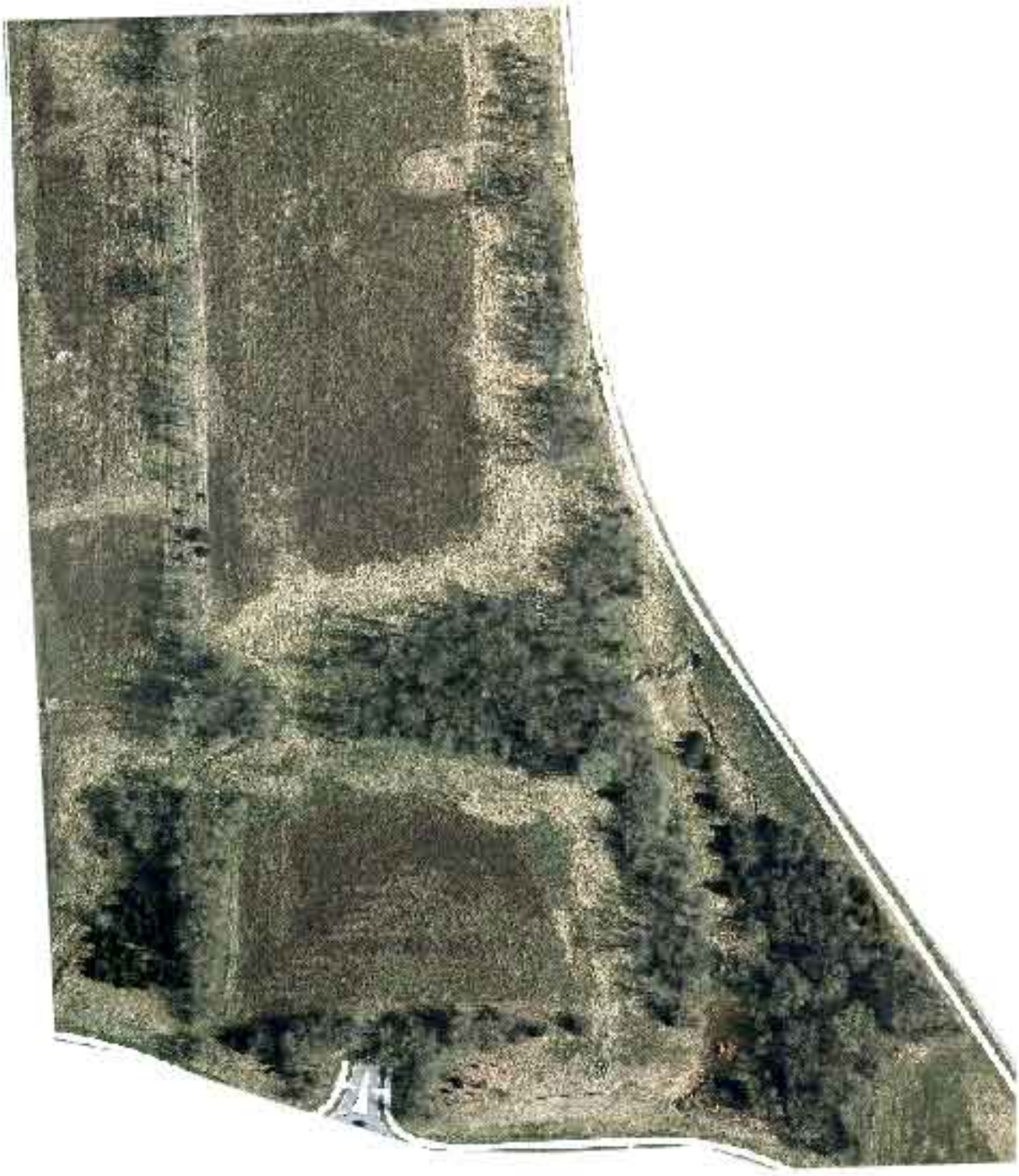
Green Zone: 100% - 4.3 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 4.3 acres

City of Lawrence
PARKS AND RECREATION

Overland Dr & Wakarusa Dr (Future Park)

Green Zone: 100% - 30 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 30 acres

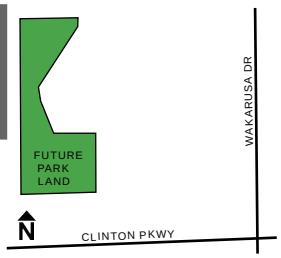


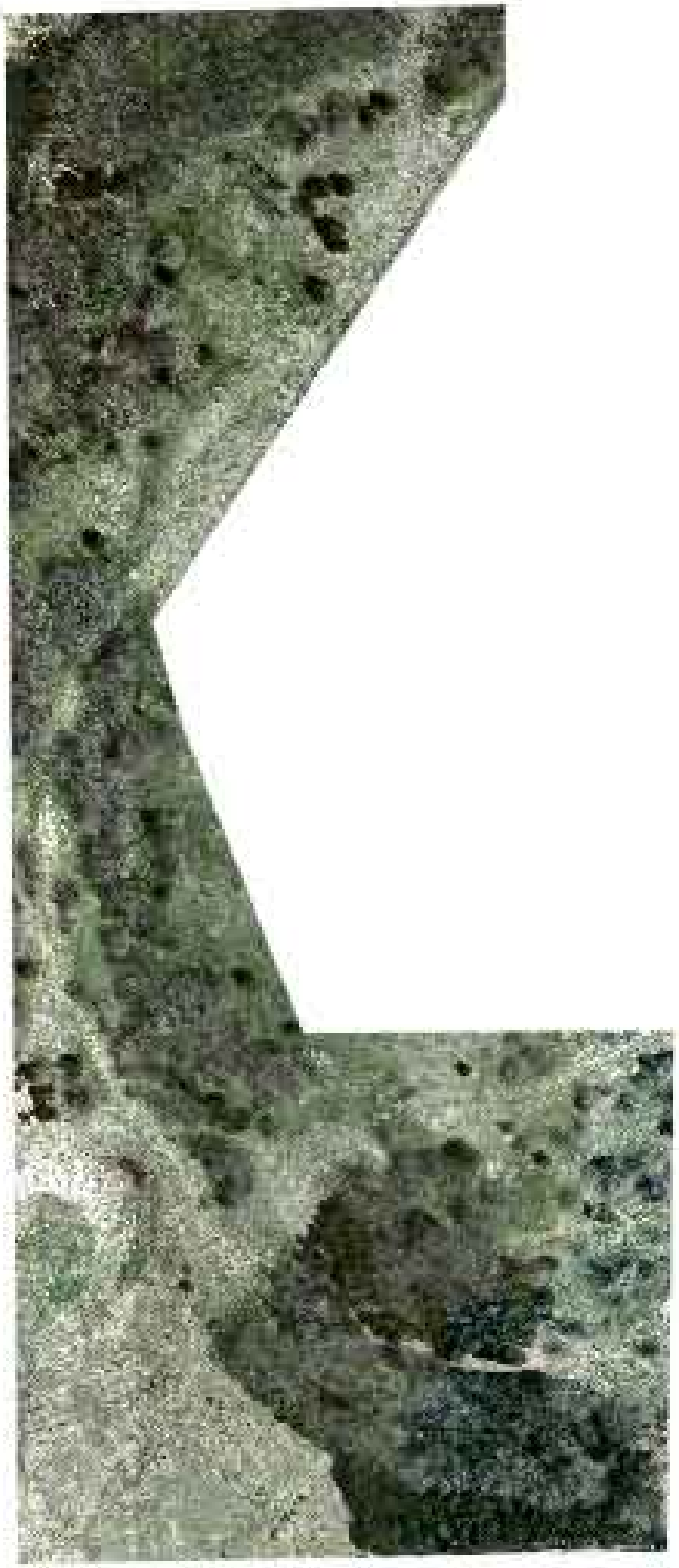


City of Lawrence
PARKS AND RECREATION

Park Property West of Wakarusa (Future Park)

Green Zone: 100% - 48 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 48 acres





City of Lawrence
PARKS AND RECREATION

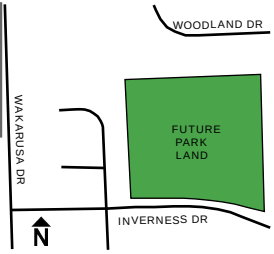
Peterson Road Park (Future Park)

Green Zone: 100% - 22 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 22 acres

City of Lawrence
PARKS AND RECREATION

Quail Run Park (Future Park)

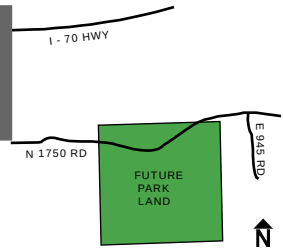
Green Zone: 100% - 5 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 5 acres



City of Lawrence
PARKS AND RECREATION

E 1750 Rd (Future Park)

