

SHAWNEE



SHAWNEE TRAILS MASTER PLAN

HOWELL &
VANCUREN



12/2007



SHAWNEE TRAILS MASTER PLAN



Vision, Goals
and Objectives



CHAPTER ONE

CHAPTER 1: VISION, GOALS AND OBJECTIVES



SHAWNEE TRAILS MASTER PLAN



Benefits of Trails &
Alternative Transportation

CHAPTER TWO

CHAPTER 2: BENEFITS OF TRAILS



SHAWNEE TRAILS MASTER PLAN



Evaluation of
Existing Conditions



CHAPTER THREE

CHAPTER 3: EVALUATION OF EXISTING CONDITIONS



SHAWNEE TRAILS MASTER PLAN



Description of
Proposed Trail System



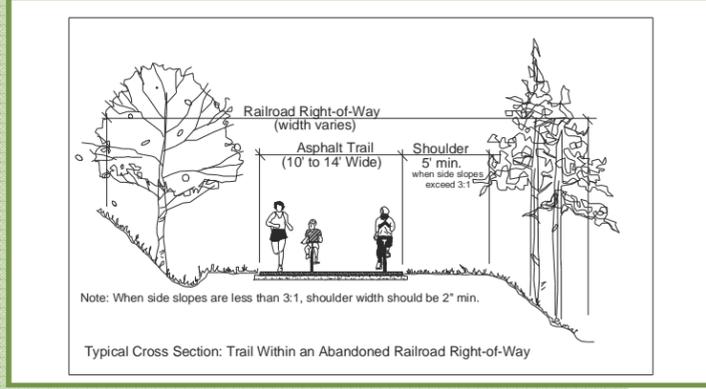
CHAPTER FOUR

CHAPTER 4: DESCRIPTION OF PROPOSED TRAIL SYSTEM



SHAWNEE TRAILS MASTER PLAN

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Design Guidelines



CHAPTER 5: DESIGN GUIDELINES



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Funding Sources



CHAPTER SIX

CHAPTER 6: FUNDING SOURCES



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Implementation
And Education



CHAPTER SEVEN

CHAPTER 7: IMPLEMENTATION & EDUCATION



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Operations
And Management



CHAPTER EIGHT

CHAPTER 8: OPERATIONS & MANAGEMENT



SHAWNEE TRAILS MASTER PLAN



Appendix



APPENDIX

APPENDIX



SHAWNEE TRAILS MASTER PLAN



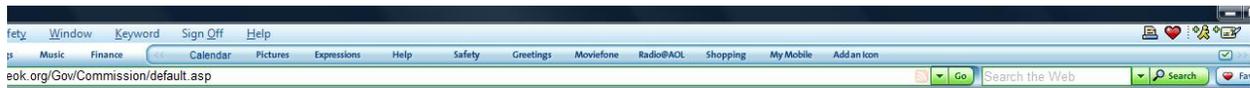
Executive Summary



EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

SHAWNEE TRAILS PLAN



CITY OF SHAWNEE CITY COMMISSION

Mayor | Commission | Administration/Staff | Advisory Boards | Sister Cities | Ward Map | City Limits

Mayor



Chuck Mills
Mayor @ ShawneeOK.org

WARD 1



Commissioner
Pam Stephens
Ward1 @ ShawneeOK.org

WARD 2



Commissioner
Thomas Schrzan
Ward2 @ ShawneeOK.org

WARD 3



Commissioner
Marva O'Neal
Ward3 @ ShawneeOK.org

WARD 4



Commissioner
Timmy Young M.Ed
Ward4 @ ShawneeOK.org

WARD 5



Vice Mayor
Linda Peterson
Ward5 @ ShawneeOK.org

WARD 6



Commissioner
Scott Holt
Ward6 @ ShawneeOK.org

This Master Plan was adopted on _____
By the City Commission of Shawnee _____ Oklahoma.

A special thank you goes
committee members and all of
Without their foresight and
not have been possible.

out to the Trails Steering Com-
their hard work and dedication.
enthusiasm this master plan would

The Trails Master Plan Steering Committee members included;
Linda Peterson, Chuck Mills, Monica Mullins, Jan Tipton, Jon
Greenwood, Stephanie Canada, Lindsay Houston, Crystal Ward, John
Krywicki and Tanner Golden

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Taking it to the Street

Vision Establish alternative modes of transportation and active recreation as an integral part of daily life in the City of Shawnee



Making it Accessible

Introduction

The Shawnee Trails Master Plan offers recommendations for improving community access to outdoor resources and community destinations by developing a network of multi-use trails and on-street linkages. The purpose of this Master Plan is to address the needs of citizens and visitors related to transportation, recreation and economic pursuits that are addressed through a comprehensive trail and alternative transportation system.

The plan addresses policies, programs and physical improvements that should be implemented to improve access to community resources and alternative transportation opportunities. It identifies 29 trail corridors and on-street linkages throughout Shawnee to be developed in the next 15 to 20 years. The total miles of possible routes, including utilizing existing street pavements, is 139 miles.

The Master Plan was developed by the City of Shawnee in association with the Trails Steering Committee and citizens of Shawnee. It responds to specific needs that were defined by residents through a series of public workshops. This Executive Summary describes the process that was used to prepare the plan, as well as the major findings and recommendations of the plan.

Vision Statement The vision statement developed by the City of Shawnee Trails Steering Committee is an overall guide to developing an alternative transportation and trail system that will enhance the quality of life for the citizens and visitors of Shawnee.

This vision, in addition to the supporting goals and objectives, reflects the results of two public workshops conducted to gather input from citizens and through an interactive website. The website included a forum for public input on the emerging plan and to gather input on possible trail corridors as well as any questions or concerns the public might have about the master planning process or trails in general. The website also included an online survey section that questioned the citizens to think about what qualities they would like to see in their trail system.



Making Due With Existing Facilities



Bikes Within the Street Section



Bike Lanes With Parking

Goals Note: The following goals are not listed in order of priority.

Transportation

Goal: To provide alternative transportation opportunities for citizens and visitors of Shawnee.

Objectives:

Provide for the public's interest, safety and general welfare by encouraging and offering a well-planned, safe and efficient system for pedestrians and bicyclists that will connect neighborhoods, parks, schools and businesses;

- Incorporate bicycle-friendly and pedestrian-friendly design and construction considerations into street reconstruction or new construction;
- Provide design and construction specifications for trails and other facilities that are safe and compatible with City standards;
- Provide support to and encourage local businesses to incorporate bicycle support facilities (parking, drinking fountains, changing rooms and showers) and employee incentives to choose alternative transportation;
- Provide connections between trails and on-street bikeways and sidewalks;
- Utilize signage, markings and other devices to regulate, warn, or guide the users of the system, including motorists;
- Encourage connections between communities within the region; Explore opportunities for utility trail, easement trail, rail-to-trail and rail with- trail projects
- Address individual neighborhood needs such as access to schools, parks, commercial centers, churches and places of employment;
- Provide public facilities for bicycle and pedestrian travel including parking, lock-ups, park-and-ride locations in association with large businesses and restrooms in appropriate locations.

Recreation/Fitness

Goal: Improve opportunities for safe, accessible recreation throughout the City of Shawnee.



Reconnecting Citizens to their Rivers and Streams



Working Within Flood Plains



Connecting Park Facilities

Objectives:

Link parks, schools and other recreation facilities through trail and on-street linkage development; Address the needs of a variety of trail users by providing paved and unpaved surfaces;

- Promote the use of the trails system as a recreational amenity for businesses, schools and local clubs;
- Provide recreational trail amenities, such as picnic areas, mileage markers, drinking fountains, restrooms, benches, fitness stations and fishing areas;
- Provide trail access and trail types to multiple users, including walkers, hikers, joggers, bicyclists, skaters, equestrians and wheelchair users; Provide lighting where appropriate.

Education

Goal: Highlight and connect significant natural and historical resources in the area with trail corridors. Create an informed user group of citizens and visitors that understands the rules and benefits of the alternative transportation and trail system.

Objectives

- Promote the trail system through bike events and public/private partnerships;
- Gain support of political leaders and the media through sustained education efforts;
- Educate motorists, cyclists and trail users as to safe behavior and trail etiquette in order to reduce user conflicts;
- Establish and promote "outdoor classrooms" and signage along trails to teach students about riparian and terrestrial ecology, hydrology and natural history;
- Provide interpretive signage along trails to highlight the natural and historic resources of Shawnee;
- Develop promotional materials such as web pages, trail maps, education packets and events that will highlight trail and greenway opportunities and the benefits of trails.

Safety

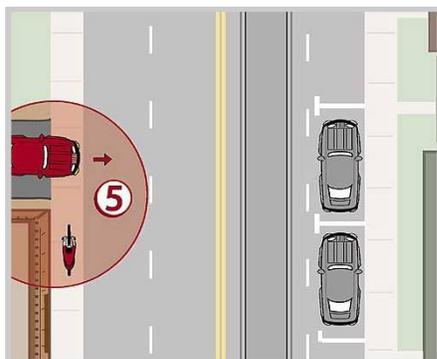
Goal: Design and manage all components of the trail system to ensure the safety and security of the users.



Educational Opportunities



Educating Young Riders and Drivers



Limiting User Conflicts

Objectives:

- Provide signs/signals for at-grade street crossings;
- Provide grade separated crossings of trails and roadways when possible;
- Implement an easy and convenient "user request" system to submit safety concerns;
- Instigate a Roadway Hazard Elimination Program
- Build trails to national standards for user safety;
- Develop a uniform signage system for trails and on-street linkages to orient and educate trail users;
- Include lighting along trails which are open at night;
- Promote trails as "self-policing" facilities, where the potential for criminal activity is reduced by the number of trail users and proximity to neighbors;
- Minimize the potential for user conflicts through proper design, education and maintenance.

Economic

Goal: Improve and enhance the economic health of the Region by increasing property values, the length of visitor stays, attracting businesses and providing citizens recreational opportunities near their homes and places of work.

Objectives:

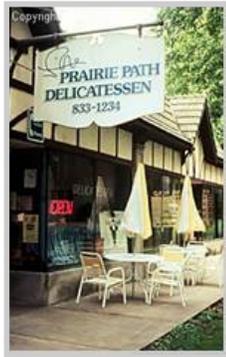
- Increase the value of nearby residential, commercial and industrial properties through trail development;
- Encourage the formation of public-private partnerships to help manage and fund the trail system;
- Provide trails as incentives for companies and individuals seeking to relocate, (e.g. partner with the Chamber of Commerce); Establish trails as tourist destinations, (e.g. partner with local hotels);
- Provide opportunities for economic growth through the creation of trail related businesses such as bike outfitters, trail tours, bike shops, bed and breakfasts, and restaurants.

Environment

Goal: Develop and protect greenway corridors that



Grade Separated Crossings



Trail Related Businesses



Trail Heads are Busy Places

will enhance the environment by conserving floodplain lands, preserving the local landscape character, protecting wildlife habitat and improving air and water quality through the preservation of vegetation and the reduction in automobile dependency.

Objectives:

- Promote the restoration of wetlands and disturbed landscapes, use of native vegetation for habitat purposes and planting of trees in greenway corridors;
- Improve water quality by protecting and restoring the natural stream banks and flood plain areas along greenway corridors;
- Promote the use of natural techniques in stream bank stabilization;
- Promote and incorporate the use of recycled materials in all aspects of trail development;
- Protect, restore and maintain environmentally sensitive lands to support plant and animal habitat;
- Limit the use of chemicals in fertilizers and pesticides which are applied near riparian greenway corridors;
- Improve air quality through promoting non-motorized forms of transportation and protecting and enhancing the tree canopy.

Maintenance & Management

Goal: Properly maintain trail facilities to ensure user safety and enhance the quality of the user's experience

Objectives:

- Develop a maintenance program which ensures that the trails and on-street linkages are clean, safe and accessible;
- Consider the formation of a designated maintenance staff within the Parks Department for the maintenance of the trails;
- Develop an Adopt-A-Trail program to involve volunteers in maintenance activities;
- Provide trash and recycling receptacles along trail corridors;

The Trails Steering Committee

The Trails Steering Committee made up of interested citizens and city staff worked closely with the consultants to achieve their goals. The committee members are: Linda Peterson, Chuck



Public workshops, getting
Citizens Involved



Families Riding together



Starting With The Past

Mills, Monica Mullins, Jan Tipton, Jon Greenwood, Stephanie Canada, Lindsay Houston, Crystal Ward, John Krywicki and Tanner Golden. The hard work and dedication of the committee members was crucial in completing the plan and considering the needs of the entire community.

An evaluation of existing physical features, which served to define both opportunities and constraints for trail development, was completed. In the segment analysis phase of the plan, the committee developed criteria for the matrix components. The consultants closely examined a variety of corridors including streams and rivers, abandoned railroads, electrical transmission lines and roadways. An important aspect of the planning process involved a series of public input workshops. One area of particular interest to local citizens was the utilization of rail road lines as trail and greenway corridors.

Public Workshops The consultants conducted a series of public workshops and promoted the planning process on a website that was also linked to the City's website. At the public workshops, citizens were provided with an opportunity to define on maps of the City, specific areas where they currently walk, ride a bike, hike and rollerblade, as well as areas where they would like to see trail improvements. Working in small groups and armed with brightly colored makers, participants marked desired routes on large maps. The results of these workshops efforts were summarized into one proposed route plan and a set of goals and objectives for the plan.

Defining the Trails System

Using the information gathered during the public workshops and other available information, the staff worked to define a comprehensive community-wide system of trail corridors (Trail Route Plan) that would support a variety of trail uses and meet the needs that were described by residents. From the comments received, the consultants revised many aspects of the initial draft Trails System Plan, and produced a final implementation plan and the Executive Summary.

Key Components of this Plan Chapter One, The Vision, Goals and Objectives, reflects the input of



Bike Facilities Being Used



Potential Rail With Trail



Trails Make Economic Sense

city residents and establishes the basis for many of the recommendations provided within the Plan.

Chapter Two, The Benefits of Alternative Transportation and Trails, defines the wide range of benefits to the area as a result of implementing the plan.

Chapter Three, Evaluation of Existing Conditions, describes the Shawnee area geographically, historically, economically and socially.

Chapter Four, Description of Proposed Trails System (Trails & Greenways), describes the corridors that make up both the trail segments of the system and the on-street segments, (on-street linkages).

Chapter Five, Design Guidelines, offers development criteria for building various types of trail facilities recommended throughout the Plan.

Chapter Six, Funding Opportunities, describes a variety of local, state and federal sources of funding for developing bicycle and pedestrian facilities.

Chapter Seven, Implementation and Education, recommends how the System should be developed during the next fifteen to twenty years.

Chapter Eight Operations and Management, describes polices and procedures to operate and maintain the trail system.

Recommendations This Plan recommends the implementation of a 139-mile network of multi-use trails and on-street linkages. The system is extensive and comprehensive, and at the same time provides a realistic program for satisfying the needs of local citizens and visitors regarding access to outdoor resources and linkages to popular destinations.

Building the system will take many years. The overall system is divided into three phases. In the Near-Term Phase, it is envisioned that local government agencies will work in partnership with neighborhoods and private sector organizations to



Citizens Mapping Their Own Way



Bike Groups - Possible Trail Partnerships?



Bryan Street-Wide Shoulder

develop an estimated 24 miles of trails and on-street linkages. Near-term projects would begin development in Calendar Year 2009.

During the Mid-Term Phase, an additional 62 miles of trail and on-street linkages would be developed, and the Long-Term Phase envisions that the remaining 52 Miles of trail and on-street linkages would be implemented.

Each of these projects will require a detailed corridor alignment/design development study to determine the availability of land, location of trail facilities, and the public and financial resources that are available to support project development. These conceptual planning studies will begin immediately for the highest priority project corridors.

