City of Lawrence

Parks and Recreation

IPM Policy Manual

August 5, 2008

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Section I. - Preamble

On March 29, 2005, the City Commission, Lawrence Parks and Recreation Department and local citizens began development of a pesticide reduction plan for the city's parks. One high-profile park, Buford Watson, Jr. Park, was selected for management as pesticide-free. In addition to this park, 33 other lower profile city parks were also classified as pesticide-free. Simultaneously, Category I and II pesticides were eliminated from the Parks and Recreation's product list, allowing the purchase of only category III and IV pesticides. This product list of pesticides was consolidated throughout the department and made available to the public. A number of alternative products were also purchased and tracked for their effectiveness and comparative costs. 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. While this program helped staff gain a better understanding of the increased workload it also highlighted necessary budget adjustments for maintaining park properties without the use of pesticides. Initially, local volunteers were used to assist with the added work load associated with the reduction of pesticides. Reliable volunteers can be a key component in assisting with an increased workload. A successful volunteer program requires volunteers to be available on a consistent basis. In the three years that Buford Watson, Jr. Park has been managed as pesticide-free, volunteer hours have diminished from 73 hours in 2005 to 20 hours in 2008. Continued management of this high-profile property as pesticide free without volunteers and budgetary assistance is challenging.

The City of Lawrence Parks and Recreation Department has developed an Integrated Pest Management Policy that replicates programs from other municipalities to achieve the goals outlined by the Lawrence City Commission. **Integrated Pest Management (IPM)** is an ecological approach to pest management designed to prevent and control undesirable weeds, insects, fungi, and rodents. IPM relies on the use of site-specific information about environmental conditions and the dynamics of human characteristics and activities, as well as pest biology and behavior to prevent, resist, and control pests that interfere with the purpose and use of a particular site. When a pest has exceeded a predetermined threshold at a particular site, all appropriate pest control strategies are employed including cultural, biological, mechanical, and chemical controls as a last resort, within the guidelines of this policy. When staff monitoring of a site discovers a pest problem and determines it to be above the threshold level, IPM implements the use of biological 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 only 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. These tactics can be effective in certain situations, but are more time consuming and subject to other environmental factors outside of staff control.

IPM offers park 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 other city maintained areas not designated as parks or future parks and Eagle Bend Golf Course.

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 impact to the environment, and the health of the public and city staff. The following IPM policy describes the department's goals and explains how they will be achieved.

Section III. – Proactive Goals 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.

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.
- Identify locations where pesticides are currently applied.
- Minimize the risk of pesticides to human health or environmental risks by:
    - A.) Encouraging the use of effective, less-hazardous pest reduction alternatives.
    - B.) Reducing the Parks and Recreation pesticide products list.
    - C.) Decrease the use of pesticides.
    - D.) Promote responsible application to reduce non target adverse effects on staff, public, and natural resources.
- Learn about plants and pests to establish an action threshold of pest tolerance at park sites.
- Conduct on-going training for staff to address risk and safety factors (protective equipment, signage, and weather conditions), new pest control methods, and other pest management practices.
- Establish consistent written documentation of pest activities and control action 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.
- Produce estimates of budgetary adjustments to be made for IPM and pesticide reduction (i.e. staffing, bed modification, and training).
- Create a consistent public notification procedure on when and where pesticides are applied.

Section IV. - City Parks

The City of Lawrence Parks and Recreation Department manages 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 chipped playground and park shelter 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 as 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. An 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.

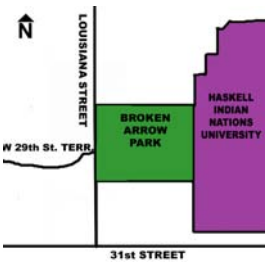
Athletic field turf requirements are different than those of Parks and Cemeteries. Different species of grass, high use along with different mowing heights required for play make these turf areas prone to weed development, diseases and insects. Herbicides are applied to control both annual and perennial 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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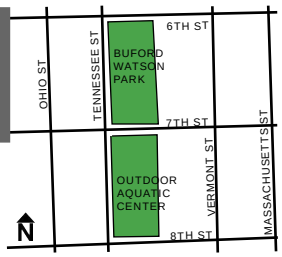
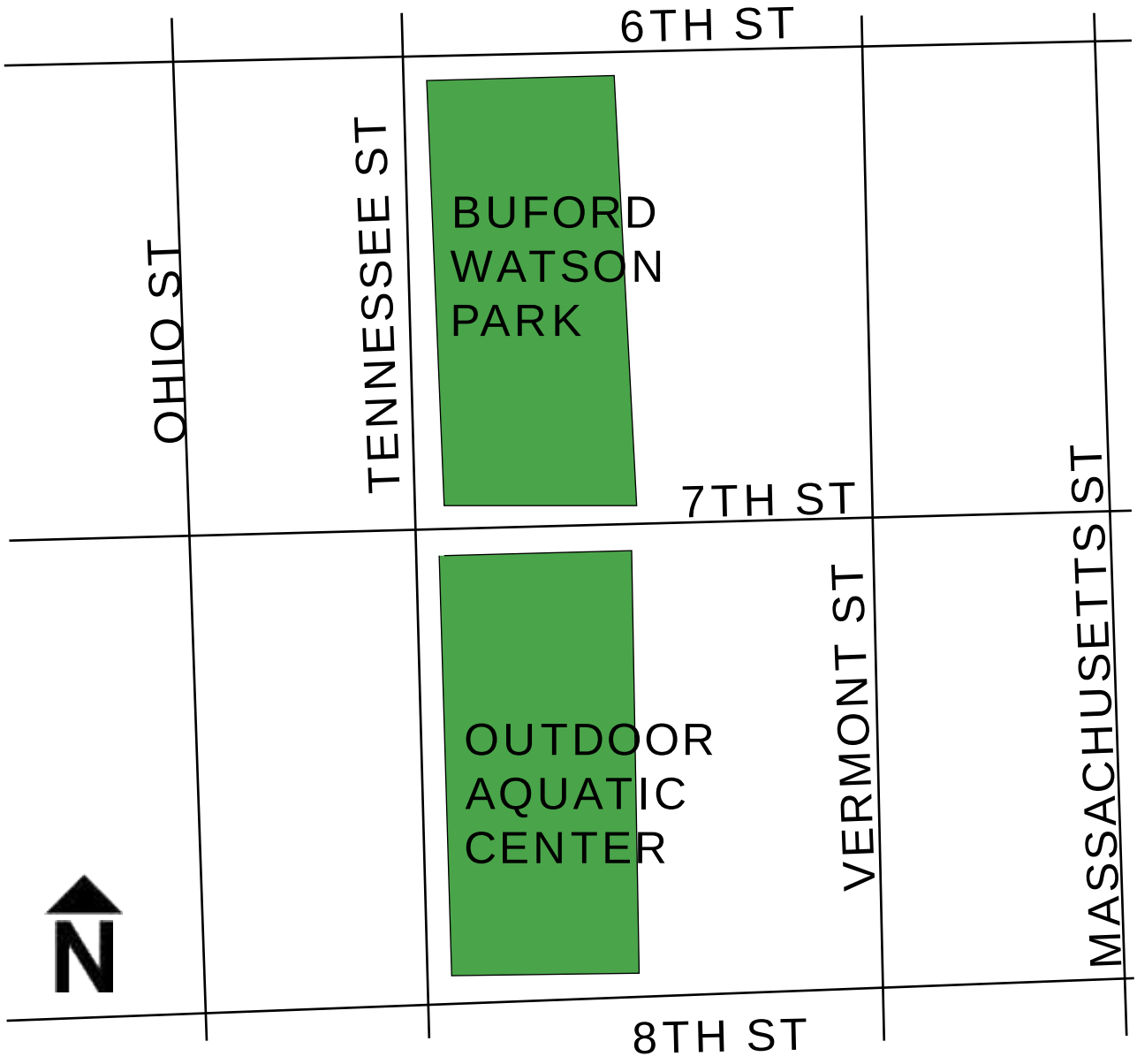
Buford Watson Park (See Additional Pages for Images)

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





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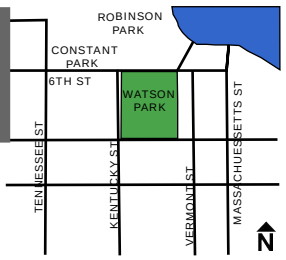
Buford Watson Park (detail 1)



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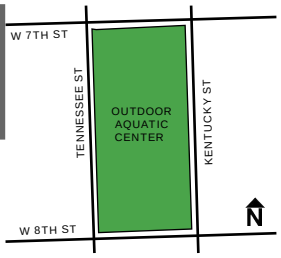
B uford Watson Park (detail 2)



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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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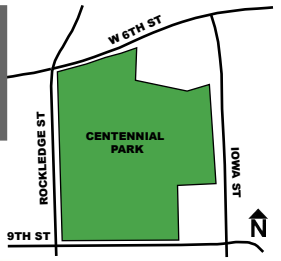
Centennial Park

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

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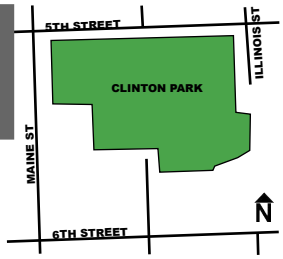
Clinton Park



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

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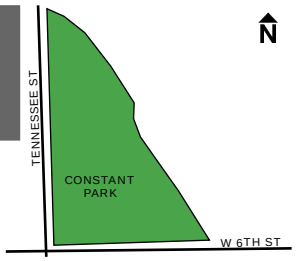
Constant Park

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



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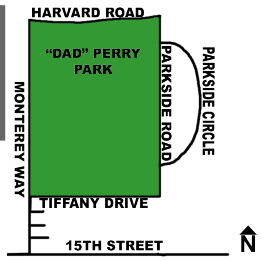
Dad Perry Park

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



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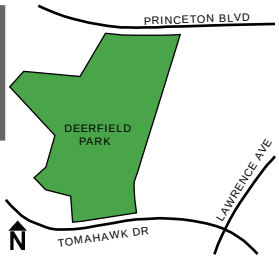
Deerfield Park

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



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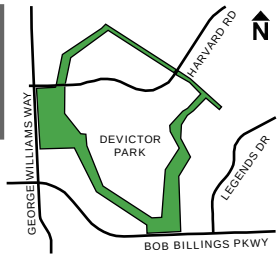
Devictor Park

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

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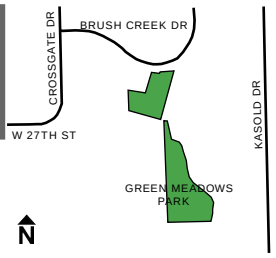
Green Meadows Park

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



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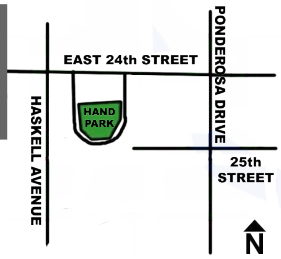
Hand Park

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



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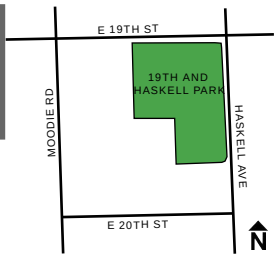
Haskell Park

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



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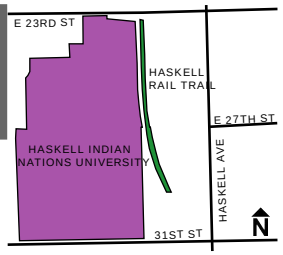
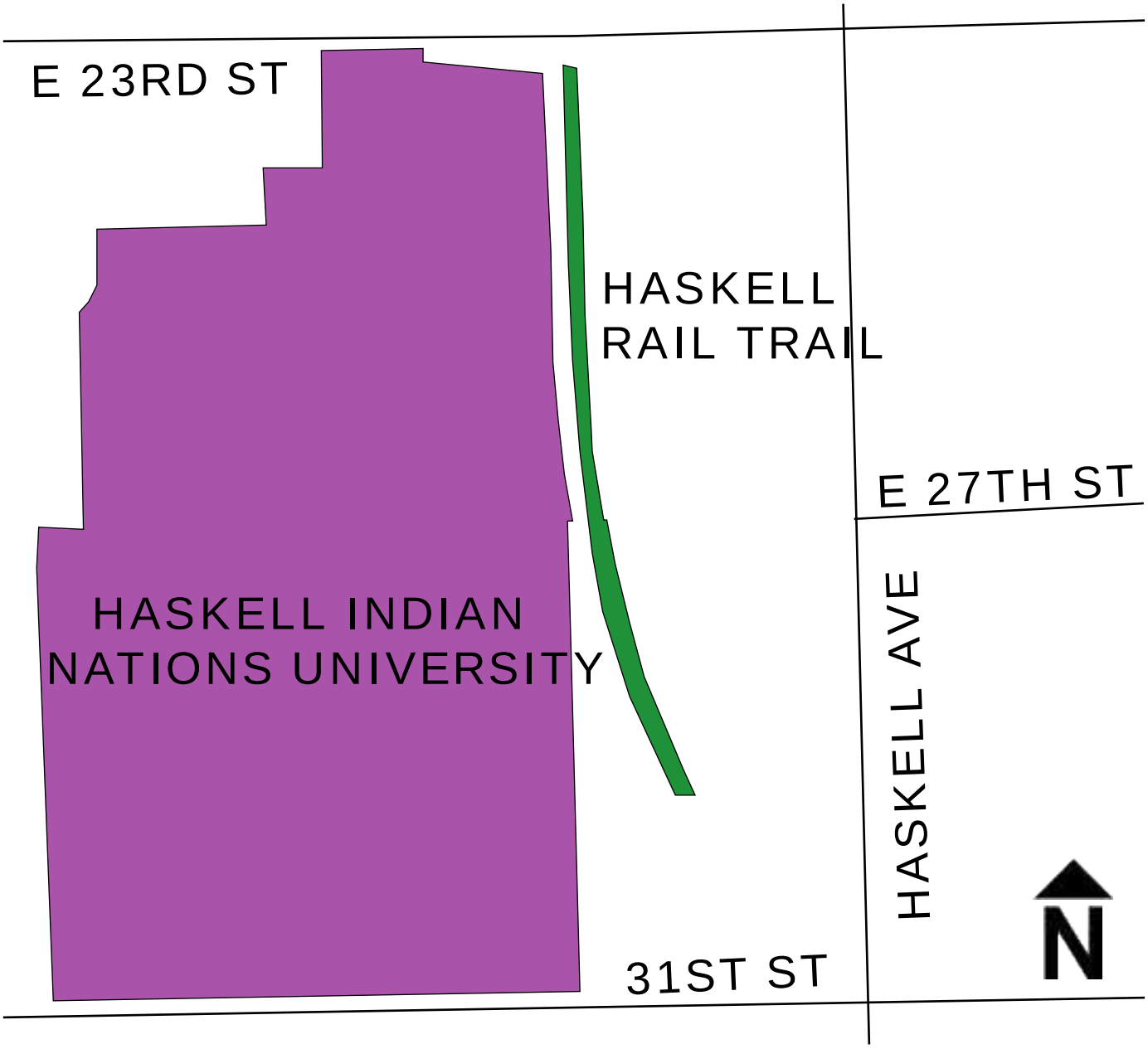
Haskell Rail Trail (See Additional Pages for Images)