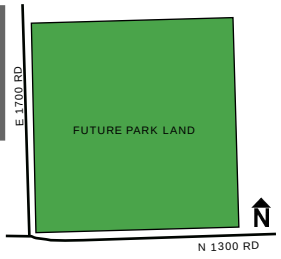
Green Zone: 100% - 40 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 40 acres



City of Lawrence
PARKS AND RECREATION

E 1700 Rd & N 1300 Rd (Future Park)

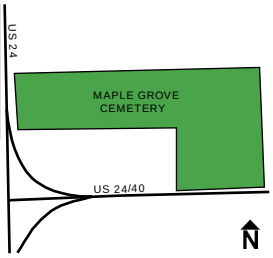
Green Zone: 100% - 40 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 40 acres



City of Lawrence
PARKS AND RECREATION

Maple Grove Cemetery

Green Zone: 0% - 0 acres
Yellow Zone: 100% - 12.3 acres
Total Acreage of Park: 12.3 acres



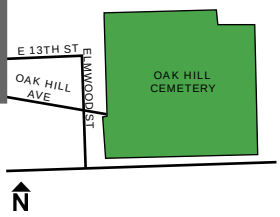
City of Lawrence
PARKS AND RECREATION

Memorial Park Cemetery

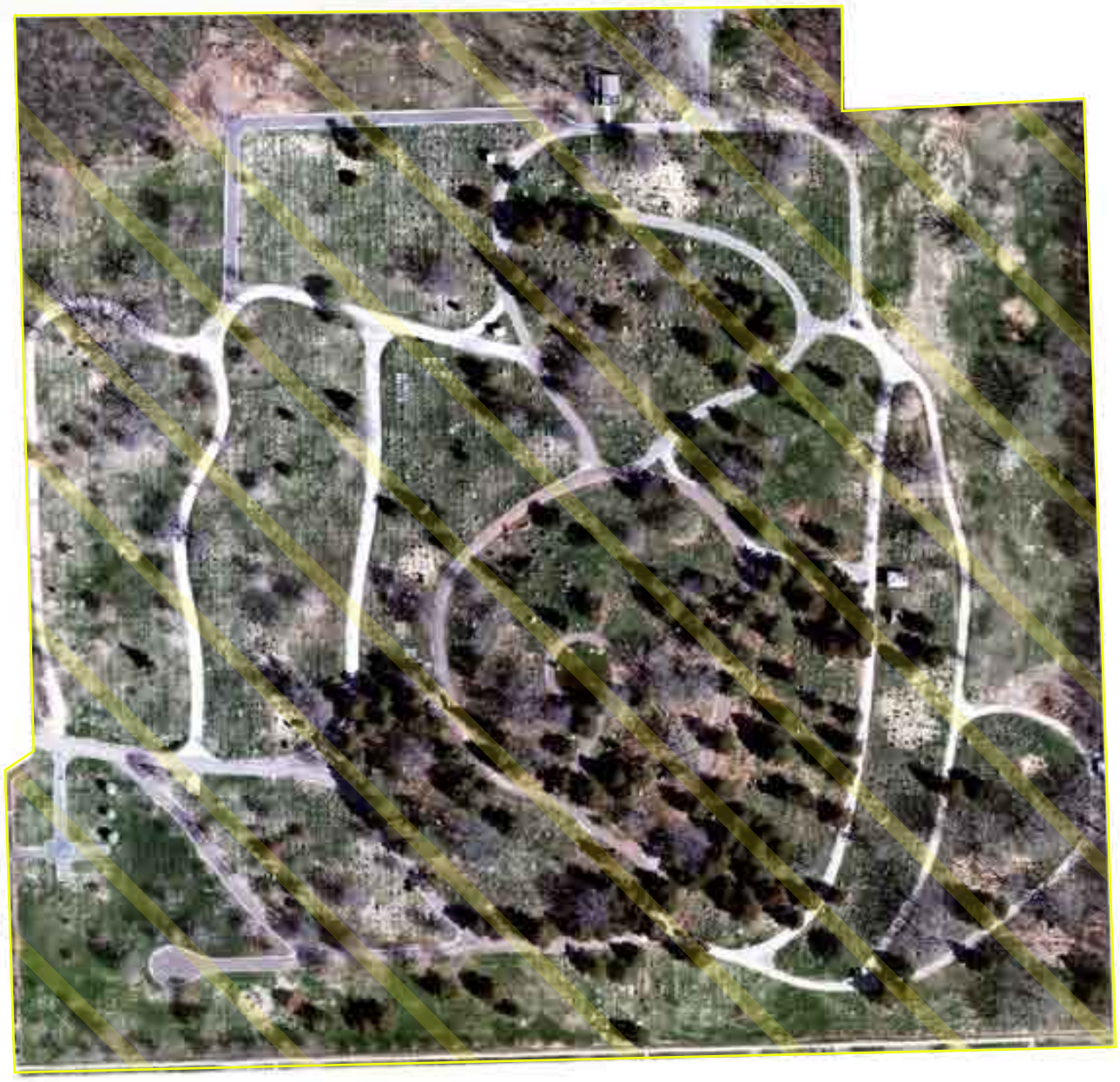
Green Zone: 0% - 0 acres
Yellow Zone: 100% - 24.7 acres
Total Acreage of Park: 24.7 acres

City of Lawrence
PARKS AND RECREATION

Oak Hill Cemetery



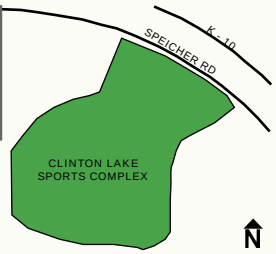
Green Zone: 0% - 0 acres
Yellow Zone: 100% - 49 acres
Total Acreage of Park: 49 acres



City of Lawrence
PARKS AND RECREATION

Clinton Lake Athletic Complex

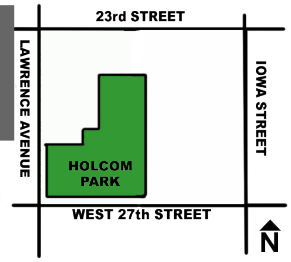
Green Zone: 24.5% - 3.8 acres
Yellow Zone: 74.5% - 17.2 acres
Total Acreage of Park: 21 acres



City of Lawrence
PARKS AND RECREATION

Holcom Athletic Complex

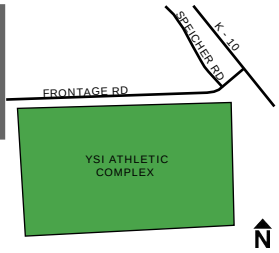
Green Zone: 0% - 0 acres
Yellow Zone: 100% - 26 acres
Total Acreage of Park: 26 acres



City of Lawrence
PARKS AND RECREATION

YSI Athletic Complex

Green Zone: 0% - 0 acres
Yellow Zone: 100% - 56 acres
Total Acreage of Park: 56 acres



City of Lawrence
PARKS AND RECREATION

Section VII. - Green/Yellow Park Acreage Percentages

Park Name	Total Acreage	Description	Green Acres	Green %	Yellow Acres	Yellow %
Broken Arrow Park	18.4	Yellow Park	13.9	75%	4.5	25%
Brook Creek Park	35.5	Yellow Park	35.4	99.70%	0.1	0.30%
Buford Watson Park	8.8	Green Park	8.8	100%	x	x
Burcham Park	62	Yellow Park	54	87%	8	13%
Centennial Park	36.9	Yellow Park	32.4	88%	4.5	12%
Chaparral Park	0.9	Green Park	0.9	100%	x	x
Clinton Park	52	Yellow Park	51.9	99.80%	0.1	0.20%
Sixteen Hundred Acre Park	1600	Yellow Park	1148	72%	452	28%
Constant Park	3	Yellow Park	x	x	3	100%
Dad Perry Park	43.9	Yellow Park	27.5	63%	16.4	37%
Deerfield Park	9.6	Green Park	9.6	100%	x	x
Devictor Park	43.4	Green Park	43.4	100%	x	x
Edgewood Park	17.5	Yellow Park	14.5	83%	3	17%
Green Meadows Park	15.4	Green Park	15.4	100%	x	x
19th and Haskell Park	3.2	Green Park	3.2	100%	x	x
Hand Park	0.8	Green Park	0.8	100%	x	x
Haskell Rail Trail	7.3	Green Park	7.3	100%	x	x
Hobbs Park	4.7	Yellow Park	2.5	53%	2.2	47%
Holcom Park	30.8	Yellow Park	x	x	30.8	100%
Japanese Garden	0.2	Yellow Park	x	x	0.2	100%
John Taylor Park	3.3	Green Park	3.3	100%	x	x
Kanza Southwind Nature Preserve	13.8	Green Park	13.8	100%	x	x
Ludlam Park	1.5	Green Park	1.5	100%	x	x
Lyons Street Park	9.5	Yellow Park	4	42%	5.5	58%
Martin Park	20.7	Green Park	20.7	100%	x	x
Nature Center/Mary's Lake/Prairie Park	78.6	Yellow Park	67	85%	11.6	15%
McGrew Nature Preserve	13.8	Green Park	13.8	100%	x	x
Naismith Valley Park	39.6	Green Park	39.6	100%	x	x
Park Hill Park 1, 2, 3	6.2	Green Park	6.2	100%	x	x
Parnell Park	3	Green Park	3	100%	x	x
Pat Dawson Billings Nature Area	42.6	Green Park	42.6	100%	x	x
Quarry Park	0.7	Green Park	0.7	100%	x	x
Riverfront Mall Park	6	Green Park	6	100%	x	x
Riverfront Park (levee)	845	Yellow Park	815	96%	30	4%
Robinson Park	0.8	Yellow Park	x	x	0.8	100%
South Park	14.7	Yellow Park	x	x	14.7	100%
Stonegate Park	15.7	Green Park	15.7	100%	x	x
Verterans Park	3.3	Yellow Park	x	x	3.3	100%
Villo Woods Park	3.8	Green Park	3.8	100%	x	x
Walnut Park	0.8	Green Park	0.8	100%	x	x
Water Tower Park	2.4	Yellow Park	1.6	67%	0.8	33%
Woody Park	3	Yellow Park	1	33%	2	66%
Total Acreage	**3123.1**		**2529.6**	**81%**	**593.5**	**19%**