Cost Near-Term Phase trail and on-street development is estimated to range in cost from \$3.2 to \$4.8 million.

The Mid- Term trail and on-street development is estimated to range in cost from \$5.3 to \$7.9 million.

Long-Term Trail and on street development is estimated to range in cost from \$12 to \$18.1 million.

A generalized cost estimate for the development of each corridor is provided in Chapter 7. Chapter 6 lists sources of funding that have been used locally, throughout the region and nationally, to build and maintain alternative transportation and trail projects.

Approval This plan has been reviewed and approved by the Trails Steering Committee and city staff and is before the City Commission for approval. As an official planning document and a component of the City Comprehensive Plan.

Community Involvement The projects defined herein are eligible for funding and development through capital improvement programs and/or various federal and private grant programs.

The City of Shawnee encourages private businesses and residents to become partners in the development of the Trail System. You can show your support for this Plan by encouraging the timely implementation of specific trail or "linkage" segments and by using the existing trail and on-street facilities. For further information on how you can become involved, contact the City of Shawnee, your local elected officials or local cycling or running clubs.



Public Workshop
Shawnee Library



Public Workshop
Discussing Opportunities



Potential Corridors

The vision statement developed by the City Shawnee Trails Master Plan Steering Committee is an overall guide to developing an alternative transportation system that will enhance the quality of life for the citizens and visitors of Shawnee. This vision, in addition to its supporting goals and objectives, reflects the results of two public workshops and an online survey to gather input from Shawnee citizens.

Vision

Establish alternative modes of transportation and active recreation as an integral part of daily life in the City of Shawnee.

Note: The following goals are not listed in order of priority.

Transportation

Goal: To provide alternative transportation opportunities for citizens and visitors of Shawnee.

Objectives:

Provide for the public's interest, safety and general welfare by encouraging and offering a well-planned, safe and efficient system for pedestrians and bicyclists that will connect neighborhoods, parks, schools and businesses;

- Incorporate bicycle-friendly and pedestrian-friendly design and construction considerations into street reconstruction or new construction;
- Provide design and construction specifications for trails and other facilities that are safe and compatible with City standards;
- Provide support to and encourage local businesses to incorporate bicycle support facilities (parking, drinking fountains, changing rooms and showers) and employee incentives to choose alternative transportation;
- Provide connections between trails and on-street bikeways and sidewalks;
- Provide temporary signage to alert users of trail construction or detours;



Connecting Schools to Neighborhoods



Connecting Public Places



Potential to Partner a Trail Project With a Water Quality Enhancement Project

- Encourage connections between communities within the Northwest Arkansas region;
- Explore opportunities for utility trail, easement trail, rail-to-trail and rail-with-trail projects
- Address individual neighborhood needs such as access to schools, parks, commercial centers, churches and places of employment;
- Provide public facilities for bicycle and pedestrian travel such as parking, lock-ups, and restrooms in appropriate locations.

Environment

Goal: Develop and protect greenway corridors that will enhance the environment by conserving floodplain lands, preserving the local landscape character, protecting wildlife habitat and improving air and water quality through the preservation of vegetation and the reduction in automobile dependency.

Objectives:

- Promote the restoration of wetlands and disturbed landscapes, use of native vegetation for habitat purposes and planting of trees in greenway corridors;
- Improve water quality by protecting and restoring the natural stream-banks and flood plain areas along greenway corridors;
- Promote the use of natural techniques in stream-bank stabilization;
- Promote and incorporate the use of recycled materials in all aspects of trail development;
- Protect, restore and maintain environmentally sensitive lands to support plant and animal habitat;
- Limit the use of chemicals in fertilizers and pesticides which are applied near riparian greenway corridors;
- Improve air quality in the area through promoting non-motorized forms of transportation and protecting and enhancing the tree canopy.



Public Workshop



Public Workshop



Think Outside the Box

Recreation/Fitness

Goal: Improve opportunities for safe, accessible recreation throughout the City of Shawnee.

Objectives:

- Link parks, schools and other recreation facilities through trail and on-street linkage development;
- Address the needs of a variety of trail users by providing paved and unpaved surfaces;
- Promote the use of the trails system as a recreational amenity for businesses, schools and local clubs;
- Provide recreational trail amenities, such as picnic areas, mileage markers, drinking fountains, restrooms, benches, fitness stations and fishing areas;
- Provide trail access and trail types to multiple users, including walkers, hikers, joggers, bicyclists, skaters, equestrians and wheelchair users;
- Provide lighting where appropriate.

Education

Goal: Highlight and connect significant natural and historical resources in the area with trail corridors. Create an informed user group of trail users, citizens and visitors that understands the rules and benefits of the alternative transportation and trail system.

Objectives

- Promote the trail system through bike events and public/private partnerships;
- Gain support of political leaders and the media through sustained education efforts;
- Educate motorists and trail users as to safe behavior and trail etiquette in order to reduce user conflicts;
- Establish and promote "outdoor classrooms" and signage along trails to teach students about riparian and terrestrial ecology, hydrology and natural



Shawnee Train Depot
Promote History of the Area



Center Prairie Trail (Fayetteville, AR)
Volunteer Clean-up Day



Center Prairie Trail (Fayetteville, AR)
Volunteer Clean-up Day

- history;
- Provide interpretive signage along trails to highlight the natural and historic resources of Shawnee;
- Develop promotional materials such as web pages, trail maps, education packets and events that will highlight trail and greenway opportunities and the benefits of trails.

Safety

Goal: Design and manage all components of the alternative transportation and trail system to ensure the safety and security of users.

Objectives:

- Provide signs/signals for at-grade street crossings;
- Provide grade separated crossings of trails and roadways when possible;
- Implement an easy and convenient "user request" system to submit safety concerns;
- Build trails to national standards for user safety;
- Develop a uniform signage system for trails and on-street linkages to orient and educate trail users;
- Include lighting along trails which are open at night;
- Promote trails as "self-policing" facilities, where the potential for criminal activity is reduced by the number of trail users and proximity to neighbors;
- Minimize the potential for user conflicts through proper design, education and maintenance.

Economic

Goal: Improve and enhance the economic health of the Region by increasing property values, the length of visitor stays, attracting businesses and providing citizens recreational opportunities near their homes and places of work.



Community Spirit

Objectives:

- Increase the value of nearby residential, commercial and industrial properties through trail development;
- Encourage the formation of public-private partnerships to help manage and fund the trail system;
- Provide trails as incentives for companies and individuals seeking to relocate, (e.g. partner with the Chamber of Commerce);
- Establish trails as tourist destinations, (e.g. partner with local hotels);
- Provide opportunities for economic growth through the creation of trail-related businesses such as bike outfitters, trail tours, bike shops, bed and breakfasts, and restaurants.

Maintenance & Management

Goal: Properly maintain trail facilities to ensure user safety and enhance the quality of the user's experience

Objectives:

- Develop a maintenance program which ensures that the trails and on-street linkages are clean, safe and accessible;
- Consider the formation of a designated maintenance staff within the Parks and Recreation Division for the maintenance of trails;
- Develop an Adopt-A-Trail program to involve volunteers in maintenance activities;
- Provide trash and recycling receptacles along trails;
- Provide suitable detours for users when trails are closed for repairs.

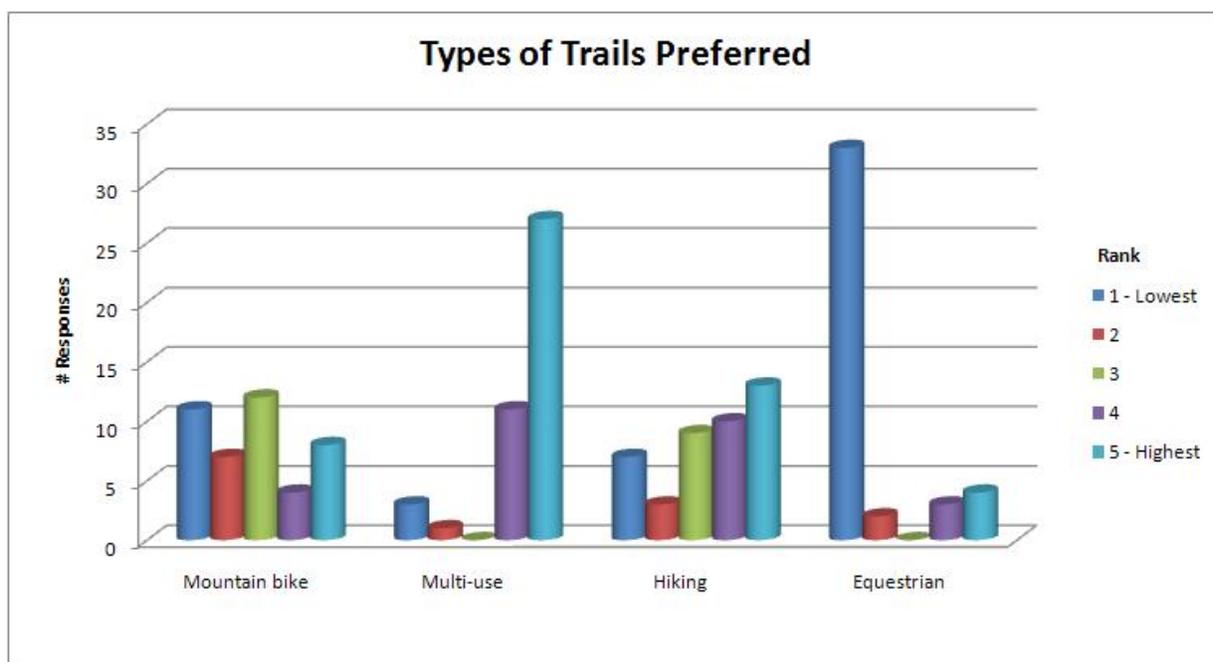
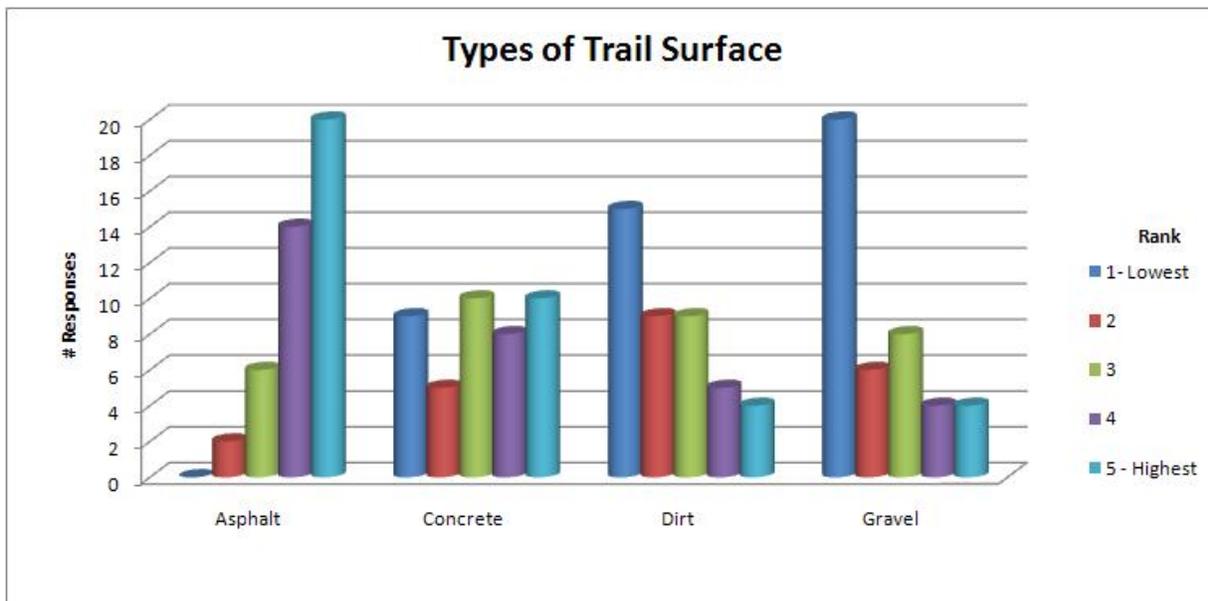


Accessible Routes Needed

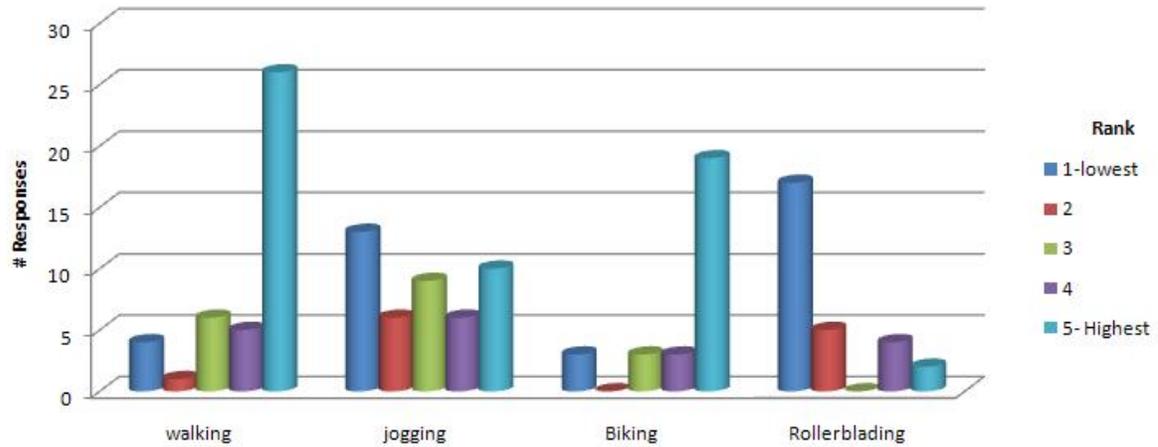


Access For All Users

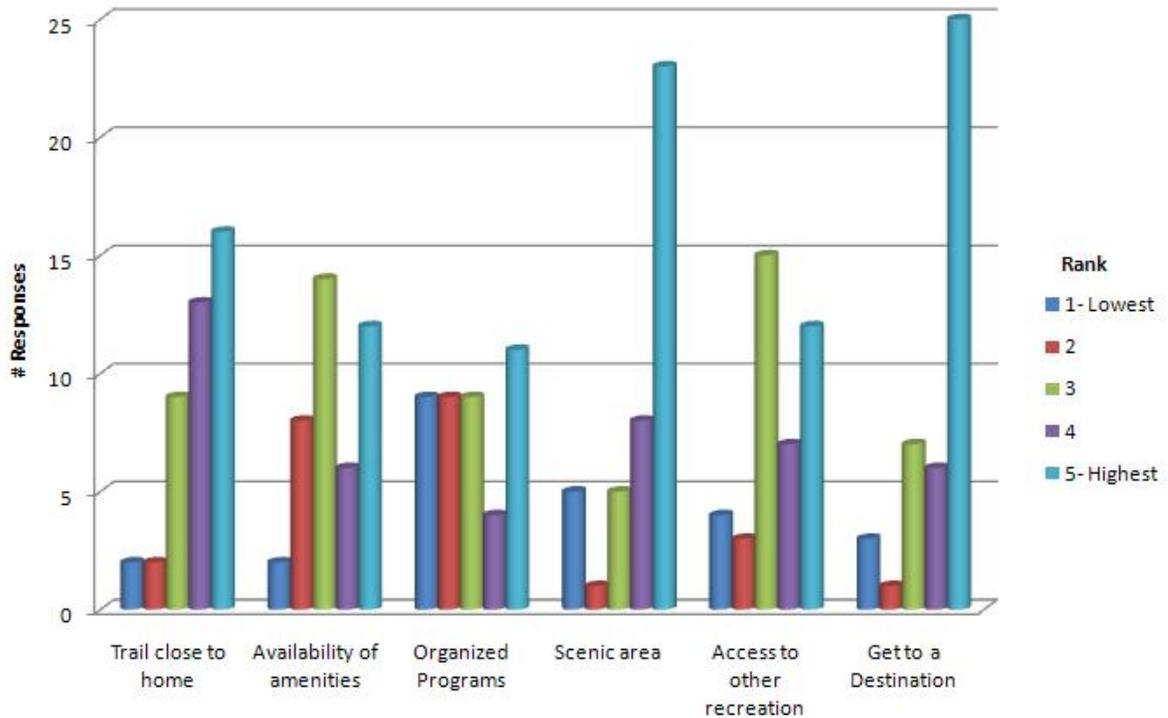
The creation and operation of the Trails Master Plan website (<http://www.trails.shawneeok.org>) was well received by the citizens. The goal of this site is to keep the citizens of Shawnee informed on the progress of the trails master planning process and promote their participation in the planning of a trails system for Shawnee. The site included the survey, schedules, an educational component and a forum that anyone could post a question or a trail corridor idea. There were 17 citizens that participated in the forum and over 45 That took the online survey. Some of results of the survey are listed in the charts below.