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





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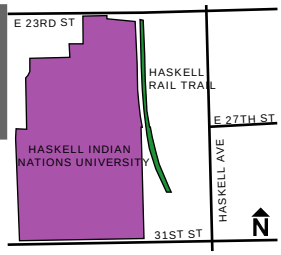
Haskell Rail Trail (detail 1)



23rd street

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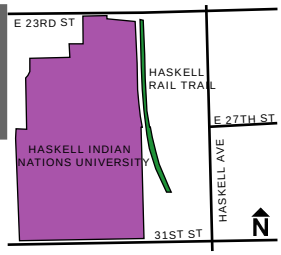
Haskell Rail Trail (detail 2)



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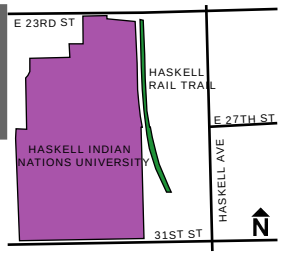
Haskell Rail Trail (detail 3)



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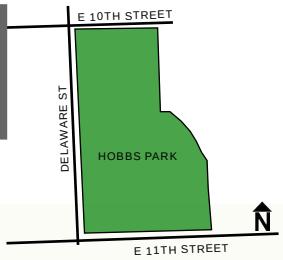
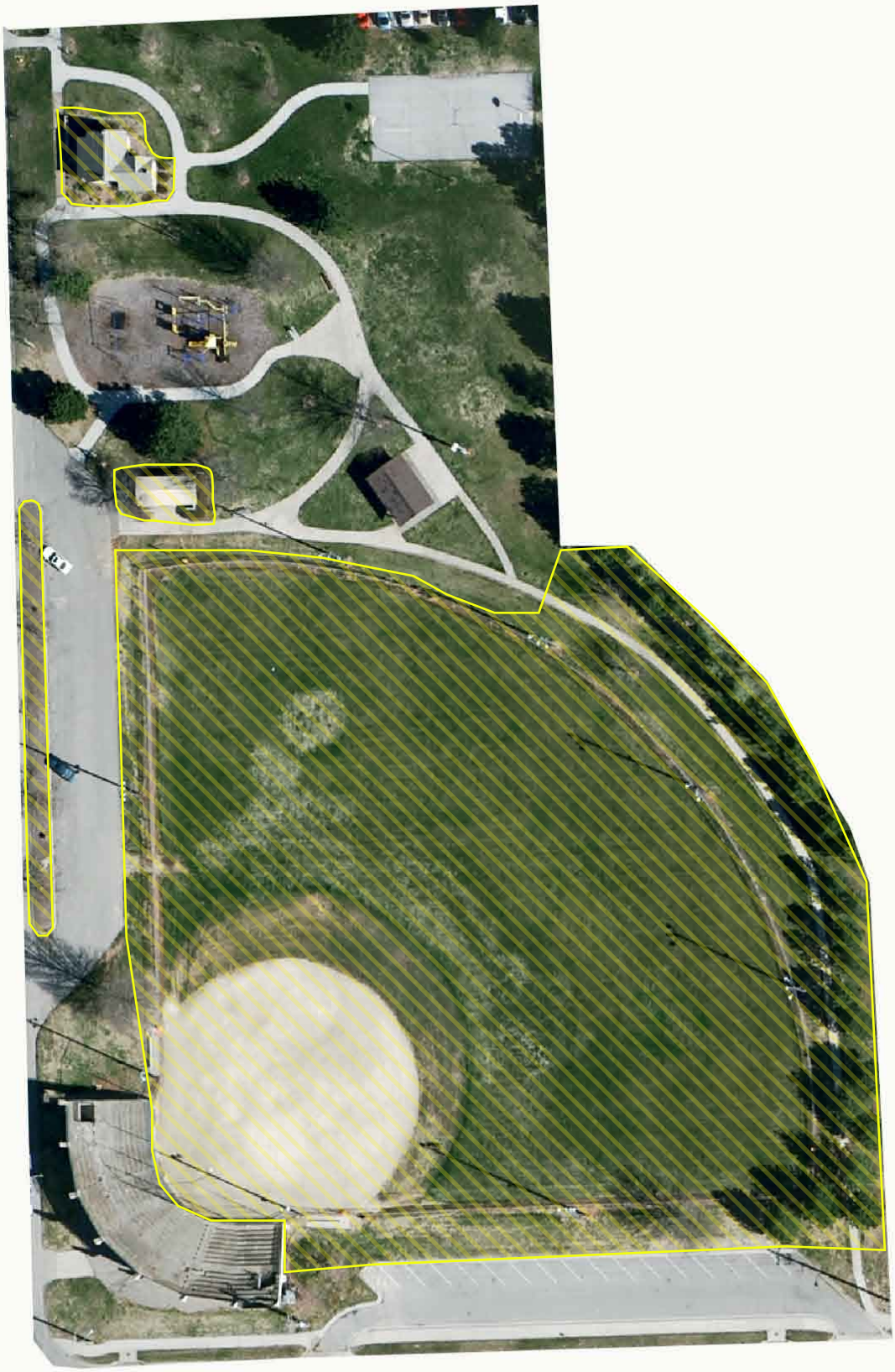
Hobbs Park

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





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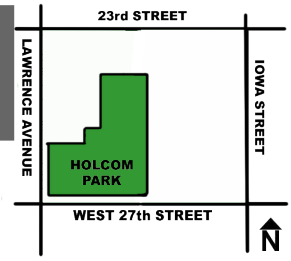
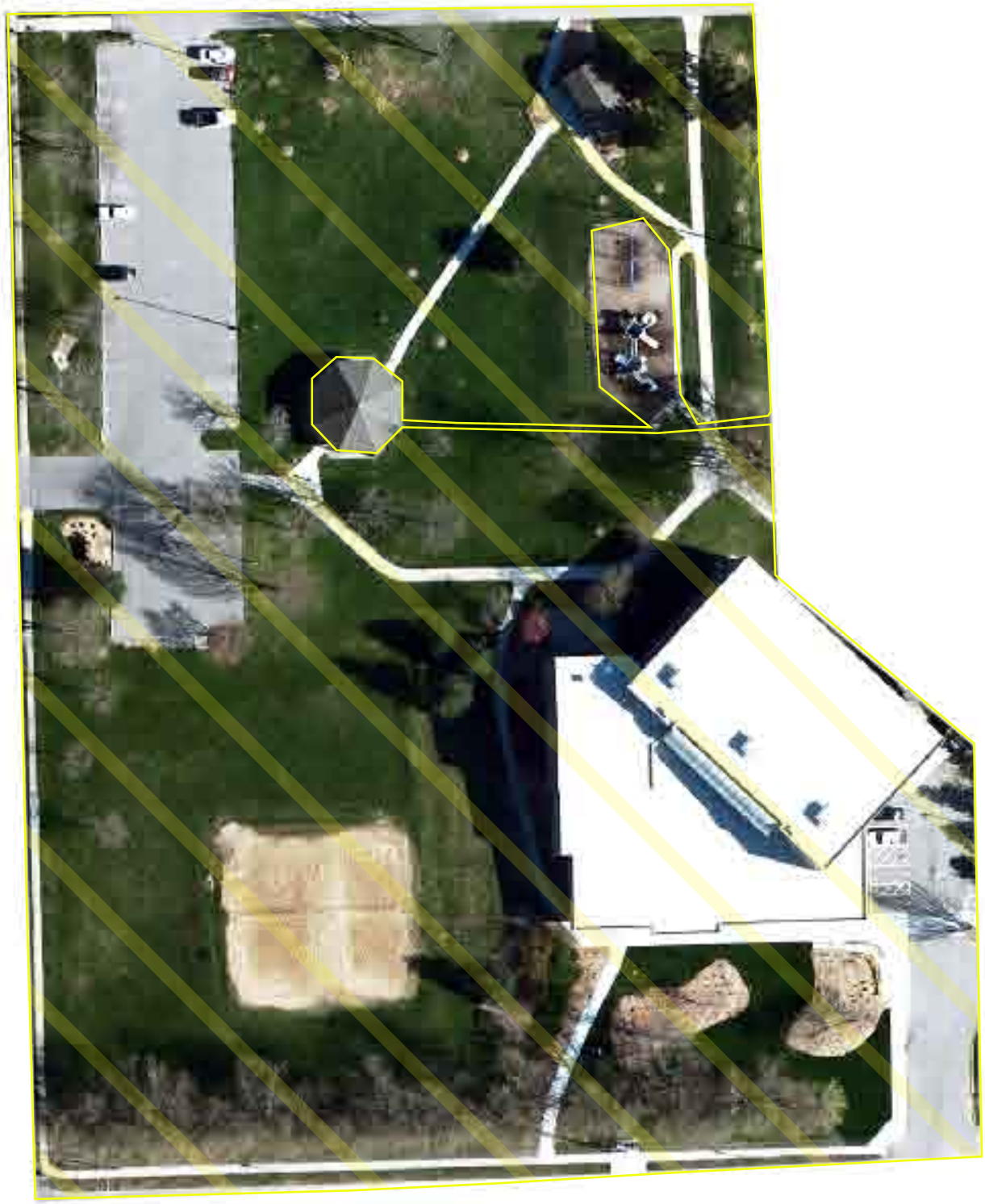
Holcom Park

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





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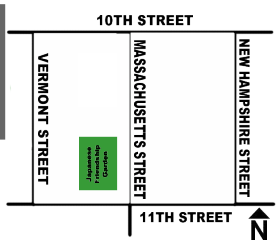
Japanese Friendship Garden



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

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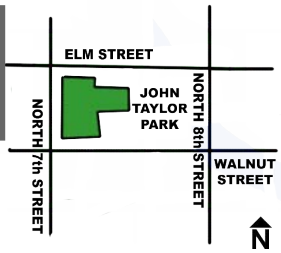
John Taylor Park

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



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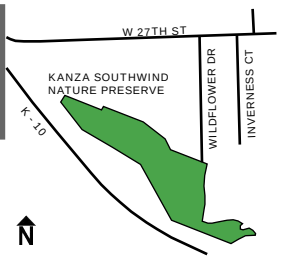
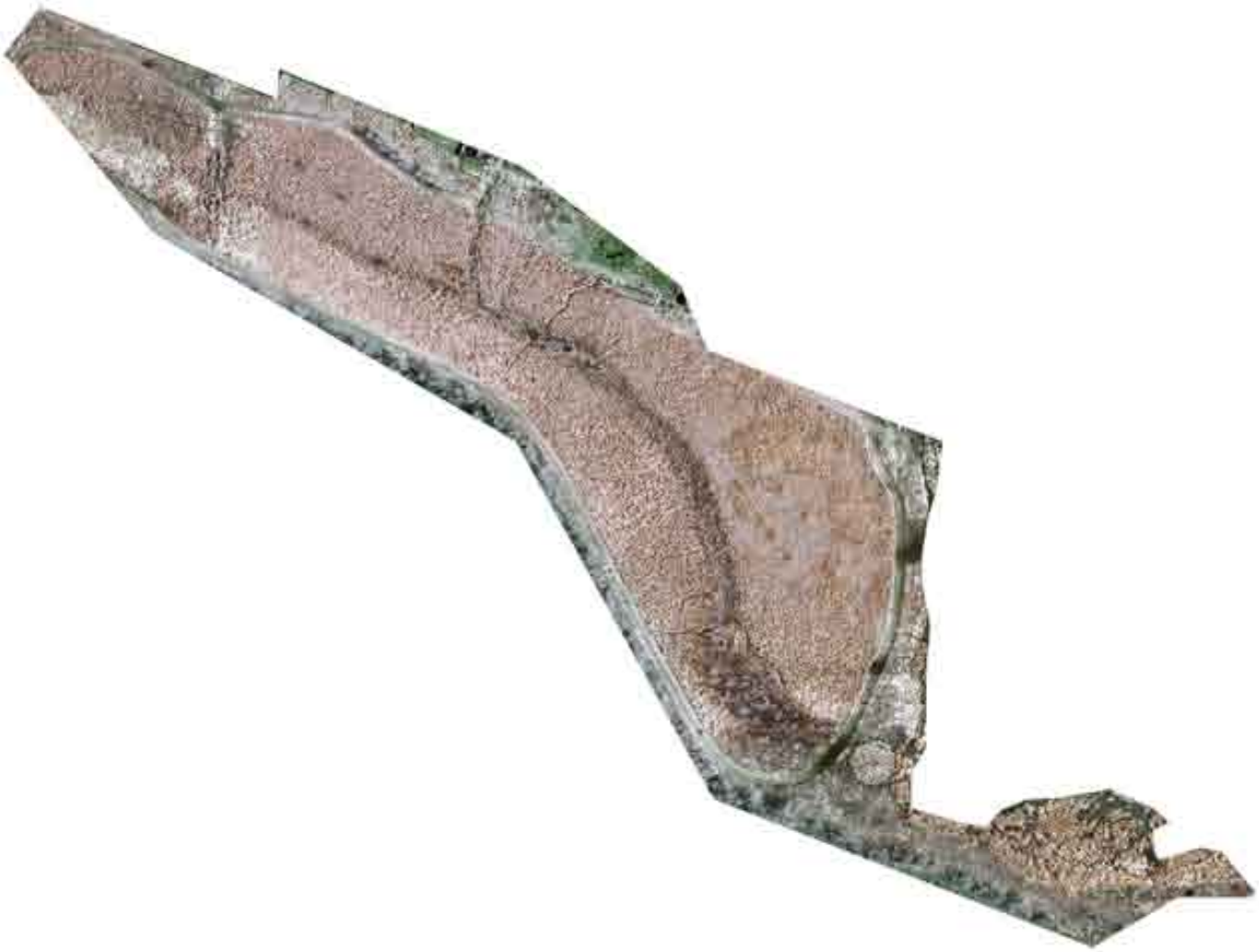
Kanza Southwind Nature Preserve Park