Section VII.– (continued)

Future Parks	Total Acreage	Description	Green Acres	Green %	Yellow Acres	Yellow %
Crossgate Dr. & 27th St	14.5	Green Park	14.5	100%	x	x
Burroughs Creek Trail	17	Green Park	16	94%	1	6%
E1700 & N 1300 Rd	40	Green Park	40	100%	x	x
Foks Rd and Peterson Rd	96	Green Park	96	100%	x	x
Oregon Trail Park	4.3	Green Park	4.3	100%	x	x
Peterson Road Park	22	Green Park	22	100%	x	x
Overland Dr & Wakarusa Dr	30	Green Park	30	100%	x	x
Quail Run Park	5	Green Park	5	100%	x	x
E 1750 Rd	40	Green Park	40	100%	x	x
Park Property West of Wakarusa	48	Green Park	48	100%	x	x
Total Acreage	**316.8**		**315.8**	**99.70%**	**1**	**0.30%**
Cemetery	**Total Acreage**	**Description**	**Green Acres**	**Green %**	**Yellow Acres**	**Yellow %**
Maple Grove	12.3	Yellow Park	x	x	12.3	100%
Memorial Park	24.7	Yellow Park	x	x	24.7	100%
Oak Grove	49	Yellow Park	x	x	49	100%
Total Acreage	**86**		x	x	**86**	**100%**
Total Acreage Included	**3525.9**		**2845.4**	**81%**	**680.5**	**19%**

Section VIII. – Staffing Descriptions

The reduction in the use of pesticides with the implementation of the Integrated Pest Management policy will create a need for staff to be assigned the management of the process. Additional staff in the field will also be needed to perform tasks previously accomplished by the use of pesticides. Following are positions necessary when instituting the IPM policy. These positions may be filled with existing staff. The Parks and Recreation Department Director will be responsible for appointing these positions.

The first appointment needed is an IPM Program Coordinator. In addition to their normal duties, this staff member will be responsible for:

- Coordinating and monitor the IPM program for the department.
- Reviewing requests by staff for exemptions in the IPM manual, and if justified submitting the request to the IPM committee and Park and Recreation Advisory Board.
- Devoting time to field inspections and become familiar with park sites and conditions.
- Seeing that staff receives the necessary amount of training through conferences, guest speakers, and interdepartmental training.
- Attending meetings of the IPM committee.
- Presenting an annual report to the department director for presentation to the Park and Recreation Advisory Board on an annual basis.

The second staffing appointment will be a group of 3-4 existing staff to form an IPM committee. The IPM committee will meet to review and discuss IPM policy.
The committee will be responsible for:

- Current knowledge of new IPM methods, as well as existing and new pesticide information
- Determining and approving considerations for pesticide zones in each park
- Field monitoring and testing of new IPM strategies
- Reviewing, approving, and/or adopting any exemption requests to the original IPM policy, as well as amendments to the policy.
- Assist in annual staff training on the least hazardous alternatives, long-term IPM methods and pesticide safety.
- Review and approve changes to chemical list to allow for changes in control conditions
- Ensuring that public education on IPM policy and changes created are communicated to the public.
- Preparing an annual IPM report to be presented by the IPM coordinator to the Park and Recreation Advisory Board.
- Annually reviewing written IPM policy and suggesting revisions to the Park and Recreation Advisory Board, making certain the policy is meeting its original goals.

The third staff position needed will be an administrative support person. This person will be responsible for:

- Collecting and retaining field data from staff including current application records, weather reports, and other useful information.
- Prepare IPM Reports
- Maintain website information to inform the public of departmental activities.

In addition to existing staff, the total number of full-time and seasonal workers will need to be evaluated and increased annually to manage the workload created by IPM. This will be a budgetary issue that will need to be requested and approved as part of the department's annual budget request.

The last group necessary to compensate for extra man hours at each park will be volunteer groups. Dependable volunteer groups will be essential for keeping up with weeds usually eliminated by the use of pesticides. These volunteer groups need to be organized and scheduled by a staff member or by an individual citizen who will work with a staff member to coordinate the groups. Volunteers are not something to be depended upon on for consistent help. If they are available to assist with the workload, and help meet the goals of IPM, then the organization of volunteer groups will be a success.

Section IX. - Advisory Board

The Parks & Recreation Advisory Board will act as the public advisory board for this program. The role of the board is to grant support to the Parks and Recreation Department for IPM progress and to review and comment on exemptions and reports on an annual basis to ensure progress is made on the stated goals.

Section X. – Monitoring

In an IPM program, monitoring is the repeated observation and recording of site conditions. Three types of information should be collected during routine IPM inspections; site information, plant information, and pest information. Information collected includes such things as plant health, drainage and moisture, soil health, weeds, wildlife, insects, or disease.

Site information is important for the diagnosis and treatment of landscape pest problems. Vital site information includes weather patterns, cultural landscape practices, and construction. These events can manipulate plant vitality and pest activity. Identifying and correcting site condition issues is crucial to an effective IPM strategy.

All plants are unique in their pest susceptibility. They are all similar in the fact that their condition, developmental stage and injury tolerance can alter their pest susceptibility. Plants in poor health because of adverse site conditions or over maturity can be particularly susceptible to certain pests and injury. Plant information is very important in understanding the amount of pest or injury damage a plant can sustain before action needs to be taken.

The last type of information that needs to be collected from each site while monitoring, is pest information. Several types of pest information should be collected during an IPM inspection. These include pest description, pest population level, life stage of pest, and potential for natural control. All of these will help in determining if the pest is the cause of the plants decline in health and the best possible treatment for the pest. Monitoring will also help in deciding whether or not the pest can be controlled naturally. When natural control is high it may be appropriate to continue monitoring and use pesticide control as a last resort.

Monitoring is a critical component of landscape IPM. Regular inspections and proper record keeping of site information, plant information and pest information will assist in determining when a plant health problem might arise and the best way to resolve the problem.

Section XI. - Action Threshold

An action threshold will help the staff determine when a pest has become problematic enough for action to be taken. The threshold level will vary depending upon the location of the site and the amount of use by the public. For example, pest problems in a low-profile park will be tolerated more frequently than pests in high-profile/high-traffic locations. A high threshold level means pests will be tolerated longer vs. a low threshold level where pests will be tolerated for a shorter period before action is taken.

There are many aspects that go into determining an action threshold for a site. These include, but are not limited to, aesthetics, the purpose of the site, safety and cost vs. loss.

Aesthetic tolerance will in large be set by the public. A pest can hurt the appearance of a plant without the loss of that plant being an issue. This determination will be made by the staff. Aesthetic tolerance levels will change from park to park depending on the location and the amount of visitation to that park. They will also change over time as staff increase their knowledge of plant tolerances to pests and public tolerances to aesthetic degradation in parks. A question to ask over time - Is the public willing to endure more pests if it will reduce or eliminate the use of pesticides?

The purpose of a site will change its action threshold drastically. For example, a soccer field needs to be maintained at a higher level for aesthetic and safety reasons. Therefore it will have a low action threshold (pests will not be tolerated). On the other hand, a wilderness area with a nature trail has a high action threshold. The purpose of these two sites is entirely different. In turn, the people who visit them have different expectations regarding the appearance of each site.

Another aspect that can set a threshold tolerance is the safety of an area. Pests at a site creating a health risk to the public, and staff, will have to be dealt with in a more urgent manner. For example, poison ivy in a high-traffic area will have a low action threshold, as this is a health risk.

Cost vs. loss will also determine an action threshold. Cost vs. loss is a budgetary issue that sets the threshold. A question to be asked - Is it worth losing $200 in shrubs when you could apply $20 in pesticide and solve the problem? Proper budget adjustments will need to be made to absorb the loss of plants due to reduction in pesticide application.