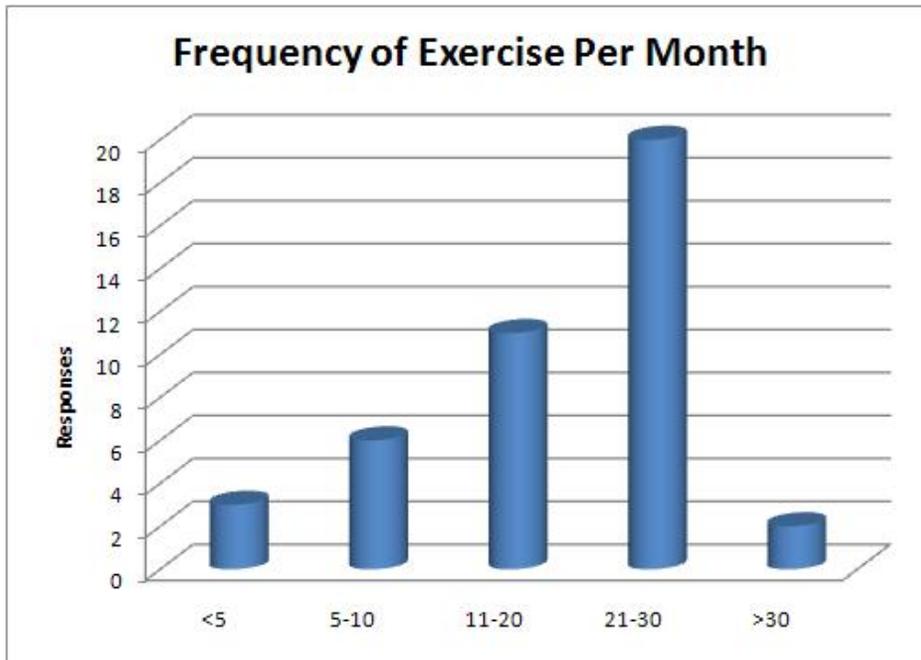


What Types of Activities Would you and Your Family Participate in Along a Trail?



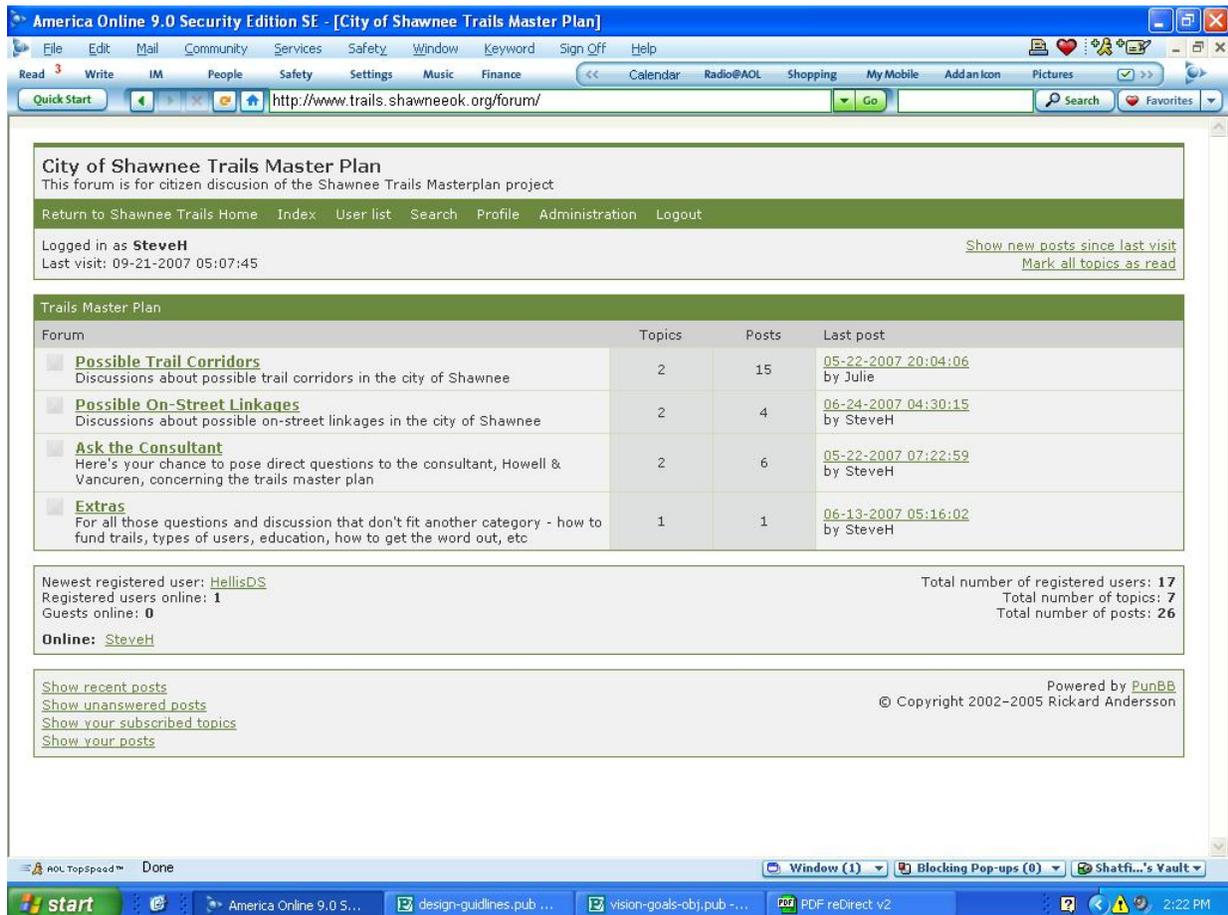
Factors That Would Influence Your Trail Use





A screenshot of the America Online 9.0 Security Edition SE browser window displaying the Shawnee Trails website. The browser address bar shows <http://www.trails.shawneek.org/>. The website features a navigation menu on the left with links for Home, Forum, Schedule, Gallery, Educational, Survey, Downloads, and Contact. The main content area includes the title "SHAWNEE TRAILS" with the subtitle "A TRAILS MASTERPLAN FOR THE CITIZENS OF SHAWNEE, OK", a "Welcome" message, a "Take the Survey" call to action, and a section for "Preliminary Survey Results". At the bottom of the page, there are three small bar charts: "Factors That Would Influence Your Trail Use", "Types of Trail Surface", and "What Types of Activities Would you and Your Family Participate in Along a Trail?". The Windows taskbar at the bottom shows the Start button, several open applications including America Online 9.0, design-guidelines, vision-goals-obj, PDF reDirect v2, and Paint, and the system clock showing 2:20 PM on 12/2007.

As the two screen shots show, the web site proved to be a popular and informational tool that helped to shape the outcome and direction of this master plan. As the trails program moves into the next phase, I believe that a web site will be beneficial in keeping citizens informed and involved.



The Benefits of Trails & Alternative Transportation

“In the future, livable communities will be the basis for our competitiveness and economic strength. Our efforts to make our communities more livable today must emphasize the right kind of growth – sustainable growth. Promoting a better quality of life for our families need never come at the expense of economic growth. Indeed, in the 21st century it can and must be an engine for economic growth.”

-Vice President Al Gore

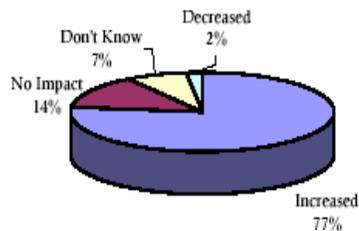
Overview

Whether the topic is quality of life, sustainable development, or smart growth; the development of a comprehensive, trail system is at the center of the discussion. Shawnee is in a position to capitalize on the nations awareness of the benefits associated with a trail and greenway system. The Shawnee Trails Master Plan will enhance the community’s appeal while preserving natural and cultural assets. Trails and on-street linkages create healthy recreation and transportation opportunities by providing people of all ages and abilities with attractive, safe and accessible places to bike, hike, jog, in-line skate or push baby strollers. In doing so, Shawnee can gain economically, environmentally and socially while providing vital services needed for a healthy city.

As a viable mode of transportation, a comprehensive system of trails and on-street linkages provides avenues to reach destination points without dependency on the automobile. This system can provide a safe, inexpensive opportunity to recreate, exercise and experience the natural and cultural beauty of the community. There is much to be gained by reducing the congestion and deterioration of the city streets through the provision of an alternative that enriches our physical and mental well-being.

Neighborhood Quality of Life

Fig. 11. Trail Impact on Quality of Life



It is especially interesting to note that little uncertainty was expressed by respondents (i.e. “don’t know”).

Omaha Recreational Trails—Survey completed by Dr. Greer, Ph.D., University of Nebraska and funded in part by the National Park Service.



Woodland Park

The most successful communities, those most attractive to Americans and the world, offer neighborhoods with easy access to major work centers, shopping areas, recreation facilities, trails, greenways, and natural open space. Greenways serving as corridors for alternative modes of transportation and a network of pedestrian friendly on-street linkages provide key components of smart growth and an improved quality of life.

Enhanced Quality of Life

The projected growth of the City of Shawnee will continue causing stress on the city’s infrastructure, frequently crowded schools, increased pollu-

The Benefits of Trails & Alternative Transportation



Family Exercise at a Park



Joggers on a Park Trail

tion and valuable losses to the natural environment. Preserving green space within a system of alternative transportation and recreational opportunities will help increase the city's quality of life. Not only will Shawnee enjoy accessible recreation among a cleaner environment, but it also will grow economically and socially as we build a sustainable transportation system.

With the utilization of greenways, The Shawnee Trails Master Plan will preserve aspects of the culture, wildlife and beautiful scenic areas while protecting the fragile quality of the environment. Utilizing alternative modes of transportation, and preserving natural spaces further improves the quality of life for the citizens and visitors of Shawnee.

Health and Recreation Benefits

Providing a system of trails and on-street linkages can enhance health benefits community wide. Lack of time or access to convenient outlets for healthy recreation and transportation are reasons cited as barriers to regular exercise. Therefore, a network of trails and greenways can provide a means to make exercise more convenient and neighborhoods more exercise friendly and to incorporate exercise into one's daily routine.

In a report by the Department of Health and Human Services, the Secretary of the Department stated that people of all ages can improve the quality of their lives through a lifelong practice of moderate physical activity. "A regular, preferably daily regime of at least 30 to 45 minutes of brisk walking, bicycling or even working around the house or yard will reduce your risk of developing coronary heart disease, hypertension, colon cancer, and diabetes." An amazing finding of the study was that more than 60 percent of American adults are not regularly physically active, 25 percent are not physically active at all.

It's true that individuals must choose to exercise, but Shawnee can make that choice easier by providing a network of trails, greenways and on-street linkages. An increase in physical activity is most feasible if the average resident can incorporate it into their daily lives. The most popular leisure activity among adults and most common physical activity is walking. As a method of promoting public health, providing walking facilities is appealing because of their acceptabil-

The Benefits of Trails & Alternative Transportation



The Lake Hefner Trails are popular sunrise to sunset during spring and summer.



Harrison Street



Future YMCA

ity and the additional transportation opportunities also provided. Research conducted by the Rails-To-Trails Conservancy proves that otherwise sedentary Americans will utilize trails once they are built in accessible locations near their homes. A study about the walking behaviors of residents from twelve rural Missouri counties was performed. At the time of the survey, there were 21 trails in these counties all recently built in the last 6 months to five years. The trails were between 0.13 to 2.38 miles in length and constructed of both hard and soft surfaces. The major finding of the study resulted from the author's investigation into whether the respondents perceived that the existence of walking trails had influence on their behavior. The authors found that among persons who had used the trails, over half reported they had increased their amount of walking since they began using the trail.

One of the benefits of regular exercise outside of improving muscle, bone and joint health, is the direct correlation to weight control. As identified by the Surgeon General as one of the nations priorities for immediate action is the prevention of obesity. In a 1999 study by the office of the Surgeon General, it was concluded that:

61 percent of adults in the United States were overweight or obese in 1999.

13 percent of children aged 6 to 11 years and 14 percent of adolescents aged 12 to 19 years were overweight in 1999.

The increases in overweight and obesity affect all ages, ethnic and racial groups, and both genders.

300,000 deaths each year in the United States are associated with obesity.

Overweight and obesity are associated with heart disease, certain types of cancer, type two diabetes, stroke, arthritis, breathing problems, and psychological disorders, such as depression.

The economic cost of obesity in the United States was about **\$177 billion** in the year 2000.

Eight action items were identified by the Surgeon General as national priorities to combat obesity. Two of these action items can be accomplished by providing a system of trails and greenways.

The Benefits of Trails & Alternative Transportation



Trail Related Entrepreneur
Photo by: www.pedbikeimages.org
/ Dan Burden



2002 Bike Rodeo
Gulley Park, Fayetteville, AR



2002 Bike Rodeo
Gulley Park, Fayetteville, AR

Build physical activities into regular routines and playtime for children. Ensure that adults get 30 minutes of moderate physical activity on most days of the week. Children should aim for at least 60 minutes.

Make community facilities available and accessible for all people, including the elderly.

“Communities can help when it comes to health promotion and disease prevention,” Surgeon General Satcher said. “When there are no safe places for children to play, or for adults to walk, jog or ride a bike, that’s a community responsibility.”

It is this link to better health and reduced weight problems that support the development of this plan. Another obvious benefit of trails and on-street linkages is the economic impact of trails from the reduction of health care costs to a jump in property values to the increase in tourism dollars. The simple fact that exercise reduces the incidence of a myriad of illnesses translates into economic savings due to reduced health care costs. A 1999 North Carolina study found that a lack of physical activity causes nearly 2,000 deaths annually and costs that state \$157 million or more annually in hospital charges. Aside from reduced health care costs, a community gains economically in many ways.

Increased Economic Development

Communities gain through the economic development of tourism dollars, as well as from the increased tax base from subsequent population growth. Across the nation, parks, protected rivers, scenic lands, wildlife habitat and recreational open space help support a \$502 billion tourism industry. Travel and tourism is the nation’s third largest retail sales industry, and tourism is one of the nation’s largest employers supporting seven million jobs. At present rates of growth, the tourism leisure industry will soon become the leading U.S. industry of any kind. Now, with our nations concern about acts of terrorism on Americans, more families are staying within driving distance to their homes, implicating that more tourism dollars will be spent within the U.S. versus in countries abroad.