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



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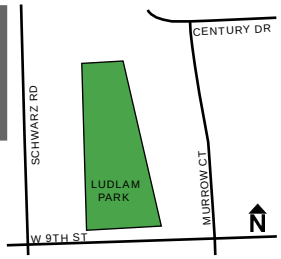
Ludlam Park

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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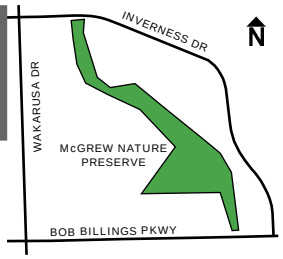
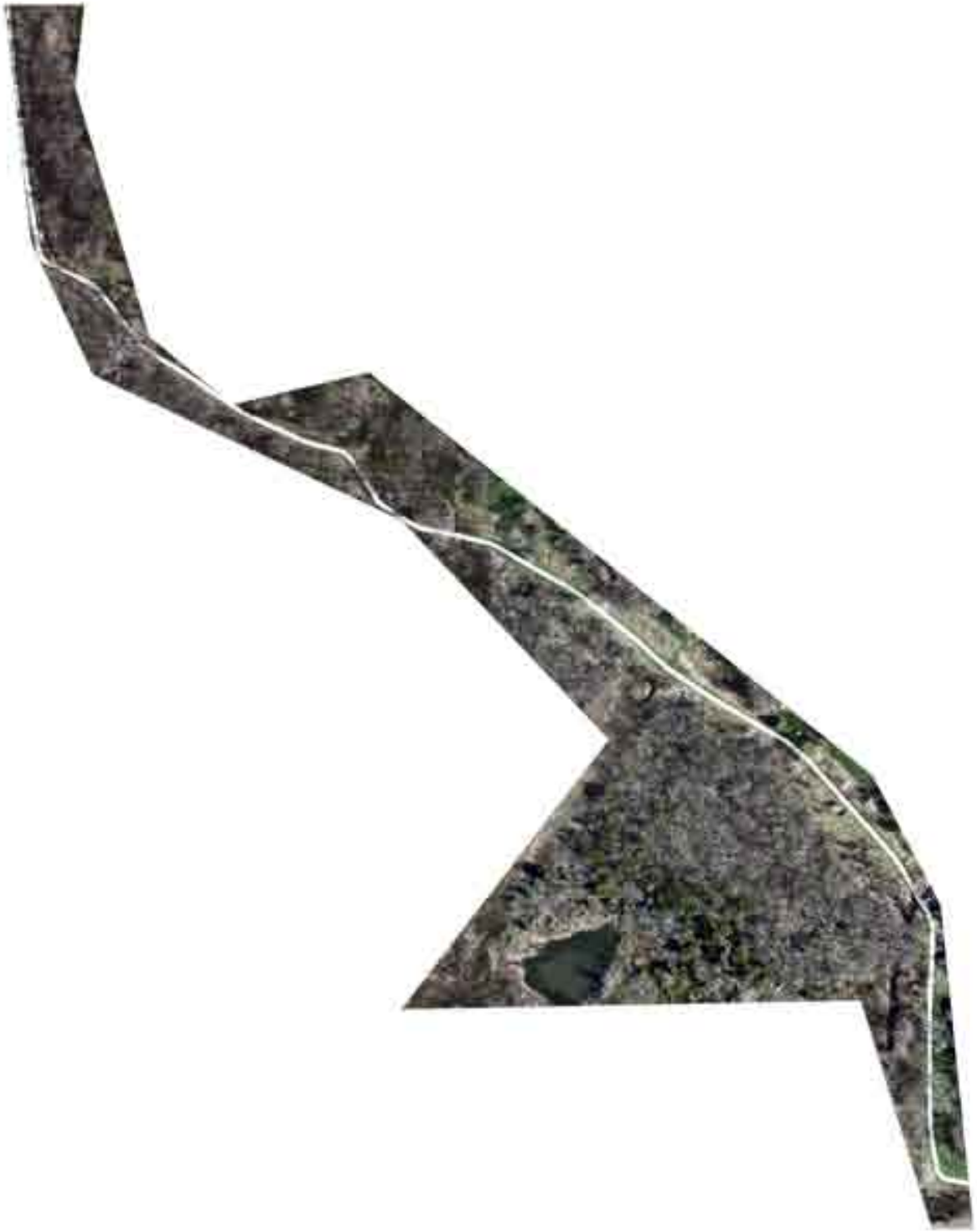
McGrew Nature Preserve

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





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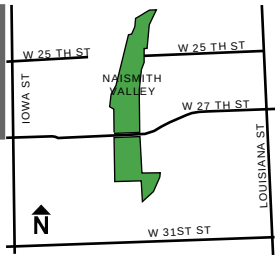
Naismith Valley Park



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

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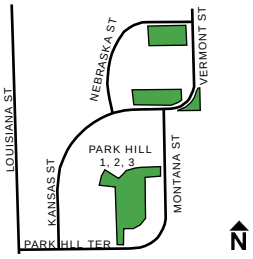
Park Hill Park

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



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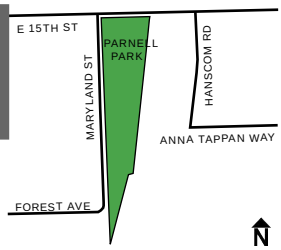
Parnell Park

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



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Pat Dawson Billings Nature Peserve

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

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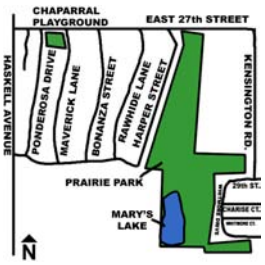
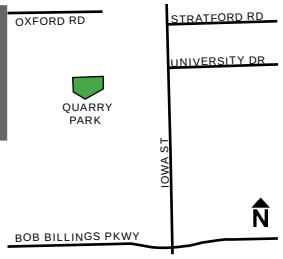
Prairie Park

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

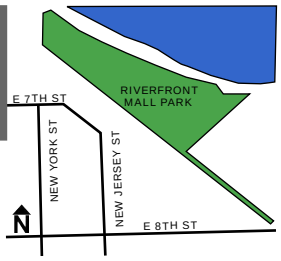
Quarry Park



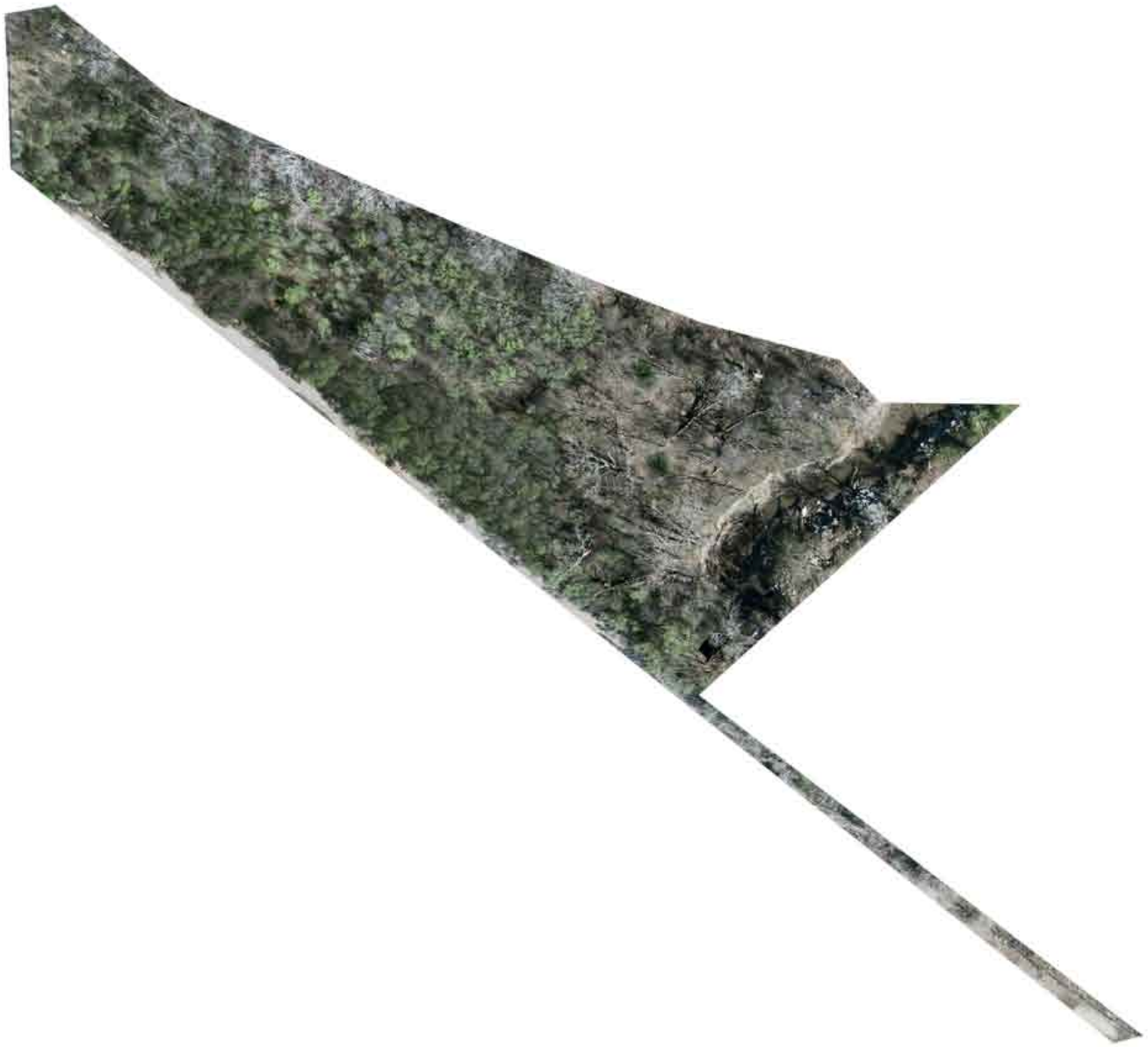
Green Zone: 100% - .7 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: .7 acres

City of Lawrence
PARKS AND RECREATION

Riverfront Mall Park



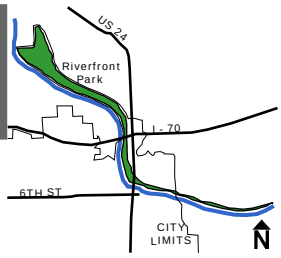
Green Zone: 100% - 6 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 6 acres