These action thresholds will also be set based upon what zone in a particular park the undesired pests are located. If the pest problem is in a green zone, the tolerance of the pest will have to be higher than if the pest were in a yellow zone. In a yellow zone, the area can be treated with a pesticide at the discretion of the staff in accordance with the IPM policy. When pests are located in a designated green zone the pest will be controlled by alternative methods.

Attaining the appropriate threshold will only occur through a trial and error process. The amount of damage that can take place before pest infested plants become aesthetically intolerable or an economic threat will determine the action threshold.

Section XII. - Signage and Notification

(A) When the Parks and Recreation department applies any pesticide it must comply with the following notification procedures:

(1) Signs must be posted one hour before the application of the pesticide and remain posted for at least 24 hours after application of the pesticide.
(2) Sign must be at least 8 1/2" x 11"size, and of a uniform design easily identifiable by the public and staff.
(3) Signs will contain the name and active ingredient of the pesticide product, the target pest, the date of pesticide application, the signal word indicating the toxicity category of the pesticide product and the name and contact number for the city department.
(4) Signs will be posted at every entry point where the pesticide is applied, if pesticides are applied in an enclosed area. If pesticides are applied in an open area, signs will be posted in highly visible locations around the perimeter of the treated area in 50' intervals.
(5) In high-use recreational areas, such as near picnic areas and playgrounds, signs will be posted at a minimum interval of every 50'.
(6) In low-traffic areas such as some city right-of-way and median locations, signs will be posted at key crossings at a minimum of every 400'.
(7) Signs will be sturdy and able to sustain exposure to sun, wind and rain.

(B) Departments are responsible for making pesticide application information available to staff and public upon request.

Section XIII. - Record Keeping

In order to determine effectiveness and cost of the program, city staff will keep an accurate record of IPM activities. The record will include the following information:

-The target pest
-The type and quantity of pesticide used
-EPA registration number
-The specific location of the pesticide application
-The date and time of application
-Amendments granted for the application
-Weather conditions at time of application

Record keeping will ensure that ineffective methods are not duplicated. City staff will make pesticide records readily available to the public and to interested institutions upon request.

Section XIV. - Training

A main concern in the continuation of the IPM policy will be training staff on IPM methods. Parks and Recreation staff will need to be educated on the policy the City of Lawrence has adopted, what the policy entails and how it will progress. They need to be aware of short-term solutions of IPM and how much labor is needed for each area.

In addition to being well-informed on short-term solutions and IPM policy, staff will need additional training on how to design landscape for long-term IPM progress. New knowledge on landscape design and maintenance is crucial to integrating long-term IPM methods. In order for pesticide reduction to progress over the years, there will need to be on-going training and educational opportunities in areas of design, maintenance methods, new alternative methods, pest populations and new pests. Training will be considered a high priority.

Training will be organized by the IPM committee through discovery of informational conferences, inviting experienced speakers to conduct training, and interdepartmental training about new IPM methods and alternatives. Staff needs to be kept up-to-date on IPM policy changes as it will constantly be revised by the IPM committee and the Parks and Recreation Advisory Board. The IPM coordinator will ensure that staff who are licensed commercial applicators will remain so by annually attending the required amount of training. Training will give them the opportunity to keep themselves as well as the public, safe while applying pesticides. On-going training will also assist applicators in identifying pest problems accurately and keep them up-to-date on pesticide laws and safety.

The IPM coordinator, with the help of the IPM committee, and approval by the Parks and Recreation Advisory Board will schedule all training. Managers and supervisors are expected to participate and fully support involvement by staff in all scheduled training.

Section XV. - Public Information

The public will play an integral role in whether or not Integrated Pest Management is successful. They need to be educated about the goals, as well as the time frame in which goals will be accomplished.

There will be many obtainable ways for the public to educate themselves on IPM, including:

- The Parks and Recreation IPM policy being available online.
- An updated list of pesticides being used by the department.
- Information online to explain notification signage when pesticides are applied.
- List of alternative products for pest treatment.
- Information on volunteer groups that have adopted a park to assist in the maintenance of the area.

Locations will also be selected to hold public education meetings, making citizens aware of our goals with the IPM policy, as well as how they can keep themselves well-informed on our time frame and the pesticides used in their neighborhood. They will also be informed on how our signage and notification will take place on site when pesticides are used.

Working with and educating the public will be on-going in the development and achievement of this policy.

Section XVI. - Alternative Pest Reduction Management Options:

In IPM control tactics are classified into three groups; cultural, biological, and chemical.

Cultural control tactics are physical adjustments made to the landscape to alter pest activity, reproduction or survival. The adjustments can be made by hand or with mechanical devices. Cultural control tactics include but are not limited to mulching, pruning and removal of debris from landscape beds. This control tactic has limited effect on non target organisms and the environment.

Biological control is managing pests by using their natural enemies – predators, parasites, and pathogens. Biological control is often natural and maintains pest populations at a tolerable level. If pests are not naturally maintained the habitat of the landscape may need to be altered to attract the natural enemies. Also, the predators, parasites or pathogens could be physically introduced into the landscape.

Chemical control uses pesticides or other chemical methods for landscape management. Chemical control is only recommended when natural, cultural or biological controls are found ineffective.

The section below lists and describes different types of control tactics that fall into the categories previously listed and have been recently tested by the City of Lawrence Parks and Recreation Department.

Cultural controls:

Mulching / Newspaper or cardboard layering: Mulching over several layers (4 minimum) of newspapers achieved several weeks seasonal weed control, similar to pre-emergent. Mulch depth must be limited to only a few inches (2-3") to promote plant health, and receive benefits of proper soil/water & air exchange. Recommend using only once a year, such as with planting annual flowers. Some seasonal labor is currently employed to assist with this labor-intensive process. Process of layer with newspapers required 2x regular man-hours.

Disadvantages: A twice-a-year method would be more effective on the fall weeds, but create more work because slowly decomposing wood chips will have to be removed. Any extra mulch depth (4-6"), could be detrimental to the landscape plants by causing anaerobic conditions in the decomposing mulch. In addition, it could create a microenvironment for insects and hold excessive amounts of moisture. In landscape areas, such as downtown, where flower displays are rotated more often, the process becomes increasingly more labor intensive and requires additional resources. Compared to conventional chemical weed control, 3-4 times the time, equipment and labor involved.

Mulching only: annual application: 100% of all city landscape areas are mulched with or without use of newspapers, with reasonable weed control success. The main advantage of mulch is to help reduce soil temperature fluctuations and water evaporation.

Manual hand cultivating: This fundamental practice is used by landscape staff in all landscape areas. Much hand work is involved in caring for bedding plants, such as deadheading old flowers, watering, pruning, thinning, weeding, and other hand to hand attention to detail. This requires a trained and dedicated staff with an eye and interest for detail-oriented work. Additional seasonal labor is employed to assist with this process. Current staff shortages will make this difficult to sustain at a previous level.

Turf Aeration: A practice used in parks, municipal building lawns, golf course, and athletic fields to improve air porosity and water movement in compacted soils, near turf grass roots. Aeration requires specialized equipment and increased labor force to facilitate work. It is advantageous to the turf roots and increases success of new seed beds in both irrigated and un-irrigated areas. Staffing limitations and equipment shortages limit this practice to resources on-hand.

Soil improvements with compost: For new city landscape and turf projects, much of the clay soil structure has been improved by using organic matter from a city resource of turf grass/leaf compost. This is inexpensive, nutrient-rich, in good supply and available in large tonnage quantities. Works best for us to use compost over two years old to avoid

damage from temperature fluctuations, must be lower than 150 degrees. Best success if incorporated as a moderate amount into the soil prior to any planting or seeding. Good source of microorganisms.

Disadvantage: Overuse can lead to insect problems, or burning of plant tissue. Staff must have knowledge of product and how to use it to avoid associated problems. This strategy must rely on natural time and temperature to break down compost into useable product.

Soil improvements with Hydro gel Products: A synthetic acrylic polymer was used downtown (3 years) with horticultural applications, resulting in reduced water needed by about 30%. Water loss due to evaporation and drainage was reduced. The product is neutral PH and releases its stored water back to the plants. Staff is researching product for street tree or other water challenged applications.

Disadvantages: Effective, but expensive and must be incorporated into the soil.

Black Plastic on soil surface: Plastic was used in Buford Watson Park as a trial and last resort to kill perennial weeds in non pesticide areas. Mulch was spread over top to help enhance the appearance. This will be checked one year later to see if it was successful. Generally no plants will grow in this environment.

Landscape Fabric on soil surface: No longer used by the city landscape staff under landscape plants due to several reasons: diversity of plants types (trees, shrubs, perennials, and annuals, in combination beds, would require cutting fabric in many locations- reducing its effectiveness; the fabric is expensive, and causes drought conditions in the soil for plantings, (impervious to water) and can girdle plants if left over a long period of time; the fabric can become unsightly and get caught in turf maintenance equipment; mulch also decomposes over the top of fabric, creating a seed bed that does not inhibit weed growth, but may be used effectively under inorganic mulch, such as rock or gravel.