Where do Americans go for rest and relaxation? A poll for the Presidents Commission on Americans

The Benefits of Trails & Alternative Transportation



Tunnel Under Airport Runway



Family Riding From the Library



Bikes at the Library

Outdoors found natural beauty and quality of view to be the most important criteria for tourist seeking outdoor recreation sites. The tourism value of open space combined with trails and alternative transportation is proven by the success of Texas's most visited site, San Antonio's Riverwalk. In the early 1900, engineers in San Antonio planned to bury the San Antonio river to prevent reoccurring flooding problems, but citizens envisioning a riverfront park stopped the project. Eventually a channel was cut and floodgates were added to control the flooding. Tree and shrubs were planted and a mile and half of walkways were added along the shore. Soon, riverside buildings, which had long faced away from the waterway, were given new entrances facing the park. With an initial construction cost of \$450,000, the park has been enlarged twice, including the addition of new canals and walkways. Today, Paseo del Rio is lined with businesses boosting their contribution to the city's \$3.5 billion dollar tourism industry.

Education Benefits

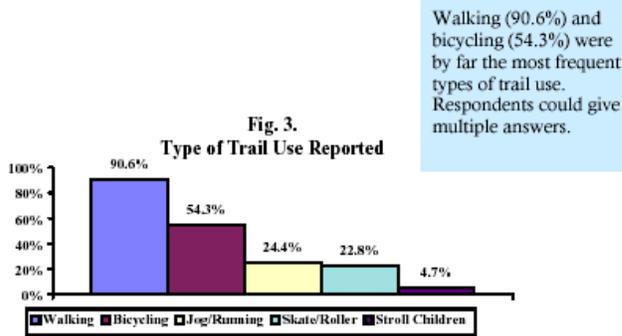
Another benefit is the experiences gained using the trail system. As greenways are developed along stream corridors within sections of forests, or along fields, the community has the opportunity to learn of the Region's natural resources. Children and adults living in an urban setting are often void of opportunities to become familiar with the rich plant and animal diversity that is present in the region as well as the interesting geological formations. Through establishing partnerships with the local schools as well as the local universities, interpretive trails can be established in unique geological areas and wetlands as a part of a community educational system. Safety education will also be important as the trail system develops. This education can be directed both at the automobile motorists and the bicycling community.

Safety

Roadway improvements made to increase the safety of bicyclists and pedestrians can also enhance safety for motorists. As lanes are widened to accommodate bicycles, the occurrences of run-off road, head-on and sideswipe motor vehicle crashes will reduce. Provisions for an alternative transportation system composed of on-street linkages, trails

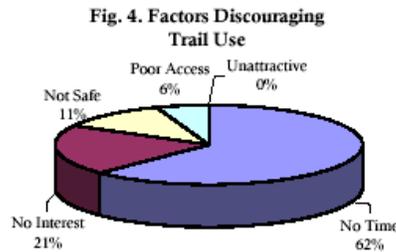
The Benefits of Trails & Alternative Transportation

Type of Trail Use



Factors Discouraging Trail Use

Amount of trail use had more to do with the interests and orientations of the respondents themselves (i.e. time availability and interest), and rarely included trail-related issues such as safety, accessibility, or attractiveness.



Omaha Recreational Trails—Survey completed by Dr. Greer, Ph.D., University of Nebraska and funded in part by the National Park Service.

Charts and graphs within this chapter show results from a survey completed on recreational trails in Omaha, Nebraska. During the past decade, few metropolitan areas have developed a recreational trail system as rapidly as Omaha, NE. Despite increased promotion of trails for health and recreation, critics of new trail development continue to raise questions about the suitability of trails in neighborhoods. Research completed by Dr. Greer and the University of Nebraska sought to examine the impact of trails, focusing on residents living within one block of the most heavily populated segments of three popular trails; West Papio, Keystone, and Field Club. Using both telephone and mail survey methodology, residents were asked about the trail's impact on public safety, property values and general neighborhood quality of life.

and greenway corridors provide a safe mode of travel for the present and future community of Shawnee.

Reduced vandalism to homes adjacent to trail corridors is yet another benefit studied in trail communities around the country. With the additional exposure to trail users and the potential for regular policing of trail corridors, adjacent homeowners are afforded additional security.

Transportation Benefits

As Shawnee strives to keep pace with the community's growth, City commissioners, planning commissioners and staff are constantly reminded of the importance of providing for an alternative transportation system. Providing alternatives to the automobile is vital to developing a sustainable transportation system which requires using each mode of travel for what it does best. Sustainable transportation systems translate to greater reliance on non-motorized modes of travel for short trips, increased use of public transit for urban use and an overall reduction of personal automobile use. A sustainable system provides for the safe, efficient and enjoyable movement of people and goods via automobiles, mass transit, bicycle and foot.

A successful transportation system is not one that provides more roads built for faster speeds; rather it is a system that readily connects people to people and people to places. As John Whitelegg put it so eloquently in his publication 'Time Pollution':

"It is the ease of access to other people and facilities that determines the success of a transportation system, rather than the means or speed of transport. It is relatively easy to increase the speed at which people move around, much harder to introduce changes that enable us to spend less time gaining access to the facilities that we need."

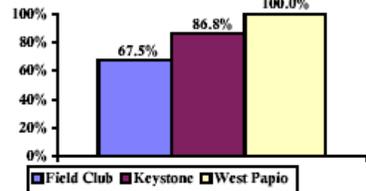
The Benefits of Trails & Alternative Transportation

Survey Results

Trail Use

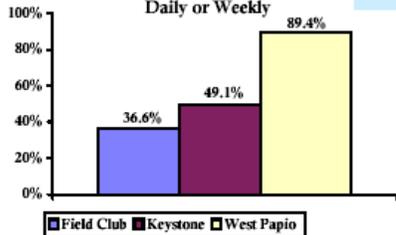
All three trails had high percentages of households who had at least a member who used their local trail.

Fig. 1 Households with a Trail User



Frequency of Trail Use

Fig. 2. Households Using Trail Daily or Weekly



85% of all surveyed households had a member use their local trail daily or weekly with the highest use on the West Papio Trail.

Omaha Recreational Trails—Survey completed by Dr. Greer, Ph.D., University of Nebraska and funded in part by the National Park Service.

Multi-use trail corridors and on-street linkages offer viable connections between origins and destinations such as offices, schools, libraries, shopping, residential areas and local interest points. A well planned trails facility can help overcome cyclist's reluctance to use bicycling for transportation. It is our assumption that the same is true for joggers and walkers. Surveys conducted along the Pinellas Trail in Florida show that 35 percent of all users reported using the trail for transportation such a commuting to work, school or shopping. In the Baltimore-Washington region, a survey of four greenway trails showed that 45 percent use the trails for transportation. A total of 85 percent of those responding used the trails to commute three days a week. These surveys and many others prove that Americans will use alternatives to their single occupant vehicles if given safe and convenient choices.

Trails are a means to not only provide a safe, low-cost mode of transportation, but also an opportunity to exercise, experience nature and interact with neighbors. An alternate mode of transportation can provide a healthier, happier community while reducing the impact to the city's infrastructure.

Reduced Transportation Costs

Shawnee's trail system will not only generate an increase in dollars spent in the community, but it can help the citizens reduce the cost for transportation by avoiding the need for a second car. Besides the cost of the vehicle itself, citizens would also save on the amount spent on normal use such as oil changes, replaced tires, fuel costs and routine maintenance. On average, Americans spend \$2,000 to \$4,000 annually on second car payments and insurance. Plus another 12 cents a mile is spent for tires, fuel and oil. Dollars could be saved in regard to purchasing a second vehicle, if alternative modes of transportation were accessible and available.



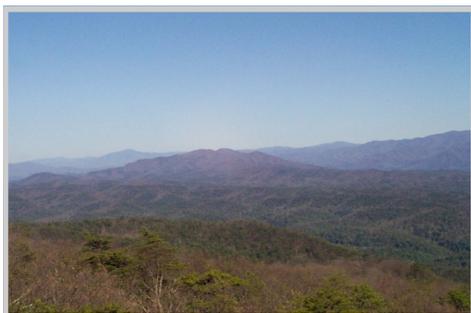
Multi-use Trail

Additional cost savings experienced community-

The Benefits of Trails & Alternative Transportation

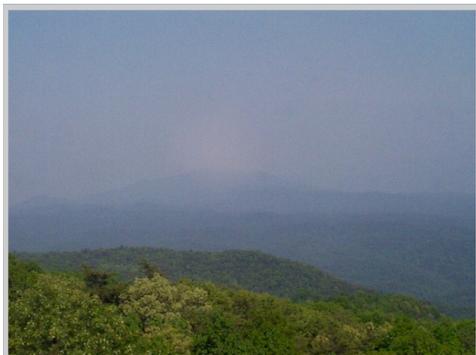


Outdoor Destination



Good Visibility Day

The Great Smoky Mountains National Park Look Rock Tower houses a digital camera which takes high resolution pictures of the view every fifteen minutes. Above/below are examples of good and bad visibility days. The visual range is calculated from data provided by the nephelometer housed at the same location.



Bad Visibility Day

wide is the reduced infrastructure and repair costs to the street system. On-street linkages can provide for widened drive lanes, resulting in a reduction of the rate of normal roadway edge degradation. As the trails system expands, providing for more linkages to major transportation destinations, an increased use of the system will result in a reduced need to widen existing streets or build additional streets.

Not only are these on-street linkages providing cost-effective, recreational connections to desired destinations, but they do so with added safety.

Below are listed several additional benefits that will become more evident as the City of Shawnee grows larger.

Air Quality Benefits

Air quality may not be a problem in Shawnee today but all communities across the country can help reduce the impacts of automobiles on the country's air quality.

Provisions for alternative transportation results in a reduction of traffic congestion and a decrease in the use of pollution producing automobiles. A quarter of all trips taken by American adults are less than one mile. If alternative modes of transportation were available and utilized, think of the positive effect that would have on the air quality as the exhaust from car emissions were removed from the atmosphere. The following facts represent the negative impact that automobiles have on air quality:

80 percent of the carbon monoxide and 40 percent of the nitrogen oxides and hydrocarbons are the result of burning gasoline and diesel fuels in cars and trucks, making the automobile the single largest contributor to global warming.

The automobile is responsible for 60 percent of the total air pollution in most U.S. cities. Cars emit 69 percent of all the lead, 70 percent of the carbon monoxide and are responsible for 60 percent of the ground ozone.

From 1936 to 1985, U.S. drivers burned 3 trillion gallons of fuel, making the automobile the largest consumer of non-renewable energy in the twentieth century.

The Benefits of Trails & Alternative Transportation



Trailhead and Restaurant
Katy Trail, St. Louis MO

Urban freeway congestion results in 6.9 billion hours of delay each year and 1.3 billion gallons of wasted fuel. The total cost of the delays to American drivers exceeds \$9 billion annually.

Half of all automobile trips in the U. S. are under three miles, a distance that could be walked in less than one hour at no appreciable cost to the environment or pocketbook

The statistics are quite telling in regards to the automobile's effect on air quality. Reducing travel by automobile through alternative transportation opportunities will reduce air pollution created by emissions. A network of greenways incorporated into a transportation system will also provide many indirect benefits to air quality in the preservation and enhancement of tracts of native vegetation and tree canopy.

By acquiring and maintaining greenways, we are preserving portions of Shawnee's precious tree canopy, native shrubs and understory vegetation. Trees, shrubs and natural groundcover have a positive effect on the city's air quality by naturally producing oxygen and by filtering and absorbing air pollutants such as ozone, sulfur dioxide, carbon monoxide and airborne particles of heavy metals. The preservation of tree canopy, as well as the planting of additional trees will result in cost savings to keep the environment healthy.

Not only is natural vegetation useful in cleansing the air, but also in absorbing and filtering stormwater runoff.

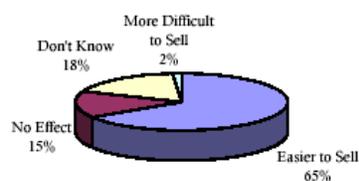
Water Quality Benefits

Greenway trail corridors are often obtained along streams and drainage corridors. Maintaining the natural vegetation along waterways will reduce flooding as well as improve water quality of the natural systems by filtering the silt and pollutants that enter these waterways.

Maintaining trails and greenways with trees and understory vegetation means less storm

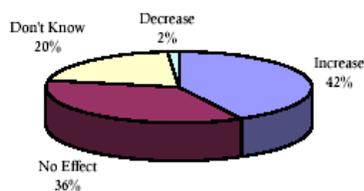
Economic Impact

Fig. 5. Impact of Trail on Sale of Home



81% surveyed felt that the nearby trail's presence would have a positive effect or no effect on the ease of sale of their homes.

Fig. 6. Impact of Trail on Selling Price



The clear majority of residents (63.8%) who bought their homes after the construction of the trails reported that the trail had positively influenced their purchase decision.

Omaha Recreational Trails—Survey completed by Dr. Greer, Ph.D., University of Nebraska and funded in part by the National Park Service.

The Benefits of Trails & Alternative Transportation



Turtles in a Creek



Bird Habitat Along a Trail



Wildlife habitat

water runoff, reduced amounts of pollutants entering the water systems, and better control of storm water. Trees, shrubs and grasses slow and absorb storm water flow thereby reducing the volume of water in urban areas and decreasing the amount of runoff that containment facilities must store. Since storm water runoff accumulates pollutants such as oil, grease, chemicals and heavy metals as it travels across paved areas and buildings, trees and other vegetation serve to cleanse these impurities before the storm water enters the natural water systems.

By acquiring and maintaining greenways for trails, we are preserving portions of Shawnee's tree canopy and natural areas, thereby providing a source to slow and cleanse stormwater runoff. The preservation of tree canopy, as well as the planting of young trees, will result in cleaner water and a savings in future air quality abatement costs.

Protection of Wildlife

As The City expands and continues to grow, wildlife species are losing precious sources of food, shelter, and safe corridors for migration. The fact is, growth is not all bad, growth is essential for Shawnee to become a sustainable, vibrant community. However, establishing a network of trails along greenway corridors will create a natural, protective corridor for wild plants and animals to thrive in an urban environment.

Animals need some basic elements to survive including food, shelter and water. The preservation of greenway corridors can preserve plants that provide not only a necessary food source, but also nesting areas and temporary shelter for migrating birds and terrestrial wildlife. These linear greenways are often located along drainage ways or creeks and streams providing a protected access point for wildlife to reach the waters edge. As well, greenways provide a linear corridor for wildlife to migrate or move between sources of food and shelter. The opportunity to not only protect, but also observe wildlife, is yet another benefit that will increase Shawnee's quality of life.

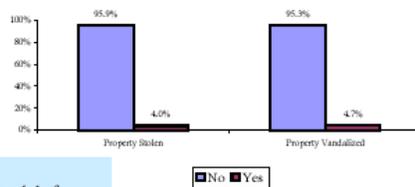
The Benefits of Trails & Alternative Transportation



Airport Trail

Safety

Fig. 9. Has a Trail User Ever Stolen/Vandalized Your Property?

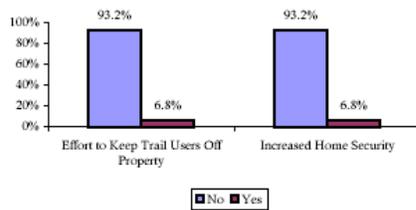


Experiences with trail-related theft (4.0%) and property damage (4.7%) were reported infrequently by respondents and most of these incidents were of relatively minor nature.

Most security improvements mentioned consisted of building privacy fence or installing security lighting around the home.

These security measures were deemed successful in all but one of the reported cases.

Fig. 10. Changes To Property



Only one respondent out of 149 wanted to see the trail along their property closed. Only two have ever considered moving but these two also the same respondents who did not care for an adjoining skateboard facility.

Omaha Recreational Trails—Survey completed by Dr. Greer, Ph.D., University of Nebraska and funded in part by the National Park Service.



Shawnee Depot



Main Street



Beard Cabin

Overview

Situated in central Oklahoma, Shawnee offers friendly people, beautiful scenery, a moderate climate, excellent schools and a steady economy. Currently, the unemployment rate runs well below national averages and population growth continues at 2.7 percent for the past 10 years. Having two universities within its borders, Shawnee presents the vibrant cultural life that would be expected in any university town. The two universities are Oklahoma Baptist University and St. Gregory's University.