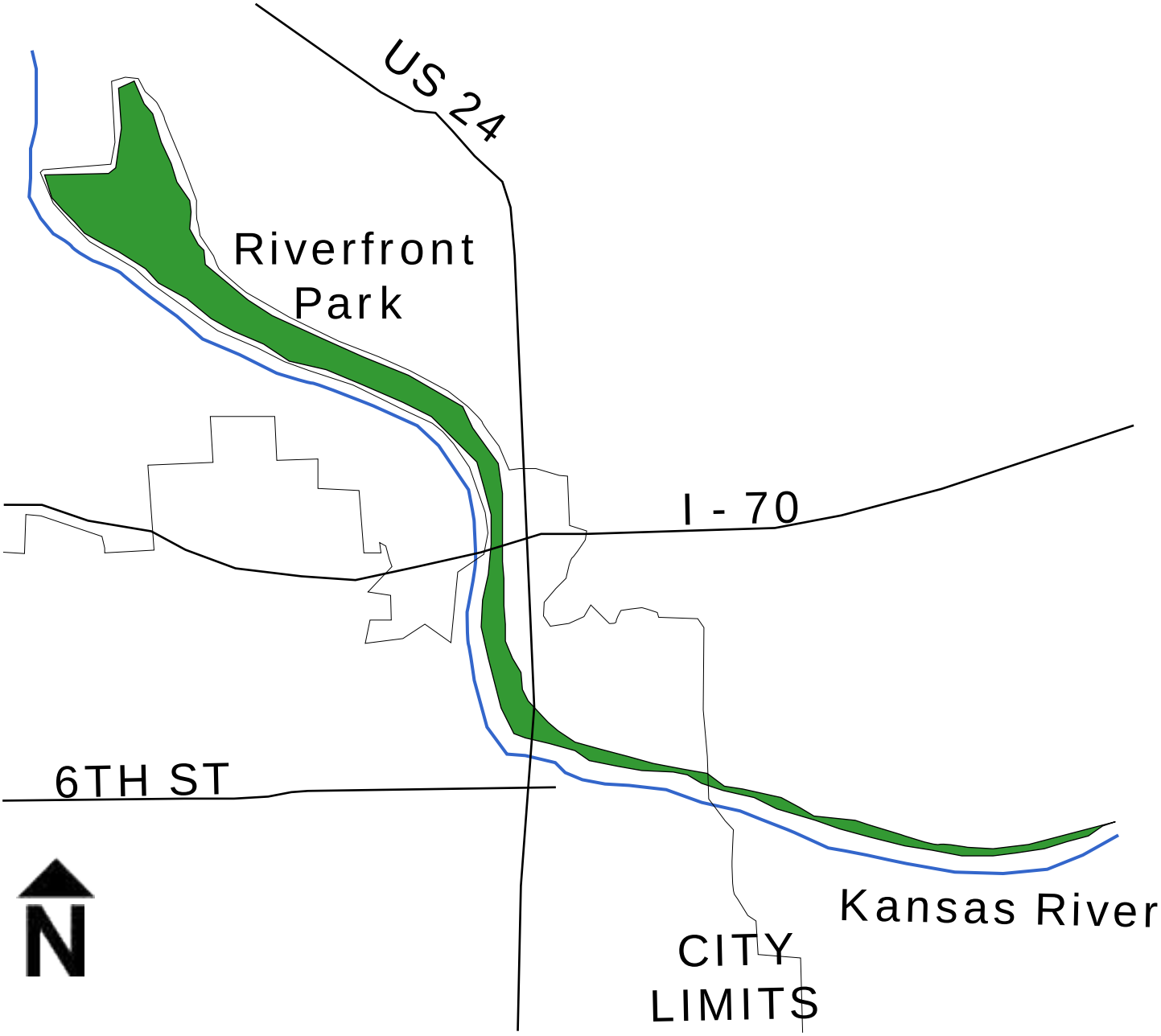


City of Lawrence
PARKS AND RECREATION

Riverfront Park (see additional pages for images)

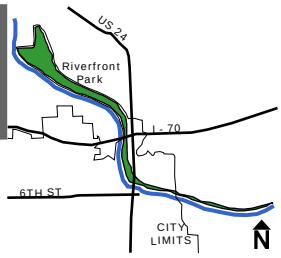
Green Zone: 96% - 815 acres
Yellow Zone: 4% - 30 acres
Total Acreage of Park: 845 acres

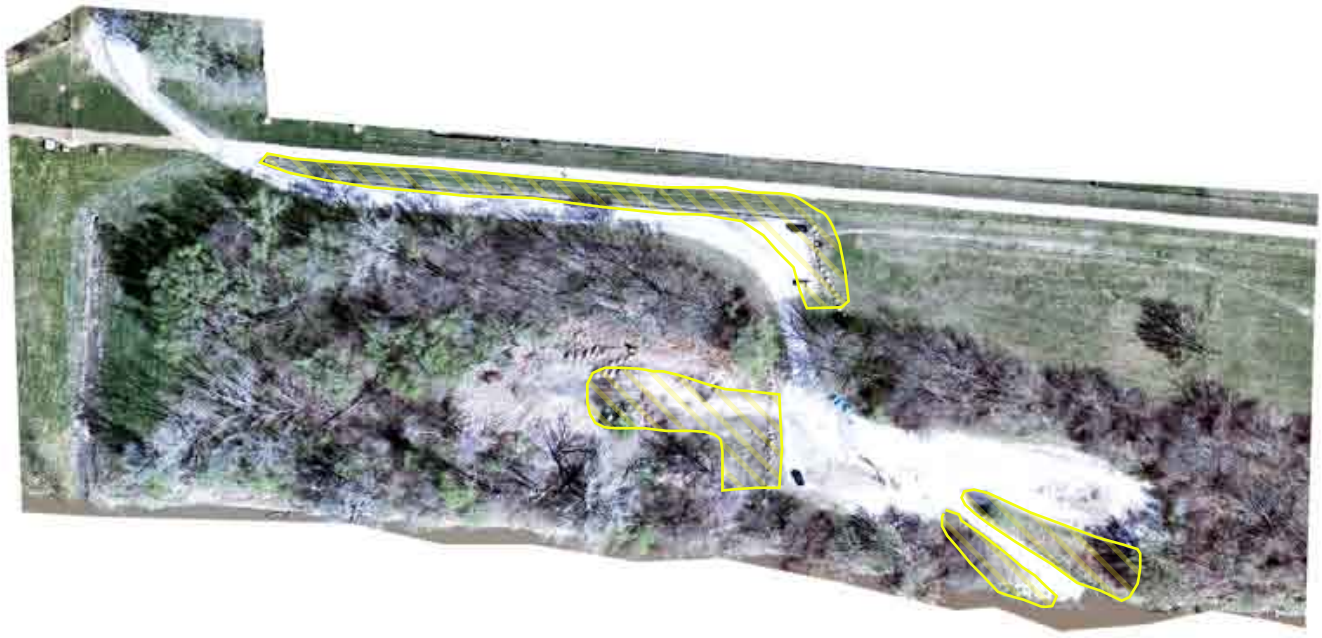




City of Lawrence
PARKS AND RECREATION

Riverfront Park: 8th & Oak (detail 1)



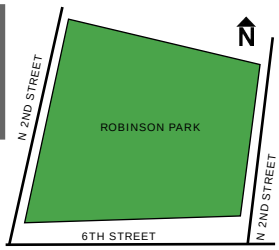


City of Lawrence
PARKS AND RECREATION

Riverfront Park Frisbee Golf Area (detail 2)

City of Lawrence
PARKS AND RECREATION

Robinson Park

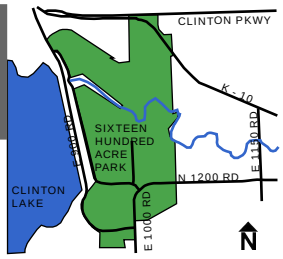


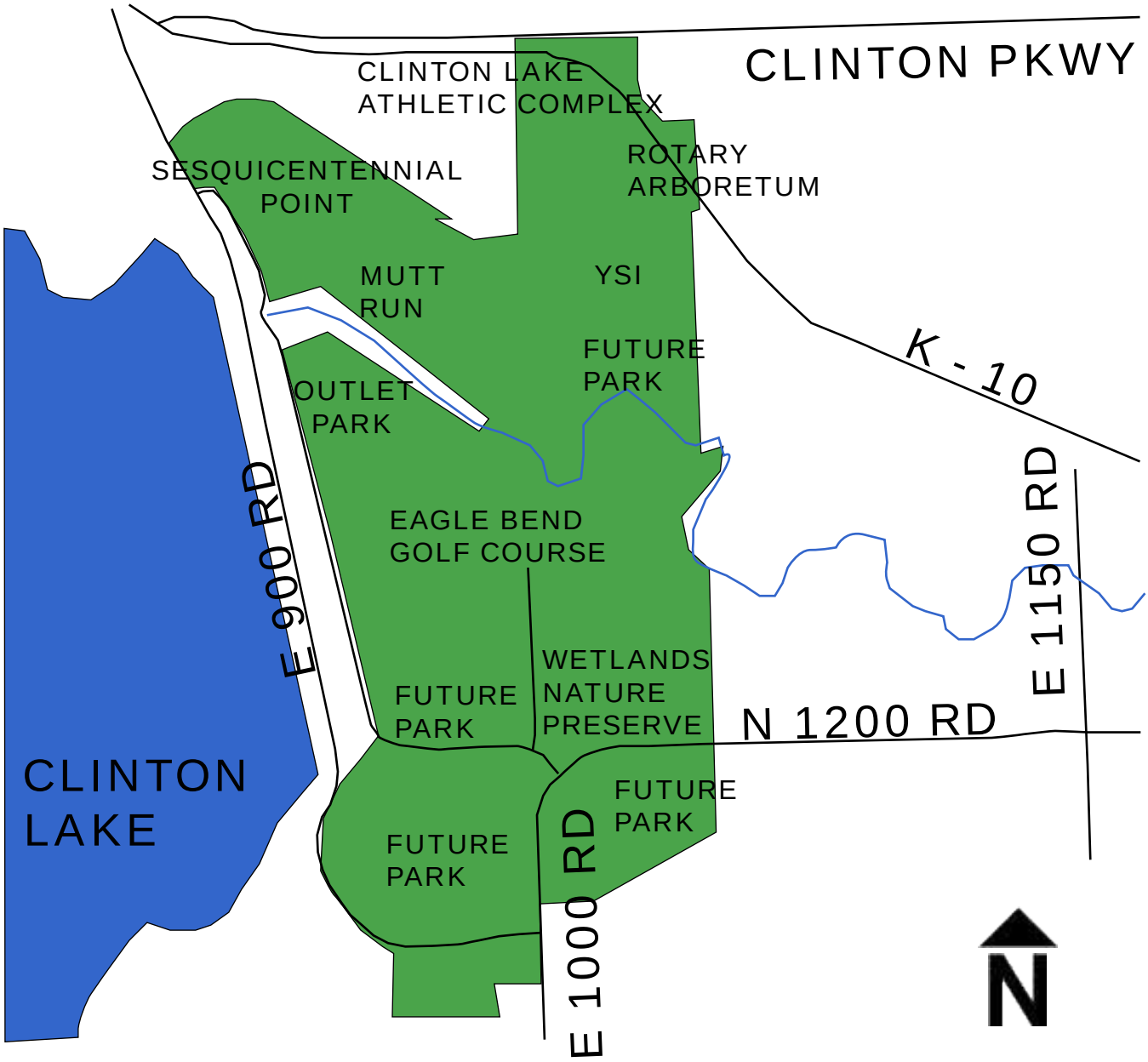
Green Zone: 0% - 0 acres
Yellow Zone: 100% - .8 acres
Total Acreage of Park: .8 acres

City of Lawrence
PARKS AND RECREATION

Sixteen Hundred Acre Park (see additional pages for images)

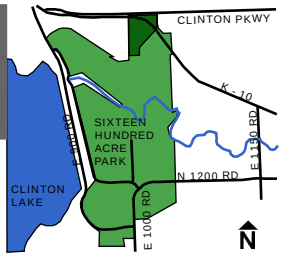
Green Zone: 71.7% - 1148 acres
Yellow Zone: 28.3% - 452 acres
Total Acreage of Park: 1600 acres





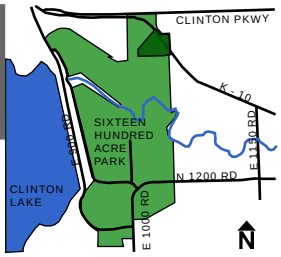
City of Lawrence
PARKS AND RECREATION

Sixteen Hundred Acre Park (Clinton Lake Athletic Complex)



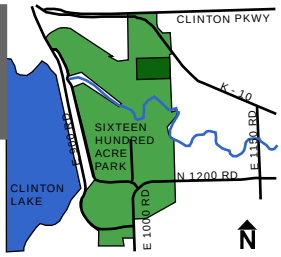
City of Lawrence
PARKS AND RECREATION

Sixteen Hundred Acre Park (Rotary Arboretum)



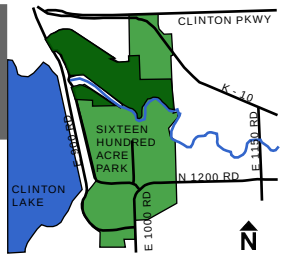
City of Lawrence
PARKS AND RECREATION

Sixteen Hundred Acre Park (YSI Athletic Complex)