Irrigation and Surface Water Management: This practice targets water distribution only to those plants needing water to sustain life through the photosynthetic process. Excess water can possibly lead to increased disease and weed problems in turf and landscape beds, and cause rapid decline in Oak tree species in the parks.

Disadvantage: Management is highly variable, due to site conditions at various locations in the parks system, and many crews & staff members in control of watering methods. Ongoing maintenance requirements of numerous systems and proper operation will require additional resources.

Sanitation: Remove disease, insect or nematode infested plantings such as dead Elm, Pine, or Juniper plantings, which might lead to a public nuisance situation. Clean up, remove, or destroy the debris or other sources of problems. Eliminate planting of these species in public and private spaces in Lawrence through site plan process and ordinance update. Labor intensive process, that requires additional resources.

Biological Controls:

Host plant resistance: Use design principles to create new spaces and purchase landscape and/or turf plants that are resistant to disease and insect problems. This includes use of some native and/or adaptable plants that can thrive in certain undesirable environmental conditions. For example, staff created a successful Public Demonstration Xeriscape Garden, with the use of native materials and labels for the public to understand. This was completed using little water resources.

Landscape Design: Preserve and create biological diversity in park areas by planting diverse populations of plants. In regard to plant selection, staff has adopted a recommended tree list for Northeast Kansas with plant selections that are native and adapted with right place right plant goals. Staff are avoiding planting other plants that are continual nuisance problems, such as silver maples, hackberry, mulberry, hawthorns, ash, honeysuckle, Scotts pine, Austrian Pine, etc. Landscapes are designed with these principles/ concerns in mind. Other commercial and public plans are also undergoing some of the same process.

Biological / Organic product trials: Use Organic products that are environmentally friendly. Examples: 'Conserve' product used successfully for bagworm control, 'Armacarb' used for disease control with limited success, Horticulture Ultra Fine Oil was successfully used on scale and spider mites, and Insecticidal RTU Soap products were used with limited success on spider mites, pine sawfly, other caterpillars (poor results on bagworms). The less expensive, more

applicable, insecticidal soap concentrate product was not available with a caution label, and therefore did not meet our policy. Neem oil was also used according to label with poor results for bagworm control.

Disadvantages: Staff knowledge and budget restraints limit progress in this area. Short residual solution that leads to increased treatments and trips to site will increase fuel costs for city vehicles.

Alternative Chemical Control:

Propane Flamer Machine: Effective on hard surfaces like sidewalks, parking lots, gravel or bare soil. Kills plant and burns it away.

Disadvantages: Equipment is difficult to maneuver around. The flame discolors the sidewalk where applied. Flame also left the applied area heated for up to fifteen minutes after treated. Machine can not be used around parked car tires, near curbs because of high heat factor. For future applications, staff may check into a backpack kit and 10 lb. cylinder. All units are highly flammable and volatile if mishandled. According to comments and public perception in the field, people still view this as spraying. This is a short residual solution that leads to multiple trips to the site and increased city fuel costs. Burning carbon fuel is not a sustainable environmental practice.

Horticultural Vinegar based weed killer: Claims to control broadleaf weeds wherever necessary, having no adverse effects on the environment.

Disadvantages: Only had limited success when applied on dry soil on hot days, and was not effective at all on a long-term basis. Product did not kill weeds, only burned the edges. The 20% acid in this product posed a high risk to applicator for eye, skin, and respiratory problems. Vinegar sold and labeled as a herbicide carries a “Danger” or “Warning” toxicity signal word. This method has no proven science behind it and is under litigation in several states for false advertising. This product was attained because of direction by the City Commission. It requires personal protective equipment to apply, the temperature must be above 65 degrees, and can easily be washed off by rain, acting as a nitrogen releasing fertilizer. Additionally this product lowers the PH of the soil when applied and can harm non target landscape plants and water resources.

Orange Peal Extract Weed Killer: Used to control broadleaf weeds. Only had limited success when applied on dry soil on hot days, and was not effective at all on a long-term basis. Product did not kill weeds, only burned the edges. The 20% acid in this product posed a high risk to applicator for eye, skin, and respiratory problems. This method has no proven science behind it and is under litigation in several states for false advertising. This product was attained because of direction by the City Commission. It requires personal protective equipment to apply, the temperature must be above 65 degrees, and can easily be washed off by rain, acting as a nitrogen releasing fertilizer. Additionally this product lowers the PH of the soil when applied and can harm non target landscape plants and water resources.

Disadvantages: Acid in this product posed a high risk to applicator for eye, skin, and respiratory problems. This is an expensive product to purchase as well as expensive to ship. It requires personal protective equipment to apply. Only had limited success when applied and was not effective at all on a long-term basis. Product did not kill weeds, only burned the edges. Several applications were made in an attempt to kill tap rooted weeds, such as dandelions. Additionally this product lowers the PH of the soil when applied and can harm non target landscape plants and water resources.

Waipuna Machine: Hot water/foam machine. Hot water melts away waxy coating on weed leaves or breaks down the plants cellular structure. Plants are unable to retain moisture and dehydrate within a few days.

Disadvantages: This machine is very expensive and purchasers of the machine have reported it to be only marginally successful. Other piloted cities that were contacted did not recommend purchasing the machine.

Section XVII. – Pesticide Information

The focus of an Integrated Pest Management is not the use of pesticides but to encourage plant health care practices which limit the need for pesticides. If a pesticide application is warranted the use of materials with the least environmental impact should be emphasized. Prior to making any application, the location of the pest problem and host should be evaluated and then an appropriate control chosen. When a pesticide application is made it should be done in a professional manner and by or under the direct supervision of licensed commercial applicator. Before applying any pesticide it is important to read and follow the label directions and only apply that product in a manner which is consistent with the label.

Establishment of an Allowed Pesticide List

The IPM Coordinator and the IPM Committee will develop a list of pesticides allowed for use by the Parks and Recreation Department.
The purpose of the list will be to:

1. Review current pesticides used by different divisions within the Parks and Recreation Department to maintain parks, cemeteries and athletic fields
2. Reduce the number of pesticides being used by the Parks and Recreation Department divisions
3. Provide staff and managers with a selection of pesticides to meet specific pest control needs when action thresholds warrant
4. Evaluate, identify and inform staff about environmental impact of pesticides
5. Identify products to remove, add, or to remain on the list

The Allowed Pesticide List will include the following:

1. Product/Trade Name
2. Common Name/Active Ingredient
3. Category/Signal word
4. Type of Pesticide - herbicide, insecticide etc.

Selection of products on Allowed Pesticide List

The selection of the products will begin with staff submitting a request for a pesticide to be placed on the Allowed Pesticide List for the upcoming year. Placement on the list doesn't indicate that it will be used only that it may be used. The decision on whether a product will be used will be the decision of the staff responsible for maintaining that area.

The IPM Coordinator and the IPM Committee shall review each of the products and recommend or not that it be placed on the Allowed Pesticide List. The purpose of this list will be to provide staff with a resource of products available to use during the current year. The list will be reviewed annually and be included as an attachment to the IPM manual. During the annual review process products may be identified for removal, recommended for addition or allowed to remain on the Allowed Pesticide List. In addition, an amendment may be requested throughout the year to add/remove a pesticide from the Allowed Pesticide List.

Criteria for selection and inclusion on the Allowed Pesticide List will be based on the following:

- Toxicity of product – Allowing only the use of pesticides with the EPA Category and Label Signal Word "Caution" or "Keep out of Reach of Children"
- Environmental Impact – evaluating and identifying pesticide for lower environmental impact
- Restricted use pesticides – EPA product registration
- Pesticide label exempt product – EPA product registration
- Non pesticide product
- Bio Pesticides and Organic Pesticides
- Duplication of product

Toxicity of Product - Hazard Category and Label Signal Words

Any product being sold as a pesticide must be registered by the Environmental Protection Agency. Each pesticide is assigned to a hazard category based on the acute toxicity of the product. The acute toxicity is the pesticide's ability to cause immediate harm. The EPA requires testing which evaluates each pesticide for acute toxicity based on the pesticide's hazard thru ingestion, inhalation and skin adsorption along with its potential for eye or skin irritation.

The EPA assigns each product to one of four hazard categories. The categories are represented by I, II, III and IV with I being the most hazardous. Also, each product is also assigned a corresponding signal word which appears on the product label. Category I pesticides are identified on the label with the signal word "Danger" or "Danger Poison" and Category II pesticides are identified on the label by the signal word "Warning". Category III pesticides are identified on the label with the signal word "Caution" and Category IV pesticides are identified on the label by the signal words "Keep Out of Reach of Children". Category III and IV are usually not distinguished from each other since most category IV products include the "Caution" signal word on the label.

Table A shows the toxicity ranges for each category and corresponding signal word. Toxicity range is represented by the products LD50 (lethal dose) or LC50 (lethal concentration). This generally represents the amount of material applied in a single dose to test animals and results in the death of 50% of the test animals. Also a product maybe assigned to the highest toxicity based on LD50 or LC50 in one area while having a very low toxicity rank in another area.