The quarter section of land on which the original city was built, was entered by Henry G. Beard, in 1892. In the early spring of 1885, Mr. Beard entered into an agreement with the promoters of the Choctaw, Oklahoma & Gulf Railroad Company, then extending its line from Memphis, Tennessee, to Amarillo, Texas, to build through his farm, and in consideration he gave the railway company one-half his claim of one hundred and sixty acres. The road was accordingly built through his farm, and the City of Shawnee began on July 4, 1895, its existence as a thriving, growing and expanding commercial center, at which time the first train arrived.

The city was located in Central Oklahoma, on the north side of the North Canadian River, and was known as the Central City of the State. It was also built in the midst of a dense forest, and for that reason was known in the Southwest as the "Forest City".

The quote "In the heart of Oklahoma" dates back to at least 1908 when the Chamber of Commerce publishing a document relating the birth and tremendous growth of Shawnee during its first thirteen years.

Quality of life for its residents is of utmost importance to the decision-makers and citizens of Shawnee. While cost of living remains low, many options for affordable housing, outdoor recreation and education are available.

The Region's History

Early Shawnee

The area surrounding Shawnee was settled after the Civil War by a number of tribes that the fed-

SHAWNEE TRAILS Evaluation of Existing Conditions



Early Automobile Travel—1907



Airport Tunnel



Destinations

eral government had removed to Indian Territory. The Sac and Fox originally were deeded land in the immediate area but were soon followed by the Kickapoo, Shawnee and Pottawatomi Indians. Members of the tribes continue to reside in and around Shawnee today.

During the 1870's, Texas cattle drovers pushed their herds across Indian Territory; there were four major trails, with the West Shawnee trail crossing near present-day Kickapoo and Main Streets. Railroads were a direct result of the cattle drives, and pressure began building to allow permanent white settlements in a region that was previously reserved by treaty for the Native Americans.

Near the current Mission Mill Hospital, an old building still marks the spot where the Quaker mission was established in 1871. The founding of this mission was an event that foreshadowed the coming of the white civilization to Shawnee.

That first missionary, Joseph Newsom, opened a school in 1872, and by 1876 a post office and trading post had been established a quarter mile west of the mission at what became known as Shawnee Town. Several structures from an earlier era remain in downtown Shawnee

Beginning in April 1889, the US government succumbed to pressure to open Indian lands to white settlement. Land Runs were initiated after tribal property was seized and then allotted individually to tribal members. At high noon on September 22nd, 1891, Etta B. Ray, John and Lola Beard, J.T. Farrall, and Elijah Ally set off for the site of present-day Shawnee. By Christmas 1891, John Beard had decided that railroads would be the key to Shawnee's success, and so with the aid of other settlers he made overtures to various railroads.

The task proved considerable because Tecumseh had already been named the county seat. Nevertheless, by the fall of 1894, the Choctaw Railroad was committed to travel through Shawnee. Shawnee's growth was fueled by the railroad industry. By 1902, the Choctaw had been absorbed by the Rock Island, and a station was built at the

SHAWNEE TRAILS Evaluation of Existing Conditions



Shawnee Mall Shopping Center



Kickapoo Street



Schools

foot of Union Street. Shortly thereafter, the Santa Fe built one of the more striking stations in the entire country. The Santa Fe Depot, built in 1903, remains one of the most unique stations in the US.

The Missouri-Kansas-Texas Railroad, better known as the Katy Railroad, also built a station. According to the Chamber of Commerce, by 1907 there was an average of 42 passenger trains and 65 freight trains arriving in the city each day. (Source: Shawnee – The Forgotten Hub of Central Oklahoma)
(Source: Shawnee Comprehensive Plan)

Like most areas, dependence on the automobile Strip shopping centers, fast food restaurants and other automobile-oriented land uses have emerged along the main thoroughfares (see street map). Opportunities for choosing a mode of transportation other than the automobile have decreased as development continues to sprawl, distances grow between destinations, facilities fail to support alternative modes of transportation and barriers to walking and biking are still in place.

With a growing population, the City of Shawnee and its citizens have expressed concern of losing open space, the rural character of the area, wetlands, wooded hillsides and stream corridors to development.

The Shawnee Trails Master Plan will preserve the quality of life components that make Shawnee a wonderful place to live and visit. The Plan will examine ways to preserve corridors of land and open space that provide outdoor recreational resources and transportation alternatives close to where people live and work. These corridors will link neighborhoods to the larger environmental outdoor resources, as well as to cultural and social destinations. Alternative forms of transportation provided by the plan are important to increasing the vitality of the area, protecting the city's waters, land and air, securing the preservation of open space, river and stream corridors and connecting citizens to each other and to the places they live, work and play.



Airport Trail



Destination—City Hall



Creek by Mall

Destinations and Connectivity

Several natural, cultural and recreational destinations exist within the City of Shawnee. The trails and on-street linkages created by the Shawnee Plan will connect residential areas with retail areas, neighborhoods with schools and homes with work. These corridors will provide safe and pleasant environments for people to commute either to work or to public transit systems and to enjoy the outdoors. If planned properly, on-street linkages and trails will create a connected community that has preserved valuable resources.

Natural Destinations

Shawnee's most identifiable environmental features include rivers and their adjacent floodplains and lakes. Secondary features, such as creeks, naturally preserve green-space due to restricted development in their floodplains throughout the area. Although rivers and creeks may create barriers for bicycle and pedestrian travel, these features alone preserve many acres of potential trails. Shawnee's mild winters and warm summers make most of these areas potentially accessible year round.

Lakes and Rivers

Shawnee Twin Lakes

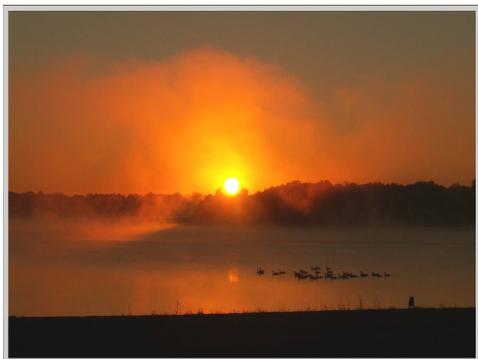
Shawnee Twin Lakes, on South Deer Creek in Pottawatomie County is a municipal lake owned and operated by the City of Shawnee. Lake #1 was built in 1935, covers a surface area of 1,336 acres and has 16 miles of shoreline. Lake #2 was built in 1960, has a surface area of 1,100 acres and 9 miles of shoreline. The lakes are connected by a 10-foot-deep canal constructed in 1962. Shawnee residents approved a referendum in 1994 permitting full recreation on Lake Number 1, which includes swimming, skiing, and personal watercraft. A fully enclosed fishing dock provides year-round all weather-fishing. Isaac Walton Park, established after the opening of Lake #1 in 1935, has 15 camp sites, eight picnic areas with grills, swimming, restrooms, lighting, and parking lots. The Glen Collins Park (formerly Stonehenge) was developed by city crews, is located between the two dams, and has a picnic shelter, picnic areas with grills, swimming, restrooms,



North Canadian River



Twin Lakes



Shawnee Twin Lakes

lighting and parking lots.
 (Source: Shawnee Twin Lakes Association)

North Canadian River

Maintaining the health of this river and the Twin Lakes is of extreme importance to the City of Shawnee. The Shawnee Trail Master Plan will provide connection to this valuable resource, re-introducing it to the people of Shawnee. The creation of trails along tributaries will also contribute to the preservation and long-term health of the River. These stream corridors play major roles in the flow and storage of water, nutrients and sediments to downstream animal, plant and human communities. In addition, the land along a stream or river forms an important environment known as a riparian corridor. By placing trails through these riparian areas, the land is preserved, allowing for natural processes to continue. If stream corridors and their watersheds and human activities are properly managed, streams and the surrounding corridors can bring a variety of environmental, economic and cultural benefits to a community.

Cultural Destinations Several cultural destinations attract citizens and visitors to Shawnee including Shawnee’s public schools, Universities, and major employers such as TDK and Exxon. Main Street, known historic business district, draws people of all ages to a vibrant assortment of restaurants, shops and civic buildings. Conveniently and safely connecting the public to these facilities will be a major purpose of the proposed on-street linkages and trails. Shawnee is also located in close proximity to many large cities, providing the potential for future regional connections.

Proximity of Surrounding Large Cities

Oklahoma City	35 miles
Wichita, KS	185 miles
Kansas City, MO	380 miles
Dallas, TX	230 miles
Tulsa, OK	90 miles
Little Rock, AR	306 miles

Shawnee Mall Area

SHAWNEE TRAILS Evaluation of Existing Conditions



OBU



Main Street



Farmers Market

The Shawnee Mall area acts as the entertainment and retail center for Shawnee. Located along the I-40 interstate corridor and in the northern part of town.

Oklahoma Baptist University (www.okbu.edu)
Founded in 1910 by the Baptist General Convention of Oklahoma. The Campus covers 189 acres, with 30 major buildings
The Student to Faculty ratio is 15:1

St. Gregory's University
(<http://www.stgregorys.edu/>)
Founded: by Benedictine monks in 1875.
St. Gregory's Abbey: St. Gregory's University is a ministry of St. Gregory's Abbey, which is located on the east side of campus and is home to priests and brothers, some of whom administer and teach at the university. Campus Size: is 75 acres surrounded by the 640-acre property of St. Gregory's Abbey. Enrollment: is 800 total undergraduate students, 330 traditional students at the main campus in Shawnee, 300 at St. Gregory's Tulsa campus.
Student/Faculty Ratio: 11:1

Public and Private School System
The Shawnee Public School System is the largest and most comprehensive school district in Pottawatomie County. It is comprised of five elementary schools, a middle school, a high school and an alternative school. Shawnee voters passed over 10 million dollars in bond issues in the last four years for improvements in educational facilities. These improvements include a new \$9 million "state of the art" Middle School, \$1.4 million on new sports facilities and \$475,000 on elementary remodeling projects.

Major Employers in Shawnee
Major employers in Shawnee provide a necessary destination for several thousand of its citizens. By connecting these employers to employees' homes and to alternative transportation routes, commuting to and from work is made possible. In addition, trails near places of work provide outdoor recreation opportunities for employees during their work day.

SHAWNEE TRAILS Evaluation of Existing Conditions



Saint Gregory's University



City Hall



Expo Center

According to the Shawnee Economic Development Foundation Major Employers in Shawnee, during 2005 were:

- Citizen Potawatomi Nation – 1100*
- Unity Health Center (North/South) – 600*
- Wolverine Tube – 550*
- Exxon-Mobil Film Division – 510*
- Shawnee Public Schools – 490*
- Absentee Shawnees – 475*
- Central Plastics – 450*
- Eaton Corporation – 400*
- Wal-Mart – 400*
- Shawnee Milling Company - 350*
- TDK Ferrites – 250*
- Oklahoma Baptist University – 315*
- City of Shawnee – 264*
- St. Gregory's University – 170*
- Al-Ko-Kober – 150*
- Uponor – 125*

Existing Transportation Systems

(Except for the Shawnee Comprehensive Plan)

The ultimate goal of the transportation plan is to increase the quality of life with a better, more efficient transportation system. While the network of streets throughout the City of Shawnee is the largest part of the whole system, there are many other aspects that need evaluation including sidewalks and trails, air and rail travel, roadways and highways of multiple governmental agencies, and coordination of transportation with both existing and future land use.

Most cities depend upon vehicles for transporting both people and goods. The plan for Shawnee improves the overall flow of vehicle travel in and around Shawnee while meeting a variety of mobility, economic, social, and environmental objectives.

Key Transportation Issues: Expand Non-Vehicular Circulation. Throughout the process of gathering community input, the issue of adequate pedestrian and bicycle facilities continually surfaced. With two first-class universities, and a growing population of over 28,000, a network of non-vehicular paths is important for the progress

SHAWNEE TRAILS Evaluation of Existing Conditions



Park Land

and attraction of Shawnee. Pedestrian connections between neighborhoods and major attractions is important to foster a community feel and provide a healthy, environmentally friendly alternative to automobile transportation.

While sidewalks are present in some areas, improvements enhance their function and provide American Disabilities Act, ADA, compliance with more clearance and additional ramps.

Two of the major arterials through the city are state highways and multi-governmental coordination of efforts could lighten the burden of expenses.

Coordinate Land Use and Transportation:

The capacity and design of Shawnee's transportation system has a direct impact on local quality of life. The ability of the roadway system to evolve and meet changing development patterns is key to maintaining a mobility network that is effective and free of significant congestion.



Connections

Along local streets, where the local government has its greatest measure of control, Shawnee can regulate the location, layout and design of land development relative to the roadway, transit and sidewalk networks. However, coordination with ODOT and other area governments plays a bigger role on larger roadways.

Transportation improvements also have the capacity to guide the overall pattern of development of Shawnee. Improvements to specific areas may promote development activity whereas intentional lack of improvements in other areas can help to preserve resources, manage growth and preserve the sense of small town character.



Auditorium

Reservation or acquisition of sufficient right-of-way, including land needed for new roadways, expansion of existing roadways, relocation of utilities, and development of trails and paths make future growth more manageable. Continuous coordination with land use will not only save time and money, but also provide ease in design and construction of new facilities and infrastructure.

SHAWNEE TRAILS Evaluation of Existing Conditions



Expo Center

Enhance Roadway Efficiency:

The transportation system is always judged by its ability to move volumes of traffic efficiently between destinations. However, efficiency means more than volume.

An effective system offers a myriad of characteristics, but is generally safe for all users, easy to navigate, accessible, and operating within its anticipated/desired parameters. Streets need to be easily maneuverable and safe with controlled speeds and directive signage. Consistent traffic violations (such as speeding and ignoring traffic signals), poor access management, frequent collisions and congestion raise the ire and concern of residents and risk altering travel patterns.

Safe access to businesses, schools, and homes must be maintained.



Shawnee Milling

Statements from residents identified signage as an issue that is unclear or not present for destinations throughout the city. “Visual clutter” and billboard regulations also are concerns as unattractive and numerous signs plague the arterials. This issue will be covered extensively in later discussion in the Image & Design Element, however, it is equally important to transportation for improved safety and “wayfinding”

Existing Trails and On-Street Linkages

Shawnee has several existing trails. These trails will be used as the beginning point for many proposed trails and on-street linkages.