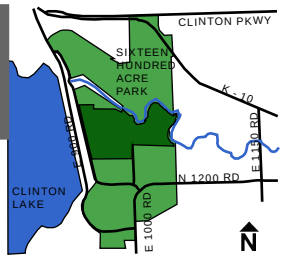
City of Lawrence
PARKS AND RECREATION

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



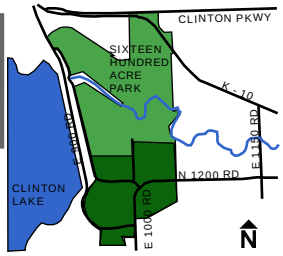
City of Lawrence
PARKS AND RECREATION

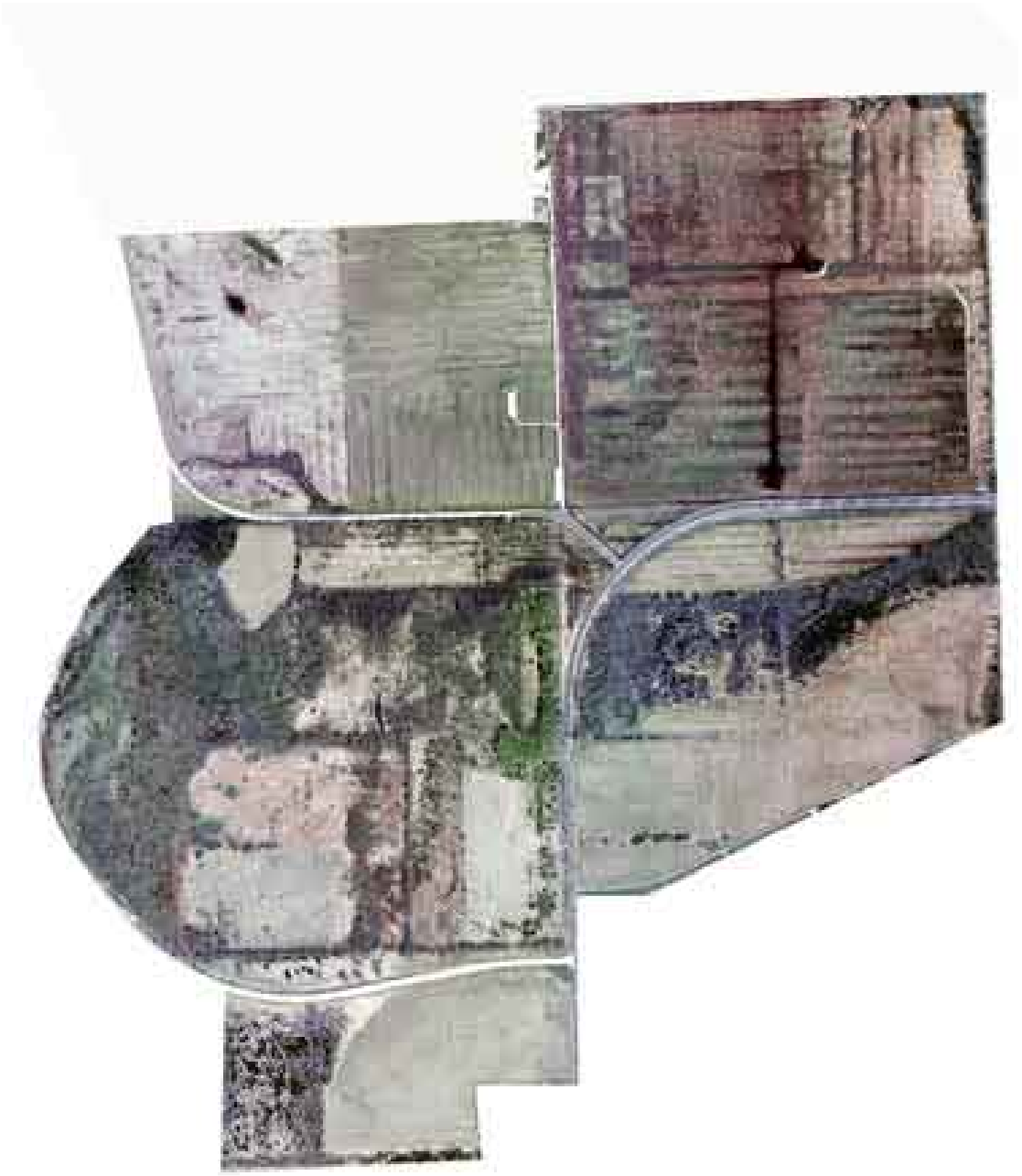
Sixteen Hundred Acre Park (Eagle Bend Golf Course)



City of Lawrence
PARKS AND RECREATION

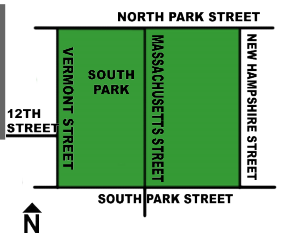
Sixteen Hundred Acre Park (Future Parks, Wetlands Preserve)



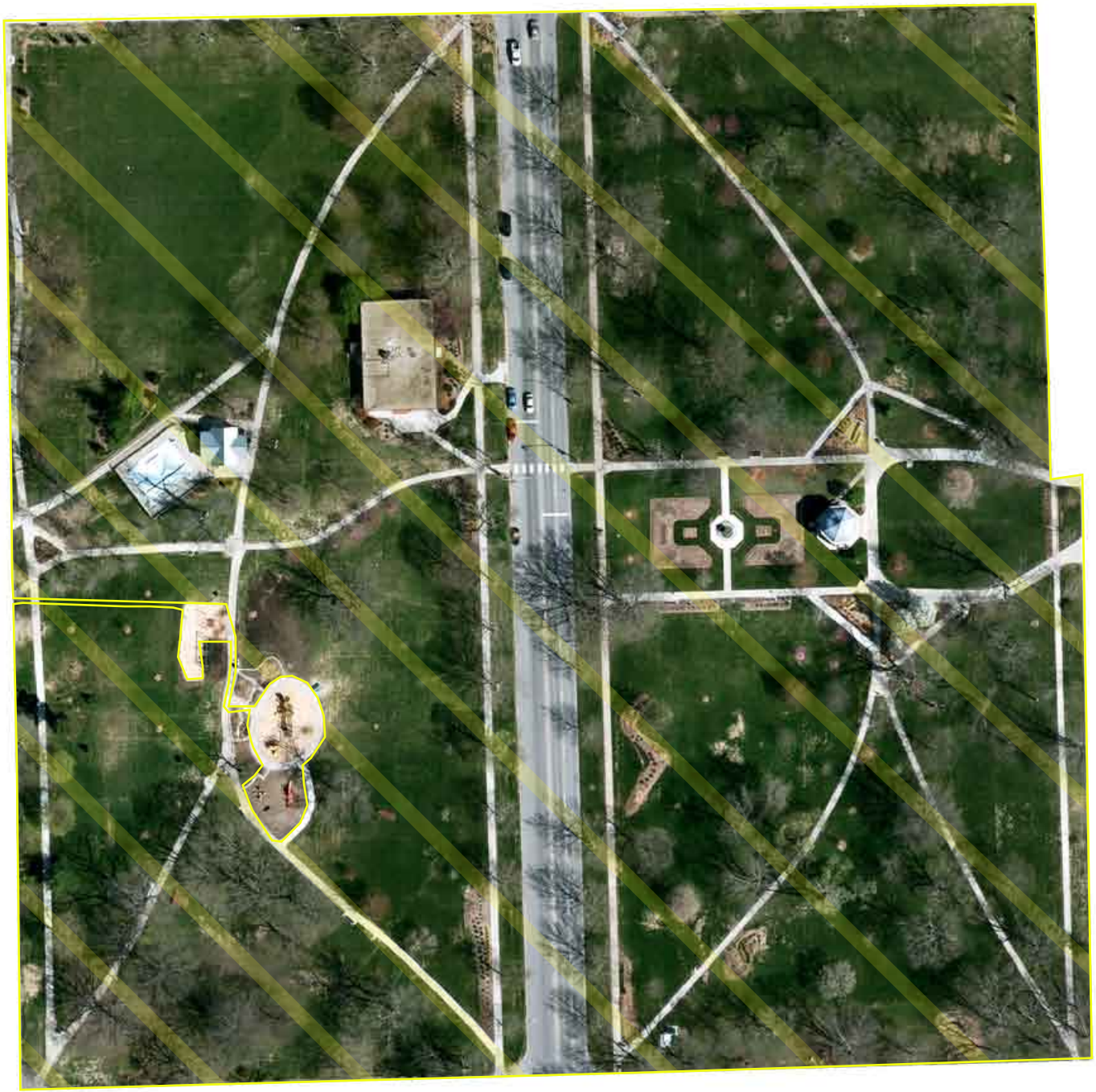


City of Lawrence
PARKS AND RECREATION

South Park

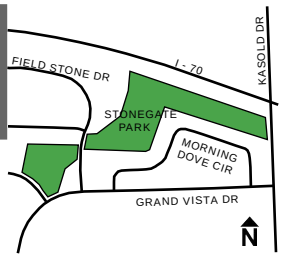


Green Zone: 0% - 0 acres
Yellow Zone: 100% - 14.7 acres
Total Acreage of Park: 14.7 acres



City of Lawrence
PARKS AND RECREATION

Stonegate Park

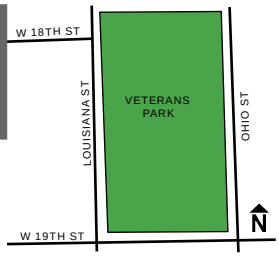


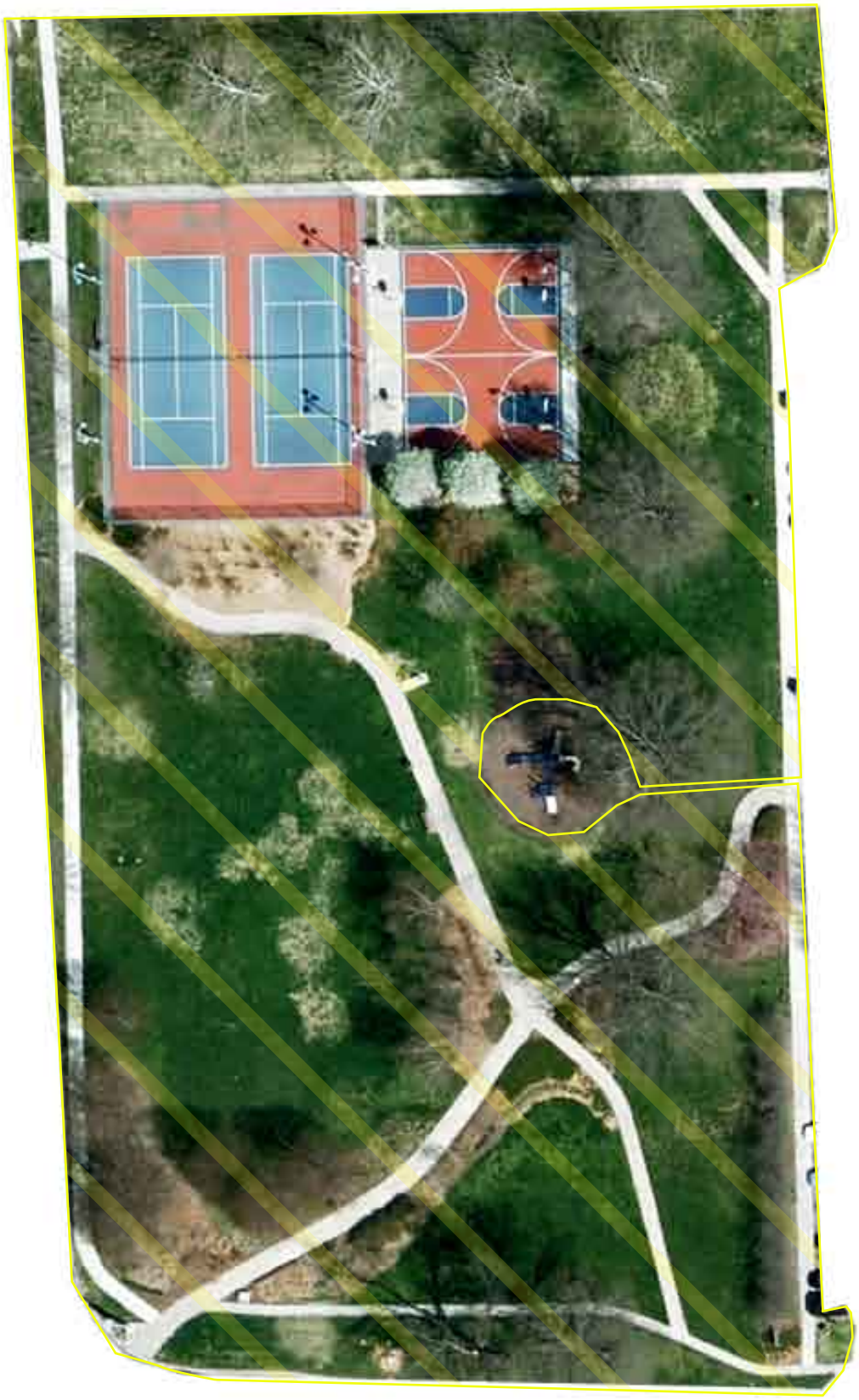
Green Zone: 100% - 15.7 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 15.7 acres

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





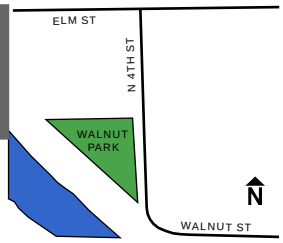
City of Lawrence
PARKS AND RECREATION

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

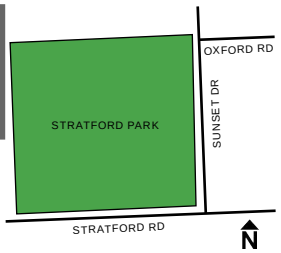


Green Zone: 100% - .8 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: .8 acres

City of Lawrence
PARKS AND RECREATION

Water Tower Park

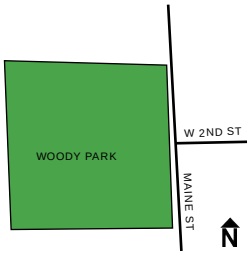
Green Zone: 67% - 1.6 acres
Yellow Zone: 33% - .8 acres
Total Acreage of Park: 2.4 acres