Current policy prohibits the use of Category I (Danger) and Category II (Warning) pesticides. Category I & II pesticides will be not be allowed for placement on the Allowed Pesticide List. Use of these Category I and II products will only be allowed by applying for an exemption as specified in the Section "Exemptions"

Environmental Impact

Recently more emphasis has been put on the long term impact pesticides and other materials have on humans, other organisms and the environment. The health and environmental testing required by the EPA to register and approve a pesticide label is extensive. New testing is being implemented and data from other sources is also available. As a result there is more information on product toxicology and environmental impact is becoming available. The number of pesticides registered along with the amount of data, availability of data, the number of sources and how it is presented can make the evaluation of these materials time consuming.

The IPM Coordinator and IPM Committee will research available data and sources in order to establish guidelines which will be used to further evaluate and inform staff of the possible long term environmental impact of each pesticides currently being used or being considered for use. Manufactures are working to develop new product which have lower impact on the environment. It is important for staff to evaluate these products and how they may fit in the IPM program.

Restricted use and General use Pesticides

The EPA groups pesticides into 2 categories, general use pesticides and restricted use. Pesticides labeled for restricted use can only be applied under the direct supervision of or by a trained and certified applicator. Restricted use pesticides carry the same signal words and hazard categories as general use pesticides.

Restricted use pesticides will be not be allowed for placement on the Allowed Pesticide List. Use of restricted use products will only be allowed as specified in the Section "Exemptions"

Minimum Risk Pesticides

The EPA has granted labeling exemption status to certain products provided they meet the criteria outlined in "Minimum Risk Pesticides Exempted under FIFRA section 25(b)". The EPA maintains and updates this list of products.

Minimum risk pesticides will be reviewed for placement on the Allowed Pesticide List.

Non Pesticide Product

This category would apply to products that are not pesticides but maybe useful in certain instances for pest control. An example of these would be the propane torch. The use of these products will be recorded as part of the IPM program.

Bio Pesticides & Organic Pesticides

Biochemical pesticides, microbial pesticides and plant incorporated pesticides are examples of types of pesticides that include naturally occurring materials. These products generally have a lower environmental impact. These pesticides are often referred to as organic pesticides meaning they are derived from natural sources. Although they are organic they are still classified as pesticides and are potentially toxic and should be used with the same care as all pesticides. These products are required to be registered with and have labels approved by the EPA. Although these products may not provide the same amount of control as other pesticides, adequate pest control maybe obtained with less environmental impact.

These products will be reviewed for placement on the Allowed Pesticide List.

Duplication of Product or Product Types

Due to site conditions or type of application equipment available a product having different formulations maybe listed on the Allowed Pesticide List.

More than one product which provides control for a specific pest maybe placed on the Allowed Pesticide List. This is done with the understanding that with the repeated use of the same product a pest may build up resistance to that product. Alternating the use of different products reduces the chance of product resistance.
Where pest resistance is not an issue the number of pesticides used to control that pest will be reduce. In addition a pesticide used to control a specific pest in turf grass may not be allowed to control that pest in a flower bed. This would require the use of two similar pesticides such as a pre emergent herbicide.

Section XVIII. – Policy Amendments

The process for filing for a policy amendment will begin with a staff member within the department who identifies a situation they feel is a public health risk, economic risk, or has been a steadily documented problem and requires an amendment to the policy to be solved. This staff member will have already exhausted all feasible solutions to alleviate the pest problem.

The policy amendment request will be filed with the IPM coordinator. The coordinator will involve the Park and Recreation Director to determine if the amendment should be proposed to the IPM committee. Depending on the Directors decision, the coordinator will take the amendment proposal before the IPM committee and then the Parks and Recreation Advisory Board if necessary. An amendment may be granted or denied. Any amendment filed will be documented and included in the IPM coordinators annual report.

1). An amendment may be requested to change zone distinction (green to yellow, yellow to green). This will allow staff to reduce the percentage of yellow zones if pesticide application is no longer necessary. It also provides staff the ability to change green to yellow if a pest becomes a consistent problem. This type of amendment must be approved by the Parks and Recreation Advisory Board before implementing

2). In addition to the annual review of the Department's Allowed Pesticide List, the ability to add or remove a pesticide from this list may be requested throughout the year. This may be necessary if a particular product is no longer available, a pest has become immune to a product, or if an equally effective pesticide with a lower toxicity becomes available. Due to the need for a timely decision on these matters, this type of amendment can be approved by the IPM committee and will be reported to the Parks and Recreation Advisory Board at their next scheduled meeting.

3). All plants found under the Kansas Noxious Weed Law will be dealt with how the State of Kansas determines. The law states that all landowners both public and private are required to control and eradicate all noxious weeds on lands that they own or manage. Noxious weeds will be reported to the IPM coordinator by staff or the State of Kansas. Due to the need for a timely compliance on these matters, this type of amendment can be approved by the IPM committee and will be reported to the Parks and Recreation Advisory Board at their next scheduled meeting. There are 14 plants in the State of Kansas considered noxious weeds.

XIX. - Conclusion

This IPM policy developed by the City of Lawrence staff will initially pertain to properties defined as parks, cemeteries and athletic complexes maintained by the Parks and Recreation Department. This policy will exclude the City of Lawrence Eagle Bend Golf Course. The goal of this policy is to correlate pesticide application processes throughout the entire department.

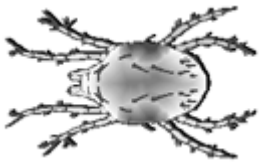
The City of Lawrence Parks and Recreation Department is committed to reducing the amount and types of pesticides used throughout the Park system. Pesticides used will be evaluated by the IPM coordinator and IPM committee and approved annually by the Park and Recreation Advisory Board. This policy will assist the department in maintaining the high-quality park properties and the health and safety of its citizens, staff and the environment. The Parks and Recreation Department currently has 92 percent of park properties zoned green. The goal is for this percentage to increase annually and for the quantity of pesticides applied to decrease.

In creating the IPM policy, budget adjustments will need to be made. Maintaining properties at a high level with a reduction in pesticides will require an increase in staff. Also, other budget adjustments for landscape modification, training, and other improvements are necessary for long term establishment of the policy. Proposing an increase annually in the percentage of green zone areas and a reduction in the quantity of pesticides applied assumes these budget recommendations will be supported.

The City of Lawrence will be recognized as a leader in the Integrated Pest Management field and acknowledged as one of the first municipalities in the Midwest to institute an Integrated Pest Management policy. It is important the citizens of Lawrence continue enjoying park properties. This continued park quality will garner public support for IPM and retain the City of Lawrence's Parks and Recreation tradition.

Section XX. – Pest Descriptions

Spider Mites



Spider mites are classed as an arachnid. They are small and often difficult to see with the unaided eye. Their colors range from red and brown to yellow and green, depending on the species of spider mite and seasonal changes in their appearance.

Spider mites are common plant pests. Injury to plants is caused as they feed, bruising the cells with their small, whip like mouthparts and ingesting the sap. Damaged areas typically appear marked with many small, light flecks, giving the plant a somewhat speckled appearance. Severe infestations, leaves become discolored, producing a gray or bronze look to the plant. Leaves and needles may ultimately become scorched and drop prematurely. Spider mites frequently kill plants or cause serious stress to them.

Moles

The mole is classified as a mammalian not a rodent. It has an average length of 5.5”-6”. The mole has large powerful front feet designed for pushing soil out of its way. It also has a short sparsely haired tail about 1.5” long. The fur that covers the moles body is different from most mammals in that it doesn’t flow towards the tail. Their fur pointing up allows them to move forward of backward in their tunnels. The coat is so dense that it keeps out water and dirt.

A moles diet consists of insects that it finds among the plant roots. These include mole crickets, beetle larvae, ants, and moth larvae among other things. In this fact and the fact that a moles tunneling helps to aerate the soil, moles are beneficial.

The damage that a mole can cause to turf is mostly cosmetic. Their tunneling may cause physical damage to the root systems of plants and may kill grass by drying out the roots, but this is usually minor.

Bagworms

Bagworms are the caterpillar stage of a moth that is rarely seen. Only the males develop into typical moths able to fly. The adult female is grub-like and remains inside the bag until just before she dies. The bag created by the caterpillar is made by whatever type of vegetation is being consumed. The bags reach a maximum size of 1.5” to 2 “. When the bags reach their maximum size they are permanently suspended from twigs on the plant, and transform into the pupa stage of becoming an adult. Bagworms have to ways of spreading from plant to plant. They can spin threads of silk and be carried distances by the wind, or they are capable of moving short distances by crawling.

Bagworms feed primarily on arborvitae trees, but also feed on spruce, juniper, white pine, elms, maples, and other shade trees. They cause damage to trees in their larvae stage by feeding on the needles of evergreens, and on the leaves of deciduous trees.
The damaged caused is mostly an aesthetic issue but heavy infestations can cause death to younger trees.
When attempting to control bagworms. The size of the area infested is a determination. If it is a small area the bagworms may be controlled by handpicking them off the infested trees. This needs to be done before the eggs have hatched.