Van's Pig Stand

SHAWNEE TRAILS Evaluation of Existing Conditions



Main Street Pocket Park

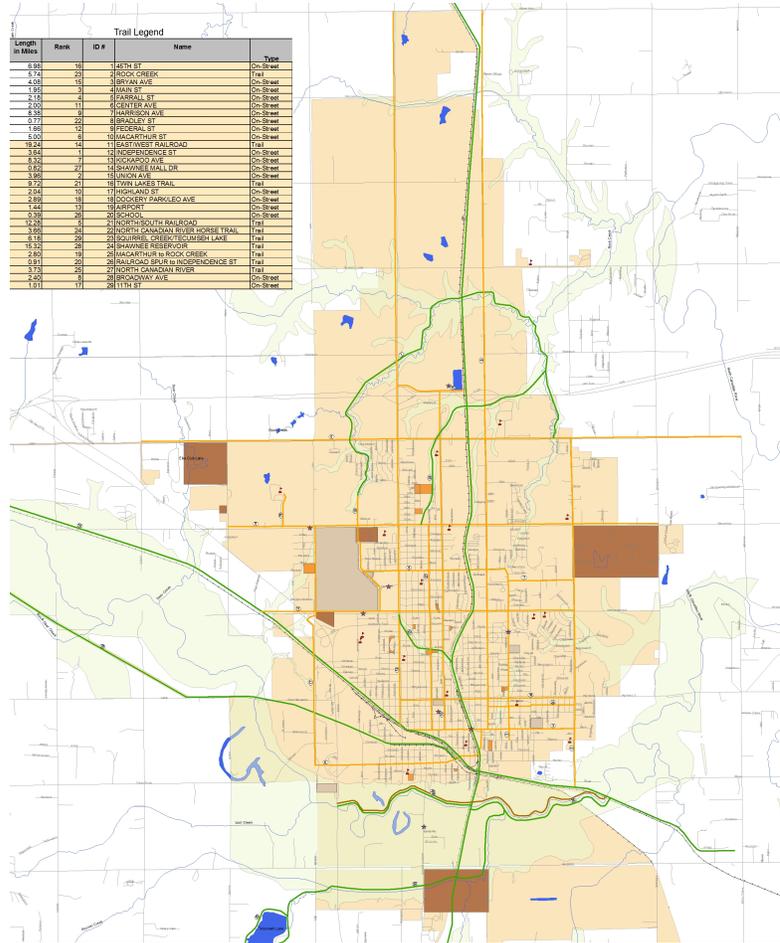


Destination Park



Bike Lanes Needed

SHAWNEE TRAILS Description of Proposed Routes



Proposed Trails City of Shawnee Trails Master Plan



- Legend**
- Community Attractions
 - Schools
 - ON-STREET
 - TRAIL
 - EQUESTRIAN
 - Streams
- Parks**
- park-type-Neighborhood
 - park-type-community park
 - park-type-special-use
 - Streets
 - approx food Zone
 - Rail Roads
 - Water
 - City Limits

Overview

The Shawnee Trails Master Plan intends to establish a trail or on-street linkage within 0.5 miles of every home, providing easily accessed trails and on-street linkages for the general public. The following chapter will describe specific trails and linkages throughout the City of Shawnee, listing beginning and ending points, a summary of the major characteristics of the trail or linkage, and a detailed description of the trail or linkages traverse. Each trail or linkage is identified by a number which corresponds with the map of the proposed system. Because many of the trails and linkages described are proposed, these will be evaluated in a Trail and On-Street Linkage Phasing Evaluation Matrix to determine its priority and projected time of development. The matrix can be found in Chapter 7 The specific facilities to be developed will be determined during the design phase of each trail or on-street linkage segment.

Two types of connections exist, multi-use trails and on-street linkages. Multi-Use Trails are intended for use by both pedestrians and bicyclists. They are physically separated from vehicular traffic along a transportation corridor. Multi-use trails can be within the road right-of-way or on their own separate public right-of-way.

SHAWNEE TRAILS Description of Proposed Routes



East/West Rail Road Trail

On-Street Linkages are composed of sidewalks, bicycle lanes, bicycle routes and roadway systems. They follow existing or proposed roads and often create more direct connections to desired destinations than multi-use trails. Shared use of on-street linkages, especially bicycle lanes, routes, and roadway systems, is imperative to their success. Pedestrians, bicyclists, and motorists must adhere to regulations established by Oklahoma Statutes and enforced by the Shawnee Police Department. Please note that Bicycles are allowed on all roadways within the City of Shawnee excluding Interstates.

Trail and On-Street Descriptions:

North-South Rail Road Trail

Trail #21

Approx. Distance 12 miles

Start:Benson Park

End: Hazel Dale

Summary:Rails to with Trails Greenway running south to north through town.

Description:A wonderful opportunity to provide a scenic trail all the way through the heart of Shawnee. This rail with trail could provide the backbone of the cities entire trail system. This corridor passes by many parks, schools and places of employment. The grades of the existing rail line are gentle and will simplify constructing an (ADA) , Americans with Disabilities Act, accessible multi-use trail within its right of way. The trail will take the user through tree lined residential areas and access too many of the local attractions that Shawnee has to offer including the historic Shawnee Train Depot. This corridor will also connect to every major east/west connection, allowing the user many opportunities to get to their destinations throughout the city. Many of the at-grade street crossings will be safer because of the required stopping of crossing vehicle traffic. Motorists in the area of the rail road crossing are already more alert and will be looking in both directions up and down the corridor. There may be opportunities to enhance drainage in the areas along the corridor as part of the trail project? Typically rails with trails projects can reduce the maintenance that the rail road has to do to maintain their right of way and studies have show that the trail actually causes pedestrians to avoid the dangers associated with walking near the tracks.



North/South Rail Road Trail



North/South Rail Road Trail

Twin Lakes Trail

Trail # 16 (See Map)

Approx. Distance: 9.7 miles

SHAWNEE TRAILS Description of Proposed Routes



Drainage Easements

Start: Near Ferrall Street and the east/west rail trail
End: Shawnee Twin Lakes
Summary: Greenway, multi-use trail running between south Shawnee and the Shawnee Twin Lakes area.
Description: Recreational opportunities abound along this trail as well as once the user arrives at its terminus, the Shawnee Twin Lakes area. The corridor can be used for the residents of the Twin Lakes area to commute into town and for everyone that wants a recreational trail that has destinations at both ends. Many residents and visitors already utilize the lake area for water recreation and with the incorporation of a loop trail around the lake; families can enjoy a day long activity together. The trail corridor may utilize City owned property along the water line easement and may also be able to use a portion of rail road right of way.

East/West Rail Road Trail

Trail # 11 (See Map)
Approx. Distance: ????? miles

Start:

End:

Summary: Rails with Trails multi-use trail
Description: Through the southern edge of town or all the way to OKC, this trail corridor has a lot of potential.



East/West Rail Line

Rock Creek Trail

Trail # 2 (See Map)
Approx. Distance: 5.7 miles

Start: 45th Street on the east side of town.

End: Near the Airport Trail

Summary: Greenway and multi-use trail corridor
Description: This trail corridor will utilize existing flood plain and provide a scenic greenway that allows the user to be separated from the vehicular traffic. As part of this multi-use trail project, many wildlife enhancing plantings can be incorporated and much needed buffer strips that will help cleanse the storm water before it reaches the river.

North Canadian River Trail

Trail # 27(See Map)
Approx. Distance: 3.73 miles

Start:

End:

Summary:

Description:



North/South Rail Line

OKC Trail

Trail # ? (See Map)
Approx. Distance: 34 miles

SHAWNEE TRAILS Description of Proposed Routes



Rock Creek Trail

Start: Near Rock Creek Road on the east side of Shawnee

End: Oklahoma City

Summary: Rails with Trails Commuter and Tourist Multi-use Trail Corridor.

Description: Following the rail road right of way this trail could become a destination that will promote visitors to stay overnight in the city of Shawnee. With a large population on one end, OKC, this corridor could be promoted as a day trip or a two day trip that would include visiting the many amenities throughout Shawnee. This scenic corridor with its gentle grades would be perfect for families and anyone wanted a longer easy ride.



N/S Rail Line Trail

Broadway Connection

Link # 8 (See Map)

Approx. Distance: 2.4 miles

Start: Intersection of ferrall and Broadway.

End: Macarthur Street.

Summary: North-south On-Street Linkage

Description: A low volume traffic connection between downtown and midtown. This linkage connects Woodland Park on the south and many east-west routes to the north. Current configuration of street may allow for Bike lanes if a re-striping plan is implemented.

Bryan Link

Link # 3 (See Map)

Approx. Distance: 4 miles

Start: Beginning on the south side of town at Farrall Street.

End: Intersection of Bryan and 45th Street.

Summary: An on-street route through a suburban area.

Description: From its beginnings to the south at Farrall Street this on-street linkage utilizes a low volume street. This linkage connects citizens to two schools, the Shawnee golf & Country Club and can provide access to east-west connects including 10th Street, Highland, Independence, Federal, Macarthur and 45th Street. Current configuration of street may allow for Bike lanes if a re-striping plan is implemented.



N/S Rail Line Trail

Ferrall Link

Link # 5 (See Map)

Approx. Distance: 2.0 miles

Start: Intersection of Brayn and Ferrall on the east side of town.

End: Intersection of Leo and Ferrall

Summary: East/West on-street link.

Description: Beginning on the east this linkage connects to two parks, Ferrall and Dockery Ball Park and comes close to

SHAWNEE TRAILS Description of Proposed Routes



Shawnee Twin Lakes



Recreation at the Twin Lakes



North/South Rails with Trails

one school, Washington. Current configuration of street may allow for Bike lanes if a re-striping plan is implemented and bike safe drain inlets are installed.

Harrison Connection

Link # 7 (See Map)

Approx. Distance: 8.4 miles

Start: Intersection of Salem Road and Clabber Creek Trail

End: Crystal Road and Wilson Springs Technology Park

Summary: On-street linkage

Description: Linkage begins at the intersection of Salem Road and the Clabber Creek Trail and heads north on Salem Road. Current configuration of street may allow for Bike lanes if a re-striping plan is implemented and bike safe drain inlets are installed.

Kickapoo Connection

Link # 13 (See Map)

Approx. Distance: 8.3 miles

Start: Main Street, Downtown

End: Hazel Dell

Summary: On-street linkage

Description: Linkage begins at the intersection of Main Street and Kickapoo and travels north to the industrial park. Connector provides link business and residential areas. The link also connects two schools, Jefferson and OBU.

Louisa Connection

Link # 18 (See Map)

Approx. Distance: 2.89 miles

Start: Intersection of Main Street and Louisa

End: Federal

Summary: North/South linkage for eastern portion of city and an option to Kickapoo.

Description: On-street linkage begins at the intersection of Main Street and Louisa and is one block east of Kickapoo. It ends at Federal Street to the north, connecting Jefferson School to surrounding residents.

MacArthur Link

Link # 10 (See Map)

Approx. Distance: 5 miles

Start: Beginning on the east side of town at Bryan

End: Leo and Saint Gregory's University

Summary: East-west on-street linkage

Description: Linkage begins at Bryan and travels to the western edge of the city. This on-street linkage accesses three schools, OBU, Will Rogers elementary and Grove Schools as well as three green spaces, Shawnee Golf and

SHAWNEE TRAILS Description of Proposed Routes



Broadway Street Connection

Country club, the Airport Walking Trail and OBU Athletic Fields. Current configuration of street may allow for Bike lanes if a re-stripping plan is implemented.

Union Connection

Link # 15 (See Map)

Approx. Distance: 4 miles

Start: Intersection of Ferrall and Union Streets

End: Interstate 40

Summary: Centrally located north south on-street linkage.

Description: Linkage begins at Ferrall Street in the south and travels north along tree lined residential street and ends to the north along pasture lands. This on-street linkage passes three schools, Bodard Middle School, Jim Thorpe Academy, Will Rogers Elementary. It also passes Woodland Park. Current configuration of street may allow for Bike lanes if a re-stripping plan is implemented and bike safe drain inlets are installed.



Bryan Link

10th Street Link

Link # 17 (See Map)

Approx. Distance: 2.1 miles

Start: Intersection of Bryan and 10th Street

End: Kickapoo Street

Summary: An important on-street east-west link

Description: Beginning on the east side of town at Bryan and continuing west to Kickapoo near downtown. On-street linkage does pass by Briscoe Boy Scout Park. Current configuration of street may allow for Bike lanes if a re-stripping plan is implemented and bike safe drain inlets are installed.



Ferrall Link

45th Street Link

Link # 1 (See Map)

Approx. Distance: 7 miles

Start: At Bryan Street on the east

End: western city limits

Summary: A northern connection.

Description: From the intersection of Bryan Street on the east this on-street connection travels west to the western city limits, with connections to the Elks Country Club and undeveloped land.

Center Street Connection

Link # 6 (See Map)

Approx. Distance: 2 miles

Start: Intersection of Walnut and Center on the south side of town

End: Federal Street

Summary: An important north south transportation link.

SHAWNEE TRAILS Description of Proposed Routes



Harrison

Description: Linkage begins at Walnut Street in the south and continues north to Federal Street. This link access two schools, Horace Mann Elementary and Sequoyah Elementary. It also passes by Briscoe Boy Scout Park.

Federal Street Link

Link # 9 (See Map)

Approx. Distance: 1.7 miles

Start: Intersection of Bryan Street and Federal Street

End: Airport Trail

Summary: East-west on-street linkage

Description: On-street linkage begins at the intersection of Bryan Street and Bradley and continues on Bradley until Center street. At Center Street it moves onto Federal and continues on Federal until it reaches the Airport property. This link passes two green spaces, The Shawnee Golf and Country Club and the Airport Trail.



Kickapoo

Highland Link

Link # 17 (See Map)

Approx. Distance: 2 miles

Start: Intersection of Bryan Street and Highland.

End: Intersection of Highland and Kickapoo

Summary: An east/west link through residential and commercial areas

Description: From the intersection of Bryan Street and Highland the accommodating, low-volume on-street link leads through residential and commercial areas including two schools, Horace Mann Elementary and Jim Thorpe Academy. Woodland Park can also be accessed from this on-street link.

Independence Link

Link # 12 (See Map)

Approx. Distance: 3.6 miles

Start: Intersection of Bryan and Independence.

End: Intersection of Leo and Independence.

Summary: East West linkage.

Description: From the intersection of Bryan and Independence this on-street linkage continues west to Leo Street. This link passes Sequoyah elementary as well as three parks, Kenwood Park, Spirit Park and the Airport Trail



Louisa

Leo Connection

Link # 2 (See Map)

Approx. Distance: 2.9 miles

Start: Intersection of Ferrall and Leo Streets

End: 45th Street

Summary: North south linkage on the west side of town

Description: On-street linkage begins at the intersection of

SHAWNEE TRAILS *Description of Proposed Routes*

Ferrall Street and Leo Street to the south and continues north to 45th street. This on-street linkage connects residents to Saint Gregory's University and three park areas, the Airport Trail, Spirit Parks and Dean Weigant Park.



McArthur

Listed to the left and on the next page are the remaining photographs of routes already described.



Union



10th Street

SHAWNEE TRAILS Description of Proposed Routes



45th Street



Highland



Center Street



Independence



Federal Street



Leo Street

Overview

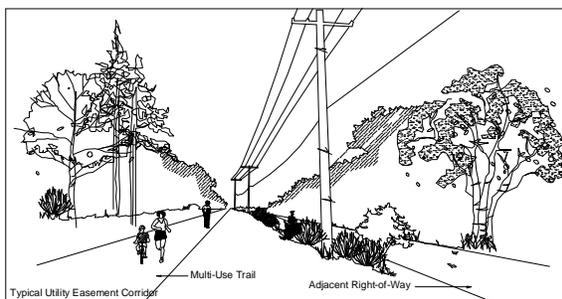
This chapter provides guidelines to both public and private entities for the development of trail and on-street facilities throughout the City of Shawnee. The guidelines are based on the best practices in use throughout the United States, as well as accepted national standards.

The general attributes of the Shawnee trail system have been determined through the master planning process. These attributes include, but are not limited to: 10 foot wide (minimum) paved trails, natural surface trails where appropriate, equestrian trails where appropriate, a comprehensive signage system, grade separated crossings where feasible, safe at grade crossings where necessary, and trail heads with drinking fountains, benches, and landscaping at appropriate intervals.

These guidelines should be used with the understanding that each trail project is unique, and that design adjustments may be necessary in certain situations in order to achieve the best results. All trail segments and on-street linkages will go through a detail design and review process. Such projects should be evaluated on a case-by-case basis, and coordinated by the City's Planning Staff.

Trail Facilities

There are several different corridor types that can be utilized in Shawnee. These include utility easements, floodways/floodplains, abandoned and active railroad corridors and expressway rights-of-way. Trail development planning in each of these corridor types must consider the unique set of characteristics that each type presents. The following sections contain information on trail development within different corridor types.