City of Lawrence
PARKS AND RECREATION

Woody Park

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

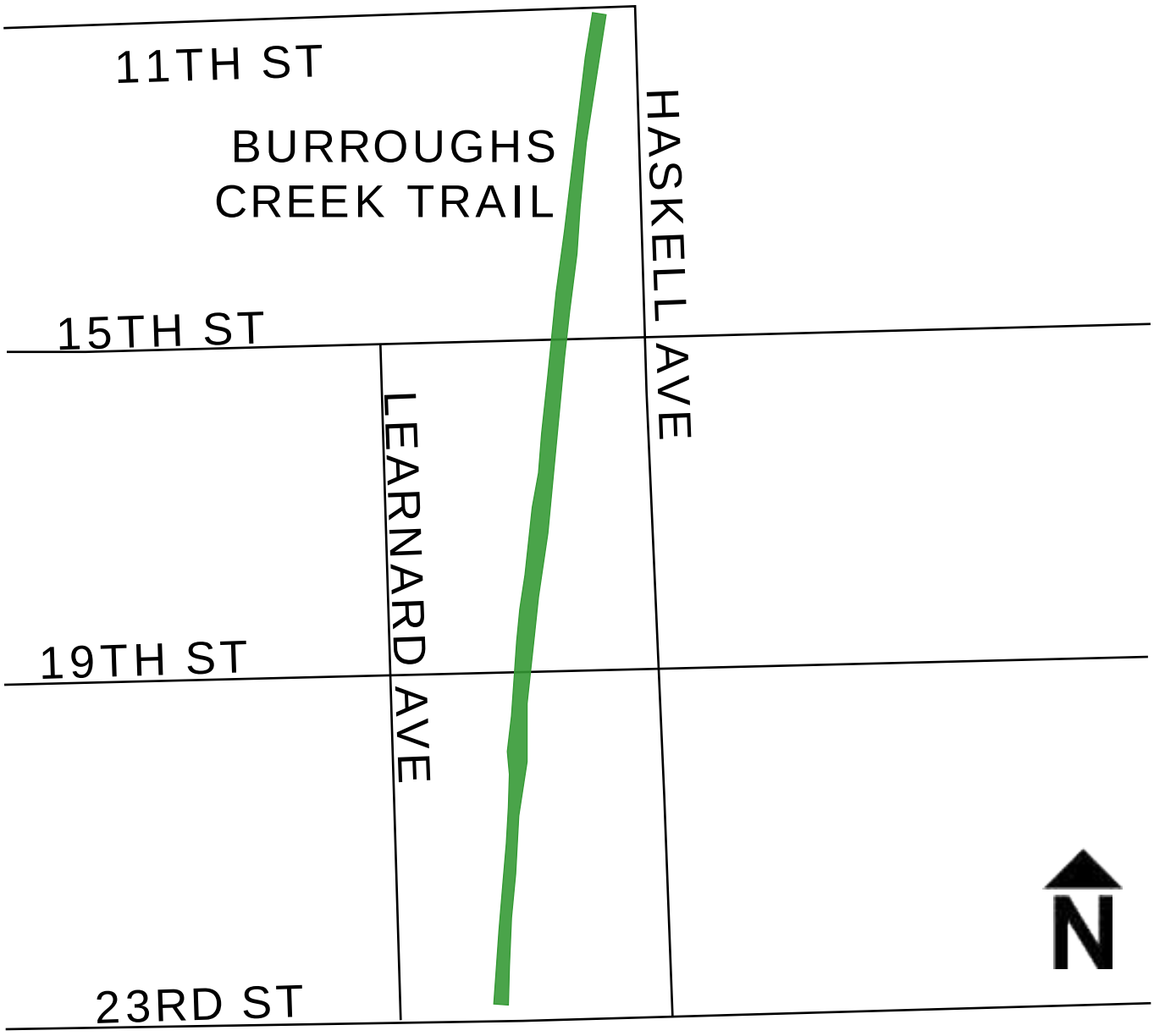


City of Lawrence
PARKS AND RECREATION

Burroughs Creek Trail (Future Park)

(See Additoinal Pages for Images)

Green Zone: 96% - 26 acres
Yellow Zone: 4% - 1 acres
Total Acreage of Park: 27 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)

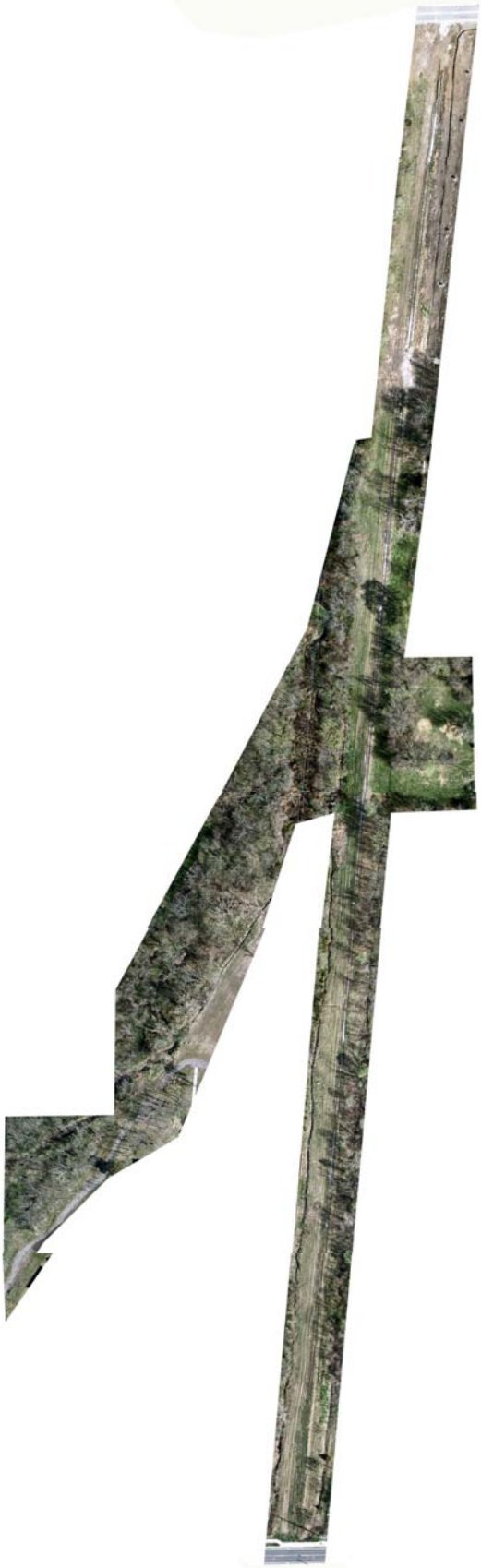
13th street

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

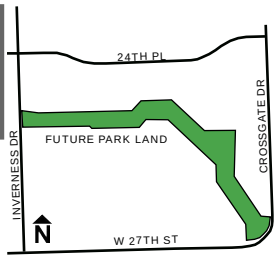
Burroughs Creek Trail (Future Park) (detail 5)

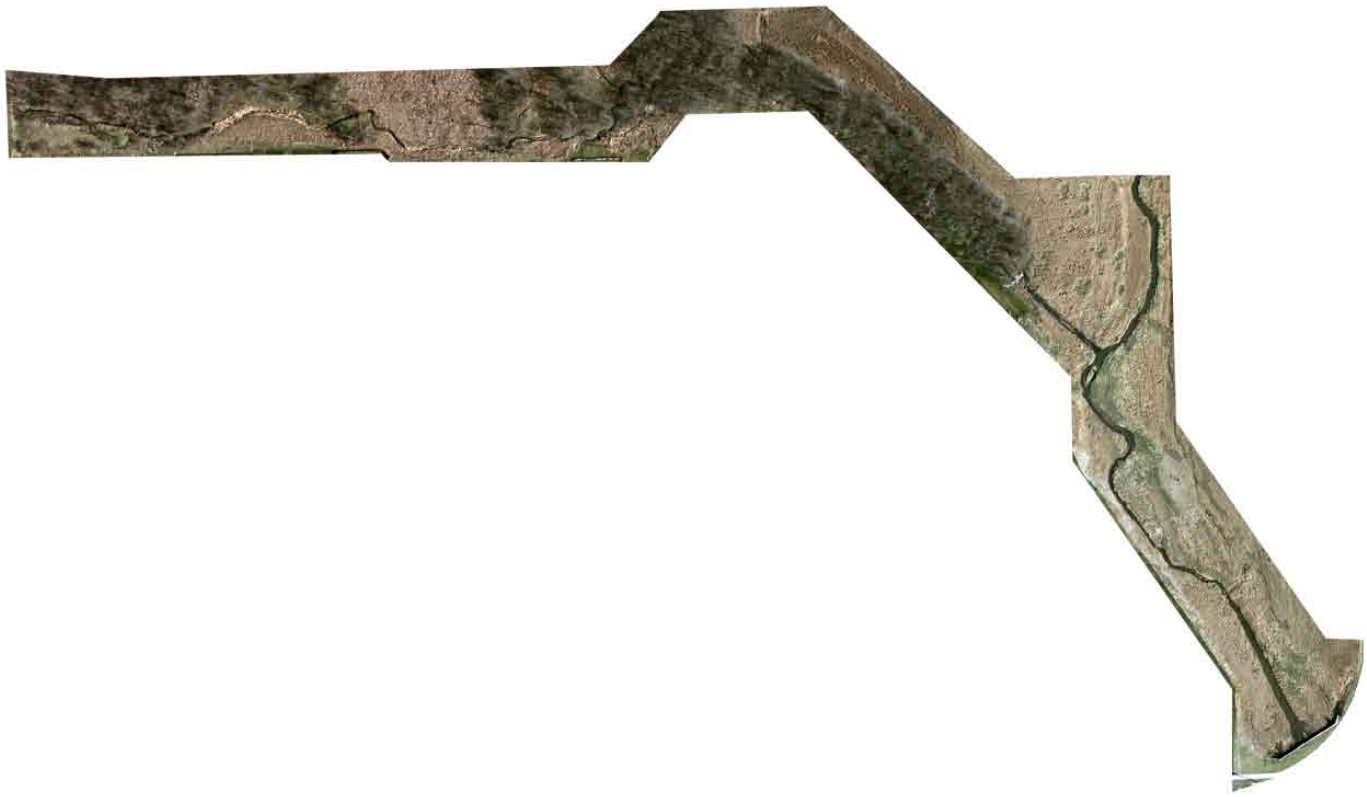
23rd street

City of Lawrence
PARKS AND RECREATION

Crossgate Dr & 27th St (Future Park)

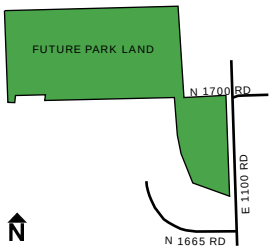
Green Zone: 100% - 14.5 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 14.5 acres





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

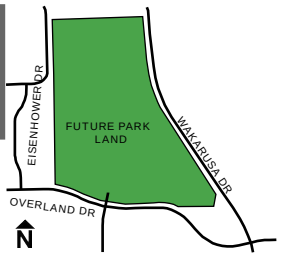
Oregon Trail Park (Future Park)

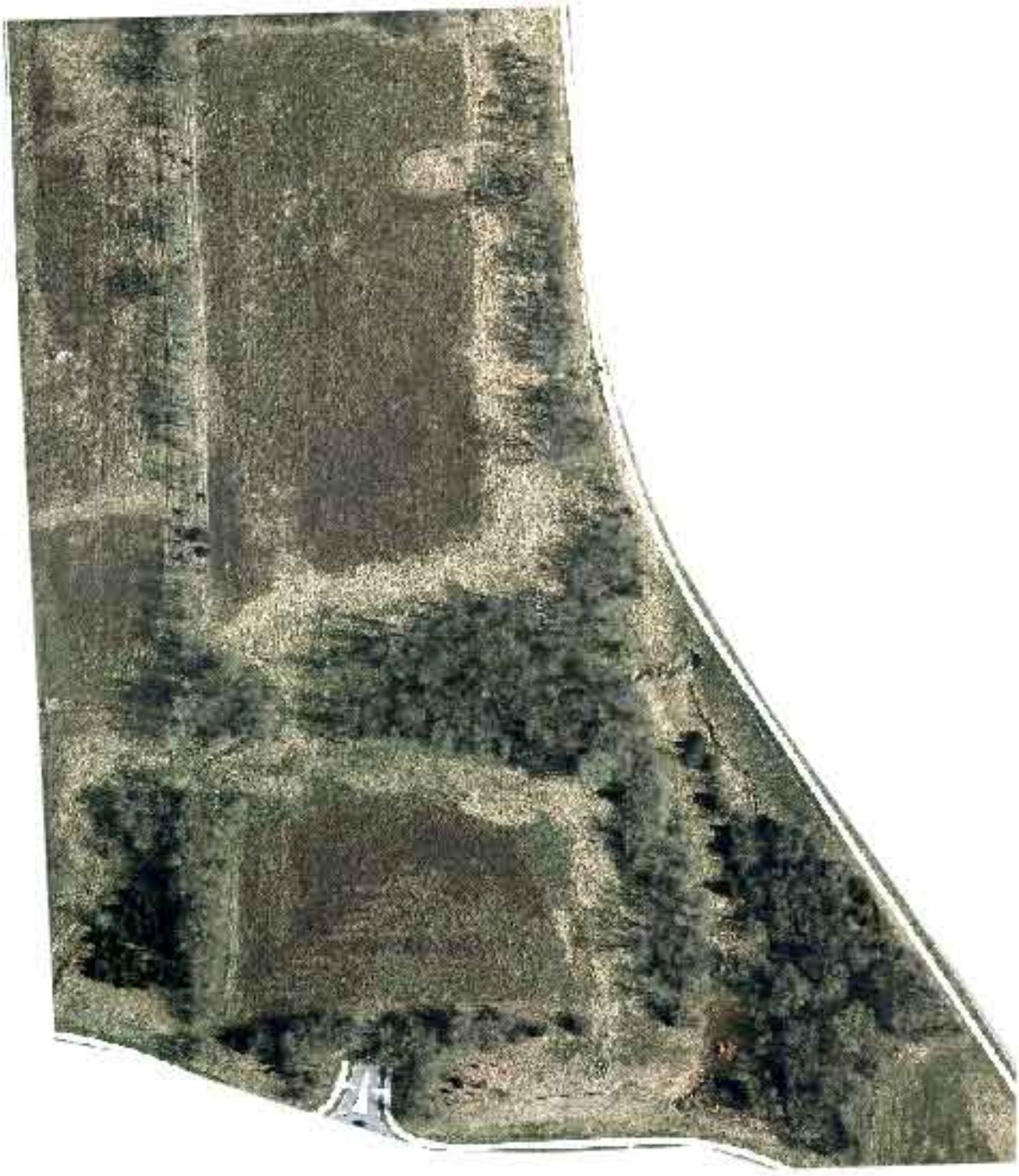
Green Zone: 100% - 4.3 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 4.3 acres