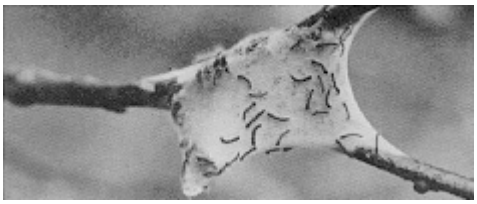
Aphids

Adult aphids are pear shaped 1/32" to 1/8" with 2 short tubes projecting backward from the abdomen. They have long antennae. Their bodies can be green, pink, black, dusty, gray, or white with a fluffy coating. Aphids may or may not have wings.

Aphids are soft bodied insects that use their piercing sucking mouth parts to feed on plant sap. They usually occur in colonies. Heavily infested leaves can wilt or turn yellow because of excessive sap removal. Saliva injected into plants can cause leaves to pucker and become severely distorted. On a mature plant Aphids are generally just an aesthetic problem. In younger plants heavy infestations can cause plant death.

Early detection of an aphid colony is key to reducing infestations. Examine the bud areas or undersides of the leaves for the colonies.

Tent caterpillars



The tent caterpillar in the larvae from is black and hairy with a white stripe down the back. On the insects sides there will be blue spots located between two yellowish lines. Larvae are 2" to 2.5" long. Adults are yellowish tan to brown moths with 2 narrow, diagonal stripes across wings.

Eastern tent caterpillars are commonly found on wild cherry, apple, and crabapple. They also will feed on ash, birch, black gum, red gum, willow, witch-hazel, maple, oak, poplar, cherry, peach, and plum. Tents are constructed in forked branches of trees. They leave the tent to feed on trees and then return when they are done. They can defoliate entire branches on large trees inhibiting growth and weakening the tree causing it to be more susceptible to other insects and diseases. In the case of smaller trees they can defoliate the entire thing in a matter of days. Overtime this can lead to the death of the tree.

Grubs

White grubs are c-shaped larvae of a large group of beetles called scarabs. The larvae form of white grubs are thick bodied, creamy-white with brown head capsules and short legs. These larvae grubs are the form usually found in turf.

Grubs eat organic matter including the roots of plants. The damage first appears to be drought stress. Heavily infested turf first appears off color, gray-green, and wilts in the hot sun. Continued feeding will cause the turf to die in large irregular patches. Tunneling of the larvae causes the turf to feel spongy. If the larvae alone are not enough to cause turf damage; skunks, raccoons, opossums, and moles will ruin the turf digging in search of grubs to eat.

Lace bugs

Adult lace bugs are about 1/8”-1/4” long with a netlike pattern on the wings. The wings are dotted with brown and black. The eggs are identifiable by their cylindrical shape. They resemble small black smoke stacks on the underside of the leaf.

Lace bug damage is first noticed as yellow spots on the upper leaf surfaces of affected plants. They actually feed on the undersides of leaves with their piercing-sucking mouthparts, but because they kill surrounding cells as they feed, they cause the yellow spots to appear on upper sides of the leaves. The spots that appear are similar to mite damage but much larger. When there is a heavy infestation the leaves take on a gray blotched appearance or will turn totally brown. Lace bugs also produce varnish-like dropping that spot the underside of the leaves.

Leaf rollers

Leaf roller larvae are green, slender and will reach about 2/3” in length. Leaf rollers overwinter as a pupa in debris on the ground. Adults emerge in early spring and lay eggs in groupings on the underside of larger limbs. The eggs hatch at about bloom. The hatched larvae then roll leaves together with webbing and feed on foliage.

Leaves are rolled and tied together with silken threads to form hiding places. While inside the larvae feed on the new leaves giving them a ragged appearance. In years of severe populations trees can be completely defoliated. The larvae also with fall to the ground on their silken threads and can defoliate other plants underneath the tree or even the grass. Even when trees are completely defoliated, healthy trees can be expected to recover. Only in cases of severe infestations occurring multiple seasons in row could this insect cause death.

Yellow necked caterpillars

Yellow necked caterpillars are closely related to the Walnut caterpillar. Caterpillars are yellow and black stripped and covered with soft white hairs. The head is black and the segment just behind the head is bright orange-yellow. The remainder of the body is marked with four longitudinal yellow stripes with black in between the markings. Full grown larvae are about 2” long.

Yellow necked caterpillars feed in masses. They are commonly found on Crabapples, Oaks, and Walnuts. These insects can go unnoticed for a period of time, but as their size increases so does their feeding. They can seemingly defoliate a tree overnight. A healthy mature tree should have no problem leafing back out again after an infestation. If a younger tree is defoliated repeatedly it could likely cause death.

Section XXI. - Noxious weeds

The Kansas Noxious Weed Law was first enacted in 1937. It is designed to control, manage and eradicate plants designated as noxious weeds by the Kansas Legislature.
The law assigns specific weed control responsibilities to three groups; landowners, counties, and state. The City of Lawrence Parks and Recreation Department is bound by this law as landowners of public and private land. This law states that landowners of both public and private property are required to control and eradicate all noxious weeds on lands that they own or manage. The list of noxious weeds below must be dealt with immediately at the State of Kansas' order.

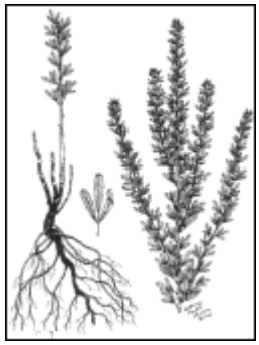
Musk thistle

The musk thistle is primarily a pest of pastures, hayfields, roadsides, and non crop areas. This is an upright plant that may reach up to 6' in height. The stem of the thistle is erect, branched, and has spines covering it. Leaves are dark green with light green to white midribs. Most leaves are 10" long to 4" wide. **Margin** of leaves are also covered with spines. The identifying characteristic of the Musk thistle is the purple to pink flower at the top of the stem.

Johnson grass

This pest species occurs in crop fields, pastures, abandoned fields, rights-of-way, forest edges, and along stream banks. Johnson grass is a tall coarse grass. It grows in dense clumps and can reach up to 8' in height. The leaves are smooth, 6-20" long. The stem of the grass is pink to rusty red at the base of the stem. Seed heads are large and loose.

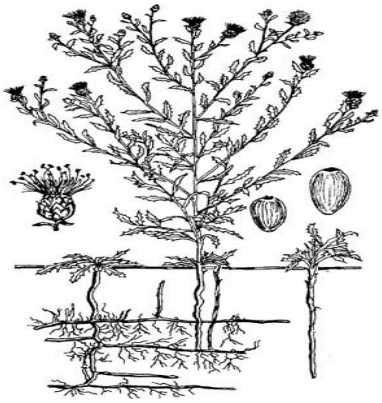
Sericea lespedeza



Sericea lespedeza is a shrubby, deciduous plant that grows to about 2' to 5' tall. The course stem of the pest is covered with numerous branches. The stem and the branches are very densely leaved. Leaves are ¼" to 1" long and 1/16" to ¼" wide. The lower leaf surface has silky hairs covering it. The flowers of Sericea lespedeza are yellowish-white with purple or pink markings and appear from mid July to early October.

Bindweed

Bindweed grows in a vine form as dense ground cover. Leaf size and shape vary but they are usually 1" to 2" long, and shaped like an arrowhead. Flowers are funnel shaped, about 1" in diameter, and white or pink in color.



Russian knapweed

Russian knapweed has stems that are erect and branch openly. The stems generally get 18-36" in height. Lower leaves on the stem are 2" to 4" wide while upper leaves are narrower. The flowers are cone shaped and about ¼" to ½" in diameter. They are pink to lavender in color and are located on the tips of the branch. Russian knapweed will grow in cultivated fields, fence rows, roadsides, and along ditch banks.

Bur ragweed

Bur ragweed occurs in moist places of fields, rangeland, and roadsides. This is an erect plant 1' to 2' high, bushy, and usually branching from the base and covered with fine wooly hairs. Bur ragweed is purplish-white in appearance. Leaves are a dusty white color, and the end segment of the leaves is much larger than the other segments. The flowers on the plant are yellowish-green and the fruit produced is bur like 11/2mm to 2mm long with spines protruding.

Hoary cress

Hoary cress lives in a wide variety of environmental conditions. It grows in waste places, cultivated fields, and pastures most typically. The stem of the plant can grow up to 3' tall. Leaves are grayish-green up to 4" long and shaped like arrowheads. The flowers are white with 4 petals ¼" across. These dense flower clusters are visible in April and May. Hoary cress is also called "White top".

Canada thistle

Canada thistle infests crops, pastures, rangeland, roadsides, and non crop areas. This plant has an erect stem 11/2' to 4' tall. The stems are branched, and slightly hairy. Leaves are lance shaped with spiny toothed margins. Rose-purple, lavender, or sometimes white flowers occur from June through October and are in round umbrella shaped clusters. The fruit of the Canada thistle are 1" to 11/2" long and are called achenes.