Utility Easement Corridor

Utility Easement Trail Corridor

Utility corridors can be utilized for multi-use trail development. Trails can be successfully implemented within overhead electric easements and easements for underground utilities such as sewer, fiber optic, cable, telephone and gas. Typically, the utility line is placed under, or parallel to, the trail tread. These utility easements can accommodate both paved and unpaved trail

treads and can serve a variety of users. Like all multi-use trails, there should be a 2-foot minimum (3-foot preferred) shoulder separating the trail tread from any above utility structure. This type of trail will need to be designed to withstand the weight of utility service vehicles.

Floodway Trail Corridor

The design of trails developed within floodplains must incorporate the preservation of buffer zones adjacent to streams, rivers and creeks. These vegetated buffers can play an important role in preserving water quality. Preserving these buffers also serves wildlife by providing important habitat. This habitat preservation is especially important in urban settings where natural habitat is limited.

Abandoned Railroad Trail Corridor

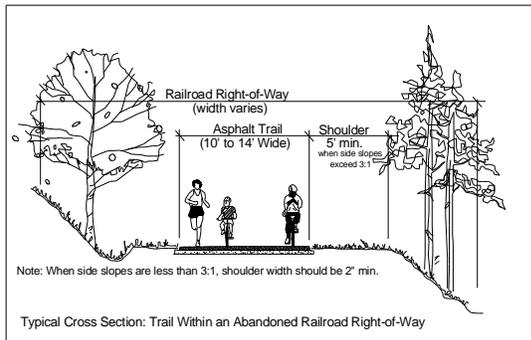
A popular movement across the country is the conversion of abandoned railroad corridors into multi-use trails. These corridors can be ideal for recreation and transportation facilities. The gentle grades associated with railroads also allow for design of ADA (Americans with Disabilities Act) compliant trails.

Additionally, railroad structures, such as trestles, tunnels and historic depots, along the corridor can be adapted for trail use as bridges, road crossings, concession stands and information centers.

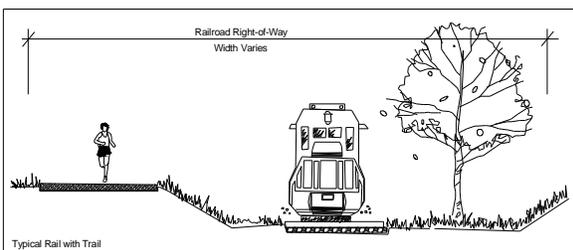
A design issue that may especially affect rail trails are side slopes that are the drainage swales typical along many railroad routes. If the slope is greater than 3:1, there must be a 5-foot wide shoulder between the edge of the trail and top of the bank. If this is not possible, a railing must be installed that is at least 2 feet away from the edge of trail. This railing, according to current AASHTO standards, should be a minimum railing height of 42 inches.

Active Railroad Trail Corridor

Another method of utilizing railroad corridors for trail development is rails-with-trails, installing a trail within a railroad right-of-way, adjacent to active tracks. This strategy has been successfully utilized in many communities. Proper design is key to developing a safe facility for trail users and minimizing liability risks for the railroad. According to a study of 37 rail-with-trails



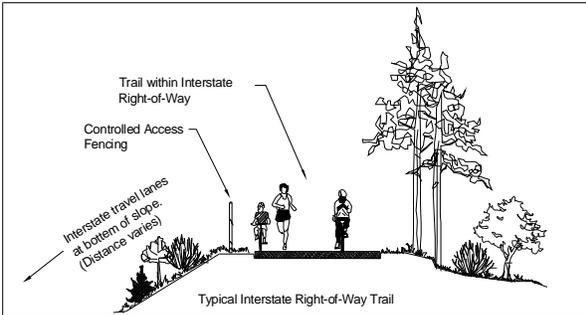
Abandoned Railroad Trail Corridor



Active Railroad Trail Corridor

completed by the Rails-to-Trails Conservancy, these facilities typically include the following design features:

- A buffer between the tracks and trail
- Grade separation which isolates the active track from the trail
- Few at-grade trail/track crossings
- Fencing or vegetative screening which serves as an attractive barrier
- Warning and explanatory signs posted.



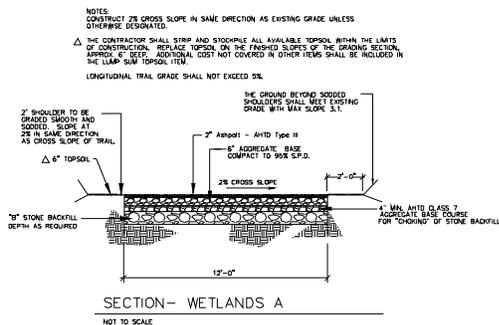
Expressway Right-Of-Way Trail

Expressway rights-of-way are excellent trail corridor resources because they are linear, well separated from the roadway, and intersect with relatively few driveways and cross streets. In Oklahoma, the Oklahoma Turnpike Authority (OTA) has supported the concept of trails utilizing the right-of-way space located outside controlled access fencing.

Each of these trail corridor types can be host to one of many different trail types. Some of these trail types include, but are not limited to, hiking trails, unpaved or paved multi-use trails, boardwalk trails, equestrian and multiple tread trails.

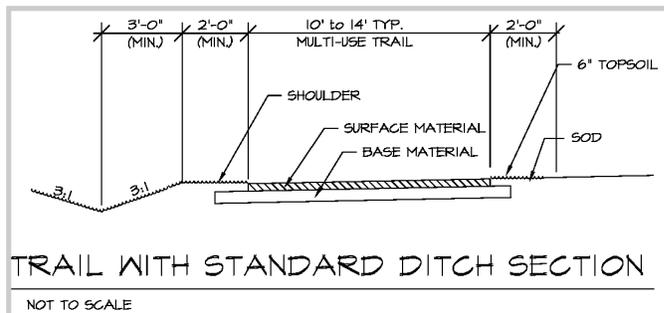
Paved Multi-use Trails

Typical pavement design for paved, off-road multi-use trails should be based upon the specific loading and soil conditions for each project location. These trails, typically constructed of a surface layer of asphalt or concrete, should be designed to withstand the loading requirements of occasional maintenance and emergency vehicles. In areas prone to frequent flooding, it is recommended that concrete be used. One important concern for asphalt multi-use trails is the deterioration of trail edges. Installation of a geotextile fabric beneath a layer of aggregate base course can help to maintain the edge of a trail as well as providing a 2 foot wide graded shoulder. The minimum width for two-directional trails is 10 foot, however 12 foot is the recommended width and 14 foot widths are preferred where heavy traffic is expected. Centerline stripes should be considered for paths that generate substantial amounts of pedestrian traffic. Possible



Detail for Paved Wetland Trail

conflicts between user groups must be considered during the design phase, as different users groups travel at vastly different speeds. Typically cyclists travel at a faster speed than other users.



Asphaltic concrete is a hard surface material that is popular for a variety of rural, suburban and urban trails. It is composed of asphalt cement and graded aggregate stone. It is a flexible pavement and can be installed on virtually any slope.

Concrete surfaces are capable of withstanding the most powerful environmental forces.

They hold up well against the erosive action of water, root intrusion and subgrade deficiencies such as soft soils. Most often, concrete is used for intensive urban applications and in flood prone areas. Of all surface types, it is the strongest and has the lowest maintenance requirement if properly installed.

Dual Tread Trail

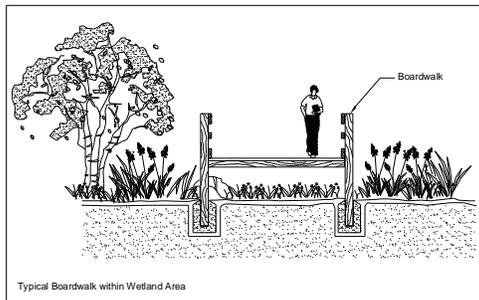
On trail corridors where anticipated usage is high, or user conflict is a concern, dual or multiple trail treads may be desired. Multiple treads allow for multiple use within the same right-of-way but on separate treads. This generally requires a wider right-of-way to accommodate the diversity of users. For example, a hard surfaced trail could be developed for bicycle use, a walking or jogging path could meander along an un-surfaced earth trail, and a boardwalk could be extended into riparian areas. With proper signage to direct trail users, all of these trail treads could be developed parallel to one another within a given corridor.



Dual Trail Treads,
St. Paul Minnesota

Boardwalk Trails

Boardwalks, or wood surface trails, are typically required when crossing wetlands or poorly drained areas. While boardwalks can be considered multi-use trails, the surface tends to be slippery when wet, and so is not well suited for wheeled users. Boardwalks intended for use by bikes, pedestrians, in-line skaters, etc. should be a minimum of 14 foot wide. Boardwalk trails limited to pedestrian use can be as narrow as 8 foot.



Wood surfaced trails are usually composed of wooden planks or lumber that forms the top layer of a bridge, boardwalk or deck. The most commonly used wood for trail surfacing are exposure- and decay- resistant species such as redwood, fir, larch, cedar, hemlock and spruce. Wood is a preferred surface type for special applications because of its strength and comparative weight, aesthetic appeal and versatility. Synthetic wood, manufactured from recycled plastics, is now available and should be evaluated as an alternative decking material. While these products are more expensive than wood lumber, recycled plastic lumber lasts much longer, does not splinter or warp and will not discolor.

Unpaved Multi-Use Trail

The unpaved multi-use trail is intended to accommodate a variety of users, including walkers, joggers, bicyclists and others. These trails, intended for use in upland environments, do not withstand the effects of flooding well. While having a lower installation cost, unpaved trails typically have higher maintenance costs than paved trails and require more frequent repairs. Careful consideration should be given to the amount of traffic the specific trail will generate, as these surfaces tend to deteriorate with excessive use. These trails should also meet all other standards within this manual, and within AASHTO's Guide for the Development of Bicycle Facilities (1999).

Materials that can be used to surface a trail include natural materials, soil cement, graded aggregate stone, granular stone and shredded wood fiber. The soft surface materials are compatible with the natural environment; however, they do not accommodate certain users, such as inline skaters and persons with some types of disabilities. Soft surface trails are preferred, however, by some runners and mountain bicyclists. Soil cement will support most user groups though bicyclists and horseback riders should only have restricted use. Soil cement surfaces last longer if installed on top of a properly prepared sub-grade and sub-base.



Multi-use Trail

Graded aggregate stone material suitable for trail surfacing includes colored rock, pea gravel, river rock, washed stone and coarse sand. This surface will often need to be kept in place with wood or metal edging. Because it is a loose, un-compacted surface, graded aggregate stone is limited to areas where rain water will not flow across the trail surface.

Granular stone includes a broad range of aggregate stone, such as limestone, sandstone, crushed rock, pit gravel, chat, cinders, sand and fine gravel. This is one of the best surface types for trails because it can be densely compacted and is compatible with the natural environment. If properly constructed, granular stone can support bicycle and wheelchair accessible trail development. This type of trail surface serves well as a base for future paving.

Shredded wood fiber is usually composed of mechanically shredded hardwood and softwood pulp, pine bark chips or nuggets, chipped wood pieces, or other by-products of tree trunks and limbs. This type of surface is favored by joggers and runners, equestrians and walkers because it is soft and blends with the natural environment. However, shredded wood fiber decays rapidly and must be limited to flat surfaces.

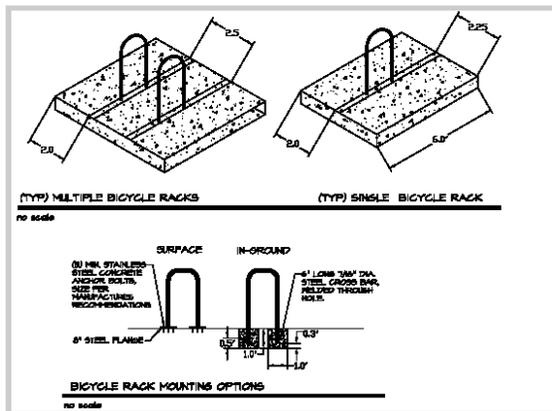
Footpath/Hiking Trail

Footpaths or hiking trails are designed to accommodate pedestrians and are not intended for cyclists or other wheeled users. These natural surface trails typically make use of dirt, rock, soil, forest litter, leaf mulch and other native materials for the trail surface. Preparation varies from machine-worked surfaces to those worn only by usage.

These pathways are often very narrow and sometimes follow strenuous routes limiting access to all but skilled users. Some hiking trails may permit equestrian use. Construction of these trails mainly consist of providing positive drainage for the trail tread and should not involve extensive removal of existing vegetation. These trails vary in width from 3 foot to 6 foot and

vertical clearance should be maintained at 9 foot (12 foot when equestrian use is allowed).

In addition to trail width and surface type, there are many other trail components that should be considered during facility design to ensure safe, user-friendly trails. The following design guidelines address features such as bike racks, site furnishings, landscaping, lighting and signage. While these components will not be required on all trail facilities, they should be considered in the design of each facility in order to develop an overall cohesive system.



Bicycle Racks

Trail Amenities

Bike Racks

Bicycle racks should be situated on-site so that more racks can be added if bicycle usage increases. The design shown is the current City of Fayetteville, AR standard. They are easy to install, vandal resistant, and work well with the popular high-security locks. In addition, they can be installed as a single unit on a sidewalk or in quantity for major recreation areas.

The location criteria included below are a mix of those developed by the cities of Fayetteville, Denver and Seattle for locating bicycle racks, and are recommended for the Shawnee area:

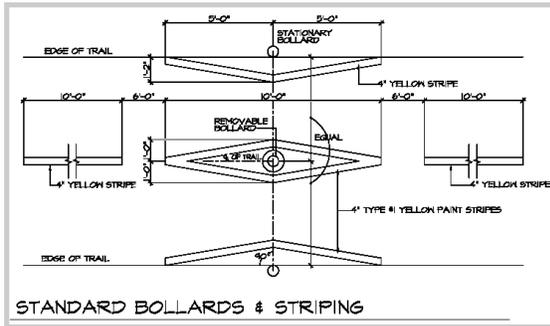
- Racks should be located within 50 foot of building entrances where bicyclists would naturally transition into pedestrian mode.
- Racks should be installed in a public area within easy viewing distance from a main pedestrian walkway, usually on a wide sidewalk with five or more feet of clear sidewalk space remaining (a minimum of 24 inches clear space from a parallel wall, and 30 inches from a perpendicular wall).
- Racks should be placed to avoid conflicts with pedestrians. They are usually installed near the curb and at a reasonable distance from building entrances and crosswalks.



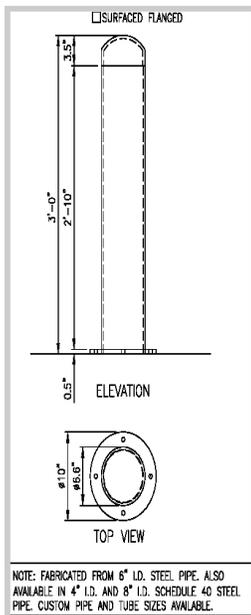
Connecting to Other Transportation

Bollards

Bollards are intended to provide separation between vehicles and trail users, and are typically used at trail/roadway intersections. They are



STANDARD BOLLARDS & STRIPING



Typical Trail Bollard



Trail Bridge

available in a variety of shapes, sizes and colors and come with a variety of features. Lighted bollards are intended to provide visitors with minimum levels of safety and security along trails which are open after dark. Bollards should be chosen according to the specific needs of the site and should be similar in style to the surrounding elements. The graphic illustrates a typical bollard currently being used by the City of Fayetteville, AR. Typical construction materials for bollards include painted steel or aluminum, with halogen or metal halide lights in weather tight casings. Removable bollards can be installed to provide trail access for emergency and maintenance vehicles.