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

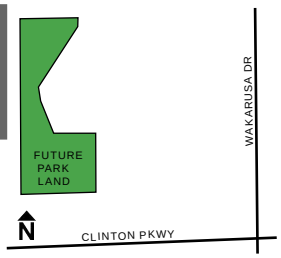


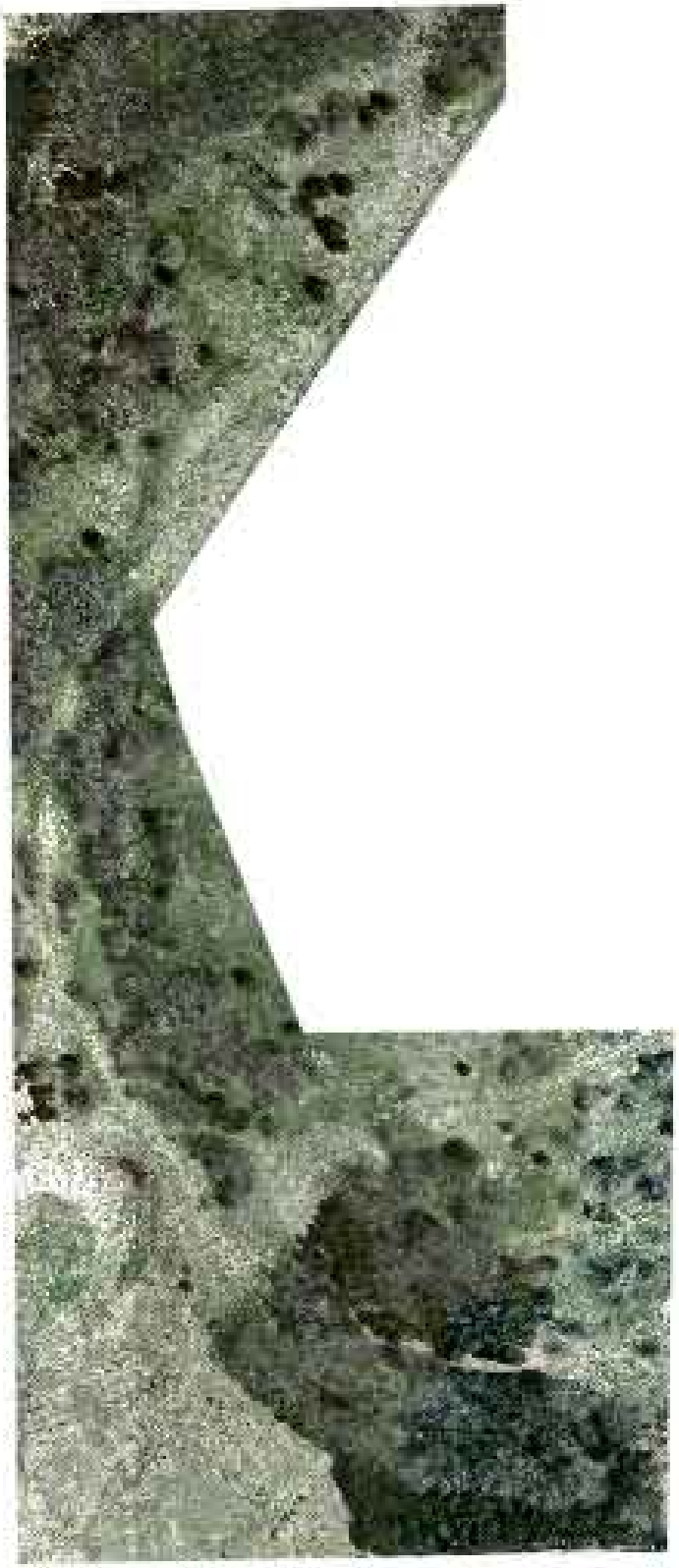


City of Lawrence
PARKS AND RECREATION

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

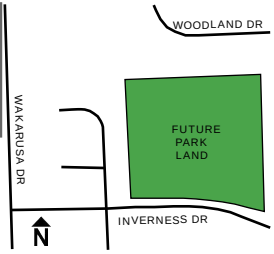
Peterson Road Park (Future Park)

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)

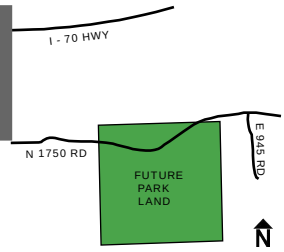
Green Zone: 100% - 5 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 5 acres



City of Lawrence
PARKS AND RECREATION

E 1750 Rd (Future Park)

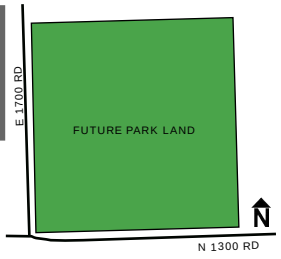
Green Zone: 100% - 40 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 40 acres



City of Lawrence
PARKS AND RECREATION

E 1700 Rd & N 1300 Rd (Future Park)

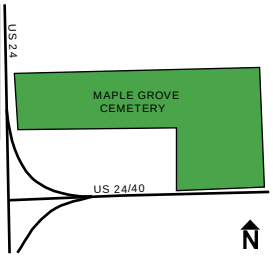
Green Zone: 100% - 40 acres
Yellow Zone: 0% - 0 acres
Total Acreage of Park: 40 acres



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



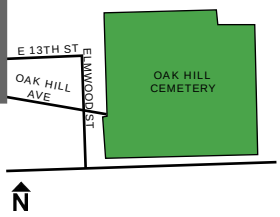
City of Lawrence
PARKS AND RECREATION

Memorial Park Cemetery

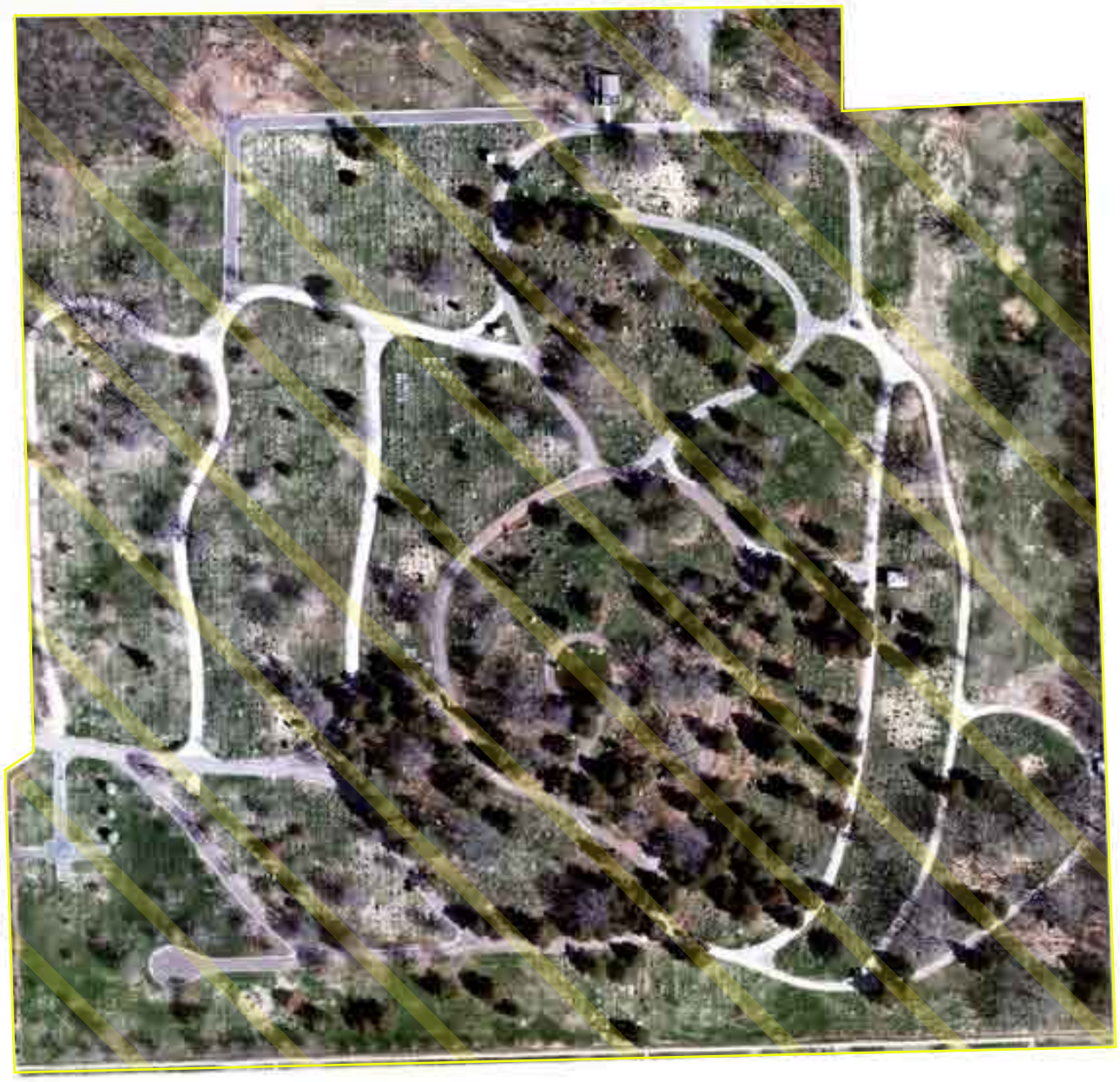
Green Zone: 0% - 0 acres
Yellow Zone: 100% - 24.7 acres
Total Acreage of Park: 24.7 acres

City of Lawrence
PARKS AND RECREATION

Oak Hill Cemetery



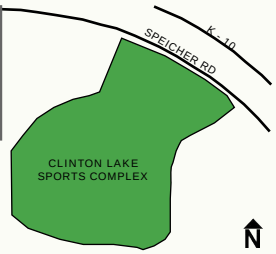
Green Zone: 0% - 0 acres
Yellow Zone: 100% - 49 acres
Total Acreage of Park: 49 acres



City of Lawrence
PARKS AND RECREATION

Clinton Lake Athletic Complex

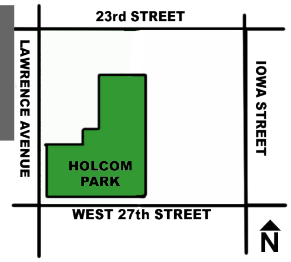
Green Zone: 24.5% - 3.8 acres
Yellow Zone: 74.5% - 17.2 acres
Total Acreage of Park: 21 acres



City of Lawrence
PARKS AND RECREATION

Holcom Athletic Complex

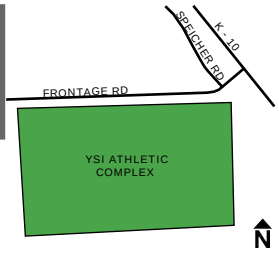
Green Zone: 0% - 0 acres
Yellow Zone: 100% - 26 acres
Total Acreage of Park: 26 acres



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 V. - 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 V.– (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	27	Green Park	26	96%	1	4%
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	**326.8**		**325.8**	**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	**3535.9**		**2855.4**	**81%**	**680.5**	**19%**

Section VI. - IPM Protocol

IPM protocol is a written procedural method used to determine the proper plant and/or pest management tactic for each particular situation.

A. Monitoring

In an IPM program, monitoring is the repeated observation of site conditions. These conditions are a key factor in determining the diagnosis and treatment of pest problems. Site conditions to observe are weather patterns, cultural practices, and site disturbances that occurred in the area; past or present. These site conditions can manipulate plant vitality and pest activity.

Plant knowledge is also important. Understanding the amount of injury from pests a plant can sustain before action is needed. Important plant information includes species, condition, and developmental stage. All plants are unique in their susceptibility to injury, but plants are similar in the fact that their condition and developmental stage can affect how susceptible they are.

Finally, pest information is a crucial part of the monitoring process. When a pest is discovered, several observations should be made. These include pest identification, pest population, life stage of the pest, and potential for natural control. Interpretation of this data will assist in determining the best possible treatment option for controlling the pest.

Monitoring of site conditions, plant and pest information will help determine the best control option to use for current and ongoing maintenance situations. This will also allow staff to detect a potential pest problem prior to its becoming a major problem.

B. Action Threshold

An action threshold will help the staff determine when a pest population, or the injury it causes, exceeds a tolerable level. A high action threshold level means pests will be tolerated longer vs. a low action threshold level where pests will be tolerated for a shorter period of time before action is taken. The threshold level will vary depending upon the location of the site and the amount of use by the public. Determining the appropriate threshold requires knowledge, experience, and foresight and can be revised based on continued observations and experience. Several aspects go into determining the action threshold for a site including aesthetics, purpose and safety of the site, and value of plants.

Aesthetic thresholds are difficult to establish because tolerance will vary among staff and the public, as well as vary from site to site. Aesthetic thresholds will in large be set by the public and their expectations in the appearance of landscaped areas. The public generally has a low acceptance for aesthetic plant injury and as a result, thresholds will be set accordingly.

Plant value will also determine an action threshold. For example, a tree will gain functional and aesthetic attributes through its maturity. These attributes include shade, air quality, water quality, and habitat. The value of these attributes increases over time and can be assessed as a monetary worth. With this in mind, if a pest population reaches a point where the injury level causes the health or structure of a tree to be compromised and pesticides can be applied in order to save the plant, then careful attention to the monetary value of the tree against the risk of pesticide application will be evaluated. If pesticide application is limited in these situations, budget adjustments will be needed to assist in the process of removing and replacing dead or dying plant material.

The purpose and safety of a site will drastically affect the threshold levels. For example, a soccer field needs to be maintained at a high level to reduce injury to users. 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 management and role of these two sites is entirely different. Any pest that creates a degraded or unsafe playing surface will not be tolerated because the public has greater expectations in consideration to athletic fields. In addition to safety on playing surfaces any pest at a site creating a risk to the public, and staff, will be dealt with in an urgent manner. For example, poison ivy in a high-traffic area will have a low action threshold, as this poses health risk.

Finally, these action thresholds will also be based upon what zone the pests are located in at each park. 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 green zone, alternative methods will be exhausted.

Appropriate threshold levels may vary at each location and is subject to staff experience and knowledge. The amount of damage that can take place before pest infested plants become aesthetically intolerable, are a safety issue, take away from the purpose of the site, or become an economic threat will determine the action threshold.