Bull thistle

Bull thistle will invade almost any type of disturbed area, such as forests, clear cuts, and pastures. The plants tall spiny stems can reach up to 7" tall. Leaves are lance shaped, hairy and can be from 3" to 12" in length. The flower heads are purple, 11/2" to 2" in diameter and 1" to 2" in length, and spine tipped. This plant is often mistaken for musk thistle.

Quack grass

Quack grass is a common pest of crops, turf-grass, lawns, nurseries, and landscapes. The plant develops as a dense mat of underground stems. The stems can grow 1' to 3" tall. Leaves are bright green and are approximately 11/2" to 12" long. The upper surfaces of the leaves may or may not have hair, but the lower leaf surfaces will be hairless. Quack grass has a long narrow spike for a seed-head. The spikes range from 2" to 8" in length.

Leafy spurge

Leafy spurge invades disturbed sites, prairies, savannas, pastures, abandoned fields, and roadside areas. This is an erect branching plant 2' to 3-1/2' tall with smooth stems. Stems usually occur in clusters. Leaves are small, oval to lance shaped. The flowers of leafy spurge are yellowish-green in color and bloom in clusters. Identifying characteristic of this plant is it contains a milky white sap.

Pignut

Pignut is an herb with stems that reach 8" to 12" in length. At the base of the stems are a tuft of leaves. The leaves on the plant are 3" to 5" long with characteristic glandular dots. The flowers on Pignut are yellow, or orange-red and about ½" long.

Kudzu

The preferred habitat of Kudzu is forest edges, abandoned fields, roadsides and disturbed areas where there is a lot of sunlight. This plant is a semi woody climbing vine. The leaflets on the vine are dark green and up to 4" across. Flowers on Kudzu are about ½" long, purple, highly fragrant, and hang in clusters. Flowering occurs in late summer and is followed by production of brown, hairy, flattened, seed pods.

Section XXII. - Definitions

For the purpose of this document the subsequent terms have the following definitions.

IPM – A system of controlling nuisance wildlife that uses a combination of methods to maximize the effectiveness of control, while minimizing pesticide applications and the potential hazards associated with their use. IPM offers park district management and staff a way of managing parks without depending on pesticides, which in turn provides a safer place for people to enjoy the outdoors, improves the health and vitality of the park's ecosystem, and ultimately reduces maintenance needs and costs.

IPM Coordinator – Existing staff member put in charge of pesticide applicators for each department, as well as contracted pesticide applicators. In charge of all dealings with pesticide application and pesticide training for each department.

IPM Committee – Committee made up of 3 to 5 individuals that will oversee the work done by the IPM Coordinator.

Governing Body – This group will consist of the City Commission. They will grant support for IPM progress, as well as gather public input for consideration.

EPA – The Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

Long-term IPM methods – Improving site conditions is the base of a successful IPM program. By modifying the soil, landscaping, and maintenance methods, plant health and pest resistance can be significantly improved, which leads to a higher level of pest tolerance and decreases the need for pest control activities.

IPM report – This is an overall summary created by the IPM coordinator and the IPM committee of that years IPM program. This report will also contain any emergency treatments and an explanation of why they were necessary.

Pest – Living organisms that occur where they are not wanted or that cause damage to crops, humans or other animals. Examples include insects, mice and other animals, unwanted plants (weeds), fungi, and microorganisms.

Pesticide – Any substance or mixture of substances that is assigned to any Toxicity Category of the U.S. Environmental Protection Agency and that is used to for defoliating or desiccating plants, regulating plant growth, or for preventing, destroying, repelling, or mitigating any pest. Pesticides include, but are not limited to, herbicides, fungicides, and insecticides.

Active ingredient – In any pesticide product, it is the component that kills, or otherwise controls, target pests. Pesticides are regulated primarily on the basis of active ingredients.

Applicator – Actual individual spraying the pesticide.

Licensed Commercial Applicator – An individual who possesses the proper training and licensing to apply pesticides or supervise pesticide application.

Pesticide zones – Areas in individual City parks designated by what types of pesticides are sprayed there.

Green Zone – Area inside each individual park where pesticides are not applied without an exemption being granted.

Yellow Zone – Area inside each individual park where pesticides labeled by the EPA with a caution label are used to control pests.

Organic products – Products created from natural materials to assist in the control of pest populations. Examples include, but not limited to, vinegar, flame torch, and orange extract.

Biological control - The use of animals and organisms that eat, kill or out- compete pests.

Natural pest control - Creating habitat for natural predators of pests.

Cultural pest control - Maintaining the site in a way to discourage pests.

Mechanical pest control – Removing the pest by hand or machine.

Chemical pest control – The use of one or more pesticides.

Noxious weeds – Plants that are aggressive growing, multiply quickly and adversely affect desirable plants, or are somehow injurious to livestock or humans either by contact or when ingested.

Action Threshold – The number of pests in a given area that are acceptable before action is taken.

Park Land – Land owned by the City of Lawrence that the committee has chosen to include in this preliminary IPM manual. The land chosen has excluded most right of way locations as well as the golf course.

Low traffic areas – Areas of park land or right of way property that are less populated with a public presence on a day-to-day basis than other areas.

Seasonal Worker – Those individuals hired by the Parks and Recreation Department to work only during certain times of the year.

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TABLE A*

EPA Toxicity Pesticide Categories and Label Signal Words

EPA Hazard Category	**I**	**II**	**III**	**IV**
Toxicity	**Highly Toxic**	**Moderate Toxicity**	**Low Toxicity**	**Very Low Toxicity**
Signal Word	**Danger / Danger Poison**	**Warning**	**Caution**	**Keep out of reach of children Caution (optional)**
Oral LD50 (mg/kg of body weight)	Less than 50	Between 50 and 500	Between 500 and 5000	More than 5000
Inhalation LC50 (mg/liter of air)	Less than .02	Between 0.2 and 2	Between 2 and 20	More than 20
Dermal LD50 (mg/kg of body weight)	Less than 200	Between 200 and 2,000	Between 2,000 and 20,000	More than 20,000
Eye Effects:	Corrosive Non-reversible opacity	Severe irritation Reversible opacity persisting 7 days	Moderate irritation No opacity Reversible 7 days	No irritation
Skin Effects:	Corrosive	Severe irritation	Moderate irritation	Mild irritation

*Information & Reference Source:
National Pesticide Information Center, http://npic.orst.edu

TABLE B
Allowed Pesticide List 2008

Signal Word	*Trade/Product Name*	*Common Name/Active Ingredient*	*Type*
Caution	**Armicarb 100**	Potassium Bicarbonate	Fungicide
Caution	**Cleary's 3336F**	Thiophanate-methyl	Fungicide
Caution	**Merit 0.5G**	Imidacloprid	Insecticide
Caution	**Dylox**	Trichlorfon	Insecticide
Keep out of reach of Children	**RTU Safer Brand Insecticidal Soap**	Potassium salt of fatty acid	Insecticide
Caution	**Omni Oil 6E**	petroleum oil parafin base	Insecticide/ Miticide
Caution	**Azatrol**	Azadirachtin --Neem Oil	Insecticide/Miticide
Caution	**Conserve SC**	spinosad	Insecticide
Caution	**DeltaGard**	Deltamethrin	Insecticide
Caution	**Floramite SC**	Bibenazate	Miticide
Caution	**Hexygon DF**	Hexythiazox	Miticide
Caution	**Dimension**	Dithlopyr	Herbicide
Caution	**PowerZone**	carfentrazone-ethyl & MCPA, 2-ethylhexyl ester & Mecoprop acid & Dicamba Acid	Herbicide
Caution	**Dismiss**	Sulfentrazone	Herbicide
Caution	**Primo Maxx**	Trinexapac-ethyl	Herbicide
Caution	**5% Treflan**	trifluralin	Herbicide
Caution	**Snapshot 2.5TG**	trifluralin & isoxaben	Herbicide
Caution	**XL 2G**	benefin & Oryzalin	Herbicide
Caution	**Surflan A. S.**	Oryzalin	Herbicide
Caution	**Pennant MAGNUM®**	S-metolachlor	Herbicide
Caution	**Ornamec**	fluasiflop-P-butyl	Herbicide
Caution	**Sedge Hammer**	Halosufuron-methyl	Herbicide
Caution	**Sucker Stopper**	ethyl 1-napthalenacetate	Herbicide
Caution	**Remedy**	triclopyr	Herbicide
Caution	**Tordon RTU**	picloram & 2,4-D	Herbicide
Exempt	**Propane**	Propane torch method	Herbicide
Caution	**Nature's Avenger**	d-limonene	Herbicide
Caution	**Round Up Pro**	Glyphosate	Herbicide
Caution	**Mole Killer**	Bromethalin	Rodenticide
Caution	**DyneAmic**	modified vegtable oil and organosilicone surfacnt blend	Additive
Caution	**Water Wetter**	Alkyl Phenol Ethoxylate	Additive