C. Control technique selection

When a pest problem goes beyond its set threshold, staff will choose the appropriate pest control action based on the following guidelines:

a. least hazardous to the applicator
b. least hazardous to the public and the environment
c. cost-effectiveness in the short and long-term
d. least hazardous to non-target organisms

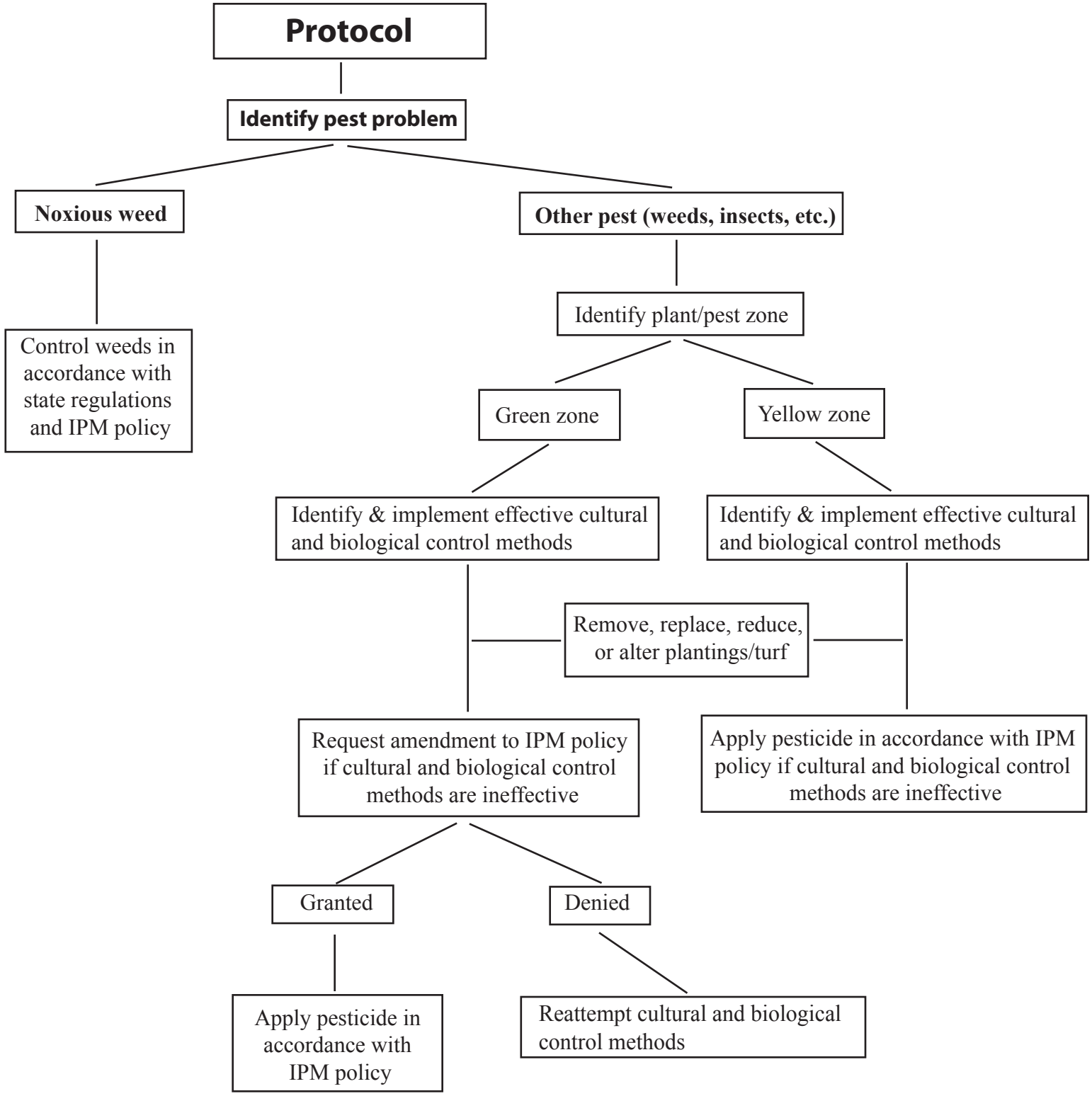
D. Control tactics

There are three types of pest control used in an IPM strategy: cultural, biological, and chemical controls. IPM implements the use of cultural and biological controls first, with chemical controls as a last resort. Often a combination of these can be the most effective.

1. Cultural controls- Cultural control tactics are physical adjustments made to the landscape to promote plant health and reduce 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
   - Removal of pest infected debris in park areas
   - Overseeding
   - Appropriate plant selection
   - Watering practices
   - Mowing frequency
   - Soil considerations

2. Biological controls- 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. Other biological control tactics include:
   - Introduction, conservation, and augmentation of natural pest enemies
   - Use of plant materials that are disease and insect resistant
   - Biological/organic products and alternative chemical controls
   - Create and preserve biological diversity using landscape design

3. Chemical controls- managing pests by use of pesticides. Chemical controls are only allowed when cultural or biological controls are ineffective. Chemical controls should be employed as a last resort and should follow these guidelines:
   - Prior to making any application, the location of the pest problem and host should be evaluated and then use the least toxic pest control action.
   - Least toxic compounds, pesticides in the EPA Toxicity Category III & IV, and those that are found on the Allowed Pesticide List will be considered first.
   - Before the application of a pesticide, all labels and warnings should be read an pesticides should be applied in a manner consistent with labeling and applied only to target pest.
   - All pesticide applications will comply with signage and notification procedures as specified in this policy. Accurate records of pesticide applications should be kept and include the target pest, type and quantity of pesticide used, EPA registration number, location of application, date, time, and weather conditions at time of application.


Protocol
Identify pest problem
Noxious weed
Other pest (weeds, insects, etc.)
Control weeds in accordance with state regulations and IPM policy
Identify plant/pest zone
Green zone
Yellow zone
Identify & implement effective cultural and biological control methods
Identify & implement effective cultural and biological control methods
Remove, replace, reduce, or alter plantings/turf
Request amendment to IPM policy if cultural and biological control methods are ineffective
Apply pesticide in accordance with IPM policy if cultural and biological control methods are ineffective
Granted
Denied
Apply pesticide in accordance with IPM policy
Reattempt cultural and biological control methods

Section VII. - Alternative Pest Reduction Management Options:

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.

Impact: 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 pesticide application for 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.

Impact: 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.

Impact: 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.

Impact: 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.

Impact: 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. The Flamer heats the plant to a level where the cell content is damaged. The weed dies due to the cytoplasm injury, however, it does not affect the root system, resulting in some weed re-growth.

Impact: 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, however there is no scientific data back up their usage.

Impact: 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 as an herbicide carries a category "I" label. 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.

Impact: 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.

Impact: 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 VIII. – Pesticide Information

The focus of an Integrated Pest Management system 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. 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. Pesticide applications may be made only under the supervision of a licensed commercial applicator. After the application of a pesticide, accurate record keeping will help determine effectiveness and cost of the program. The record keeping 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.

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 III and IV with 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.

Environmental Impact

Recently more emphasis has been put on the long term impact that pesticides and other materials have on humans, other organisms and the environment. Testing required to register and approve a pesticide label is extensive, however it is not independently overviewed by the EPA. New testing is also being implemented by manufacturers and other sources of data. As a result more information on product toxicology and environmental impact is becoming available. The number of pesticides registered along with the amount and availability of data, the number of sources and how it is presented, can make the evaluation process time consuming.

The IPM Coordinator and IPM Committee will research and evaluate available data and sources in order to establish guidelines and inform staff of the possible long term environmental impact of each pesticide considered for use. Manufactures are constantly working to develop new products which have lower impact on the environment. It is important for staff to evaluate these products as they are made available 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 "Policy Amendments"

Minimum Risk Pesticides

The EPA has granted labeling amendment 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. Other 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 have an EPA registration number as well as an approved label.

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 reduced. 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 IX. - 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) Signs will be sturdy and able to sustain exposure to sun, wind and rain.

(7) In wide open areas where posting is not feasible, kiosks will be requested to be placed at the entrance to parks. Kiosks will be a permanent fixture at the entrance that will allow for temporary notification of pesticide application in that area. Kiosks will be subject to budgetary recommendations.

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

Section X. - Public Education

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 XI. - Staff 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 consistent training for staff to maintain a commercial applicator's license. This will assist staff 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 XII. – 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 alternative cultural and biological control methods to alleviate the pest problem.

The policy amendment request will be filed with the IPM coordinator. The coordinator will involve the Parks 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. This includes the use of category I and II pesticides in the event control is not obtained by category III and IV pesticides. This type of amendment requires approval by the IPM committee and will be reported to the Parks and Recreation Advisory Board at their next scheduled meeting.

3). The city will comply with state law for all plants in violation of the Kansas Noxious Weed Law. Noxious weeds may be reported to the IPM coordinator by staff or others. Due to the need for compliance on these matters, this type of amendment requires approval 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.

Section XIII. – Impact to system

Integrated Pest Management as a general rule is a more expensive management system than the traditionally used pesticide 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 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 XIV. – 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 the Parks & Recreation Department 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 shifting their responsibilities and devoting a percentage of time to IPM tasks.

In addition to staffing needs, sustainability of IPM strategies in the parks are items that will need budgetary consideration annually to improve areas that currently receive pesticide treatments. Permanent landscape improvements including landscape borders, retaining walls, concrete mow strips under fences, bed renovations and many other projects will be ongoing and essential to move zones from yellow to green. 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 restricting Bermuda grass from entering 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 pesticide 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.

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. Therefore, the goals of the city's IPM policy to reduce the amount and toxicity of pesticides applied will require a substantial funding commitment. This will all be necessary in order to move this plan forward.

Section XV. – Staffing Descriptions

The implementation of this IPM Policy will create a need for staff to manage the process for further reduction of pesticide use. 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 monitoring the IPM program for the department.
- Reviewing requests by staff for amendments to the IPM manual, and if justified submitting the request to the IPM committee and Park and Recreation 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 amendments and reports on an annual basis to ensure progress is made on the stated goals.)
- Devoting time to field inspections and becoming familiar with park sites and conditions and troubleshoot problems.
- Oversee staff training through conferences, guest speakers, and interdepartmental training to educate best management practices and achieve measurable goals.
- Facilitate IPM committee meetings.
- 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:

- Knowledge of 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 amendment requests to the IPM policy.
- Assist in staff training on the least hazardous alternatives, long-term IPM methods and pesticide safety, and environmental risks.
- Review and approve changes to the pesticide list to allow for changes in control conditions.
- Ensuring that education on IPM policy and changes to the policy are communicated to the public.
- Preparing an annual IPM report to be presented by the IPM coordinator to the Park and Recreation Advisory Board.
- Annual review of 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.
- Assist in typing IPM Reports.
- Maintaining 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 alternative cultural control methods. This will be a budgetary issue that will need to be requested and approved as part of the department's annual budget request.

Dependable volunteer groups will be essential for keeping up with weed growth, previously eliminated by the use of pesticides. These volunteer groups need to be coordinated by a staff member or individual citizen. When these groups are available to assist with the workload, and help meet the goals of IPM, then the organization of volunteer groups will be a success. In the past volunteer help has been inconsistent and unreliable.

XVI. - 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.

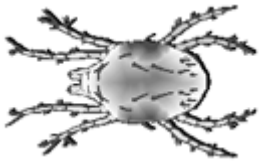
In creating the IPM policy, budget adjustments will need to be made. Maintaining properties at a high level with a reduction in pesticides will require an increase in staff. Also, other budget adjustments for landscape modification, training, and other improvements are necessary for long term establishment 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 XVII. – Pest Descriptions

These are examples of common pests found in Lawrence Parks.

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.

A moles diet consists primarily of earthworms as well as 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 mole’s tunneling helps to aerate the soil, moles are beneficial.

However, mole tunneling may cause physical damage to the root systems of plants, may kill grass, and in the sports turf industry, is a serious safety concern because mole tunnels can cause ankle injury to players.

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.

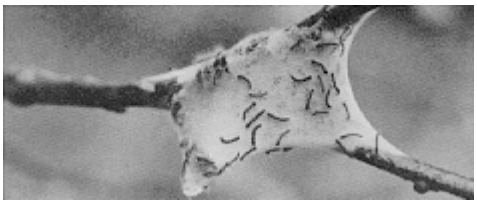
Aphids

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 is 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.

Other Urban Pests Found in Kansas

Ash/lilac borer
Mealybugs
Scale insects
Sawflies
Fall webworms
Norway rats

Section XVIII. - 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.

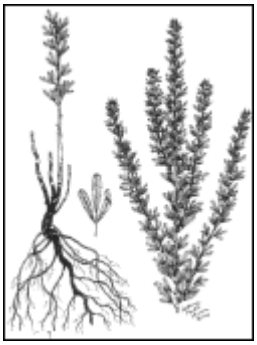
Musk thistle

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

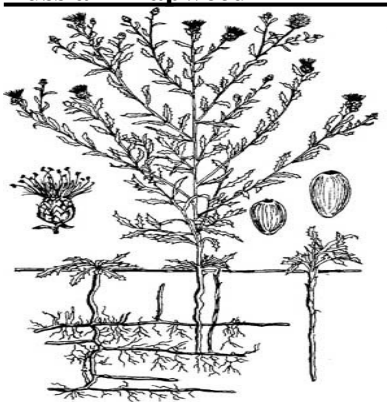


Sericea lespedeza is a shrubby, deciduous plant that grows to about 2' to 5' tall. The course stem of the pest is covered with numerous branches. The stem and the branches are very densely leaved. Leaves are ¼" to 1" long and 1/16" to ¼" wide. The lower leaf surface has silky hairs covering it. The flowers 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 XIX. - 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	**Shutout**	2,4-D, 2 – ethylhexyl ester & Mecoprop-p acid & Cafrentrazone-ethyl	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