Trail Culverts

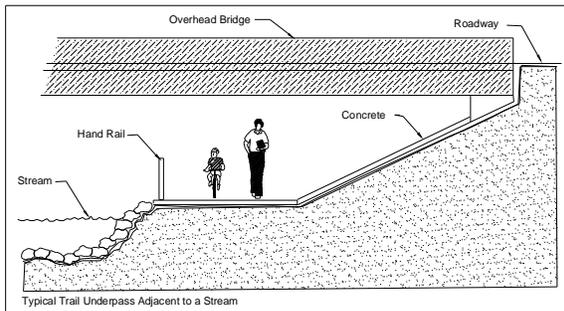
Installation of trail culverts is important to insure proper stormwater drainage, trail user safety and longevity of the trail surface. Pipe length, diameter and material specifications will vary depending on specific site needs. Materials typically used for trail culverts are reinforced concrete pipe, High Density Polyethylene (HDPE) recycled plastic pipe and corrugated metal pipe. Plastic pipes are typically less expensive on a per foot basis.

Bridges

Bridges are an important element of almost every trail project. They are required at crossings of larger drainage or water ways and can sometimes be used to cross roadways. The type and size of bridges can vary widely depending on the trail type and specific site requirements. Some bridge types often used for multi-use trails include suspension bridges, prefabricated span bridges (illustrated) and concrete bridges. When determining a bridge design for multi-use trails, it will be important to consider the issue of emergency vehicle access. Trail bridges intended for occasional vehicular use must be designed to handle such loads safely.

Trail Underpasses

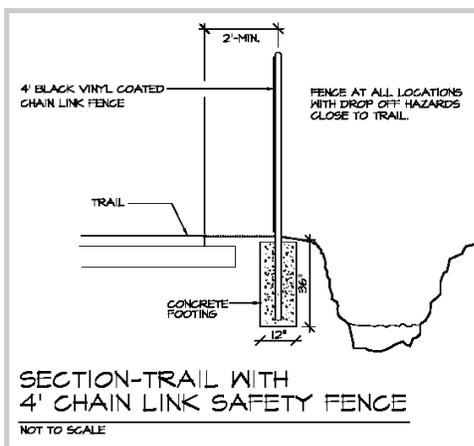
Trail underpasses can be used to avoid undesirable at-grade intersections of trails and roadways. These underpasses typically utilize existing overhead roadway bridges or culverts



Trail Underpass



Fencing at Trail



Fencing for Safety

under the roadway that are large enough to accommodate trail users. There are several key issues that must be addressed or considered in the design of a roadway underpass:

- The vertical clearance of the underpass must be at least 10 foot.
- The width of the underpass must be at least 12 foot.
- Proper drainage must be established to avoid pooling of water inside the underpass.
- It is recommended that long underpasses be lighted for safety.
- Roadway underpasses that utilize box culverts can sometimes be installed as part of a roadway improvement or construction project at greatly reduced cost.

Fencing

Fencing and railings are often needed on trail projects for safety purposes or to serve as barriers. They can consist of many different materials and, depending on the specific site needs, can be a variety of heights. Many different fence types, including post and rail, chain link, post and cable, and lumber privacy fences, can be used. Safety railings often consist of pipe railings, or lumber rails. The need for fencing or safety railings on trail projects will vary and should be determined on a project by project basis. Fencing or railings may be needed along elevated pathways or boardwalks, along expressway trails, along trails with steep side slopes and trails in close proximity to parking lots or roadways. Aesthetics should be carefully considered when determining a type of fence or railing. The materials used should blend with those used in the surrounding area and the overall trail system.

Trail/Roadway Intersections

Trail/Roadway intersections can be dangerous conflict areas if not carefully designed. For at-grade intersections, there are several primary design objectives:

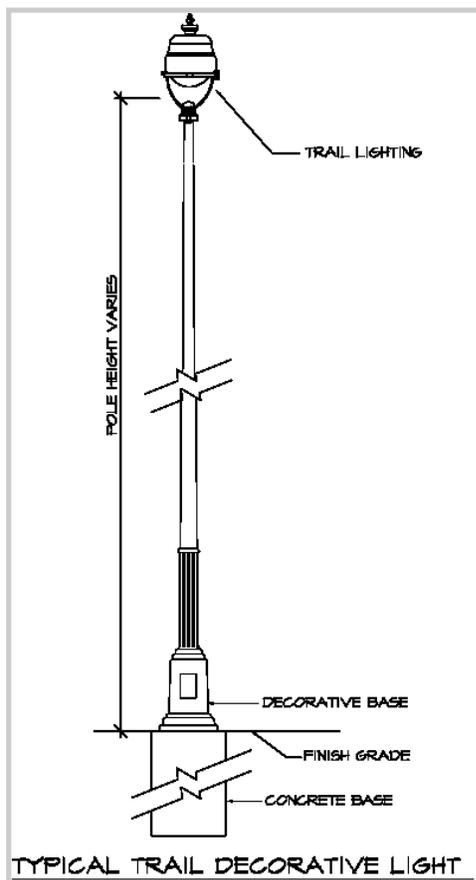
- Site the crossing area at a logical and visible location.
- The intersection should be at right angles when possible.
- Warn motorists of the upcoming crossing with signage.

- Inform trail users of the upcoming intersection with signage.
- Maintain visibility between trail users and motorists.

Intersections and approaches should be on relatively flat grades. In particular, cyclists should not be required to stop at the bottom of a hill. If the intersection is more than 75 feet wide from curb to curb, it is preferable to provide a center median refuge area, per ADA (Americans with Disabilities Act) or ANSI (American National Standards Institute) standards. If crossing traffic is expected to be heavy, it may be necessary to provide a traffic signal that can be pedestrian/cyclist activated.

Trail Lighting

Particularly during winter months, when trips to and from work are made in the dark, adequate lighting can make the difference in a person's choice to bicycle or walk to work. However, due to liability and security concerns, many off-road bicycle paths are closed at night, and therefore unlit. Lighting for multi-use trails should be considered on a case-by-case basis, with full consideration of the maintenance commitment lighting requires. Included here is an example of a popular pedestrian-scale light fixture that could be used in a trail environment.



Vegetative Clearing

Vegetative clearing refers to the amount of vegetation removal that is required for various levels of trail development. The amount of vegetative clearing required for any one trail will depend on the type of trail being developed and the type of vegetation along a particular trail.

Landscape Plantings

The amount of landscaping needed for trails will vary from project to project. While some projects will require little or no plantings, others may require it for vegetative screening, habitat restoration, erosion control or aesthetics. Trees and shrubs are important to greenways and trails for both aesthetic and environmental reasons. Not only do they contribute to the appearance of a trail, their shade cools the



Tree Planting
Along a Trail



Trash Can Receptacle



Trail Bench

environment for trail users and provides habitat for wildlife.

When choosing trees and shrubs for use in greenway corridors, it is recommended that native and well adapted species be used. Generally, most indigenous and ornamental trees are acceptable for planting near a trail. The use of certain trees that drop debris and have aggressive surface roots should be avoided in close proximity to the trail.

Site Furnishings

Benches along trails allow users to rest, congregate or just enjoy the scenery. Trail benches should comfortably accommodate the average adult. They should be located at the primary and secondary entrances to the trail and at regular intervals, and should be set back a minimum of three feet from the trail edge on a concrete pad.

Trash containers should be in place along most trails. They can be attractive as well as functional and should be selected based on the amount of trash expected, overall maintenance program of the trail and types of users. Trash cans need to be accessible to both trail users and maintenance personnel. At a minimum, containers should be located at each entranceway and near each seating area. They should be set back a minimum of three feet from the edge of the trail. The location of additional trash cans will depend the length and amount of usage of the trail.

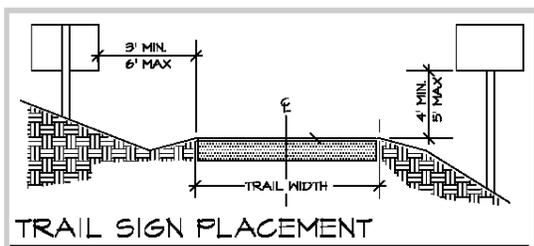
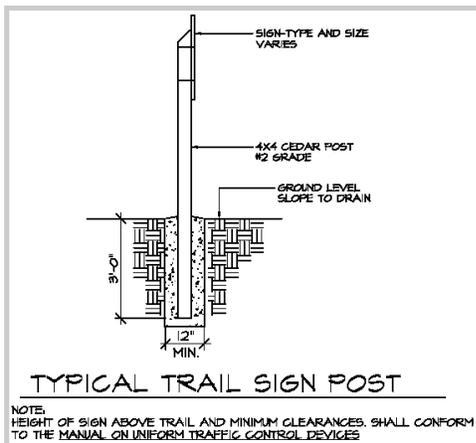
Drinking Fountains

Drinking fountains are important amenities for this trail system, given the hot summer seasons in the Shawnee area. Fountains are typically located at major trail heads and trail entrances, and at regular intervals (approximately 1-1.5 miles on heavily used trails, and 3-5 miles on more remote trails) along the trail.

Drinking fountains should be set back at least 3 foot from the trail edge, and should be wheelchair accessible. They should also be designed and installed to be freeze proof. Drinking fountains with water bottle fillers are also desirable.



ADA Accessible Drinking Fountain



Trail Heads

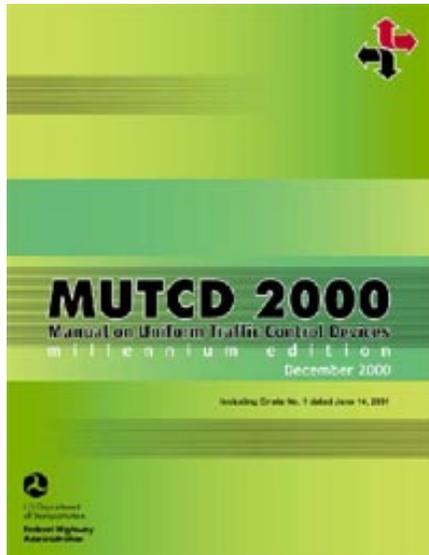
Trail heads will be required throughout the trails system to provide easy access to the trails. Typically trail heads fall into two categories: primary and secondary. Primary trail heads usually provide a wide range of amenities including: parking, restrooms, drinking fountains, picnic areas, benches, trash receptacles, lighting, all types of signage and bike racks. Restroom buildings at primary trail heads can often serve a dual purpose and provide storage space for supplies and maintenance equipment needed to service the trail. Primary trail heads are typically found at key destination points or trail endpoints but can also be incorporated into existing parks when trail routing is suitable. Along heavily used trails in densely populated areas, primary trail heads should be provided every five miles. Secondary trail heads are needed more frequently than primary trail heads, and do not provide as wide a variety of amenities. Typically, secondary trail heads are characterized as rest stops located between major destination points and can include such amenities as: signage, benches, trash receptacles, picnic tables, and sometimes parking. These trail heads are often placed at or near major roadway intersections, or periodically along longer trail segments. On more popular trails, secondary trail heads should be provided every 1 to 2 miles.

Signage

A comprehensive signage plan throughout the trail system will be needed to insure that information is provided to trail users regarding the safe and appropriate use of all facilities. Trail signage is typically divided into information signs, directional signs, regulatory signs, and warning signs. Trail signage should be developed to conform to the Manual on Uniform Traffic Control Devices (MUTCD) and the American Association of State Highway Transportation Officials (AASHTO) manual.

Key Entry Signage -Key entry signage is typically placed at trail heads and trail/ roadway intersections. These signs are typically the largest of all signage types, and designed to be seen from a vehicle as

well as by trail users. These signs typically include the trail name and often include a map of the trail and surrounding area.



Regulatory & Warning Signage -

Regulatory and warning signs display rules, regulations and warnings regarding trail use and include standard signs such as stop, yield, sharp turn, etc. Like all trail signage, these signs should conform to the Manual on Uniform Traffic Control Devices (MUTCD). These signs are typically mounted on either wood or metal posts. In order for a trail system to function as a complete component of the overall transportation system, proper linkage with the roadway system is required. Since it is not possible to provide off-road trails to every destination in the community, on-road facilities must be used as linkages to "fill in the gaps".

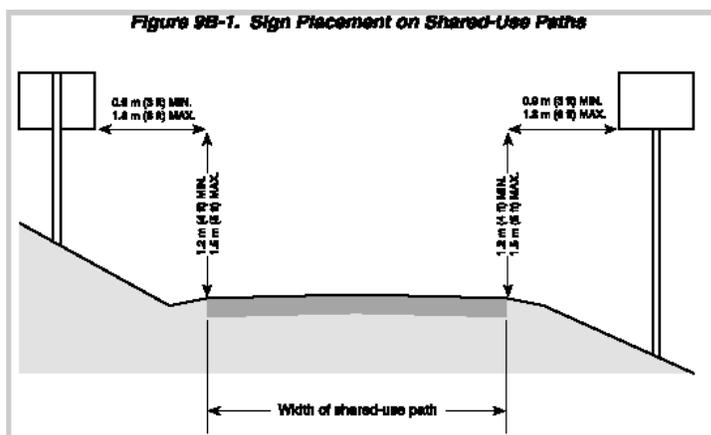
The following guidelines offer ways to safely link the trail system with on road bicycle and pedestrian facilities.

Directional/Informational Signage -

Directional and informational signage is typically found at trail heads, as well as trail/trail and trail/roadway intersections. This type of signage is typically built at a pedestrian scale and is no more than 40 inches high. The information often provided on these signs includes: maps, trail rules and regulations, trail etiquette, mileage to destinations, directions to destinations and directions to amenities such as restrooms or water fountains.

Educational/Cultural Signage -

Educational or cultural signage is used when an element or feature with educational or cultural merit exists within or in close proximity to a trail corridor. These elements may include but are not limited to wetland or other environmental features, and historical structures or





Rail Plates From a Converted Rail Line
Potential Use as Distance Markers

locations. These signs are designed to be viewed by pedestrians, can be mounted either vertically or angled, and may include photos, maps and text information.

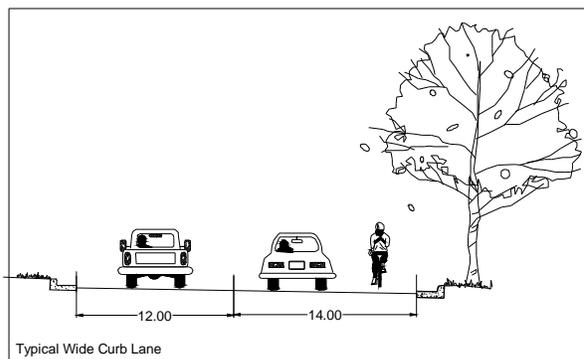
Distance Markers - Distance markers typically consist of a post or a pavement marking displaying the distance from the beginning of the trail to the mileage marker. These are usually placed in 1/2 mile and 1 kilometer increments to indicate to the trail user how far they have traveled.

On Street Bicycle Facilities

There are four types of on-road bicycle facilities: wide curb lanes, paved shoulders, bike routes and bike lanes. Wide curb lanes, or outside lanes, are wider than the standard 12 foot travel lane and can provide more space for cyclists and easier passing for motorists. Under most conditions, automobiles and bicycles can coexist in a 14 foot wide curb lane, without the need for the motorist to move into the next adjacent lane to pass a cyclist.

Wide Curb Lanes

Location and Use - Wide curb lanes best accommodate advanced cyclists, as these riders are more comfortable operating directly in traffic. The wide curb lane is always the furthest right-hand lane, and should optimally be 14 foot - 16 foot wide, not including the gutter pan. Curb lanes that are wider than 16 foot are not recommended. Wide curb lanes are not required to have curb and gutter. In order to achieve the extra space needed for a 14 foot wide outside lane, the roadway may either be physically widened or re-striped to reduce the lane width of inner lanes and increase the width of outer lanes. Re-striping proposals should be reviewed by a traffic engineer to ensure adequate safety for the motorists as well as bicyclists.



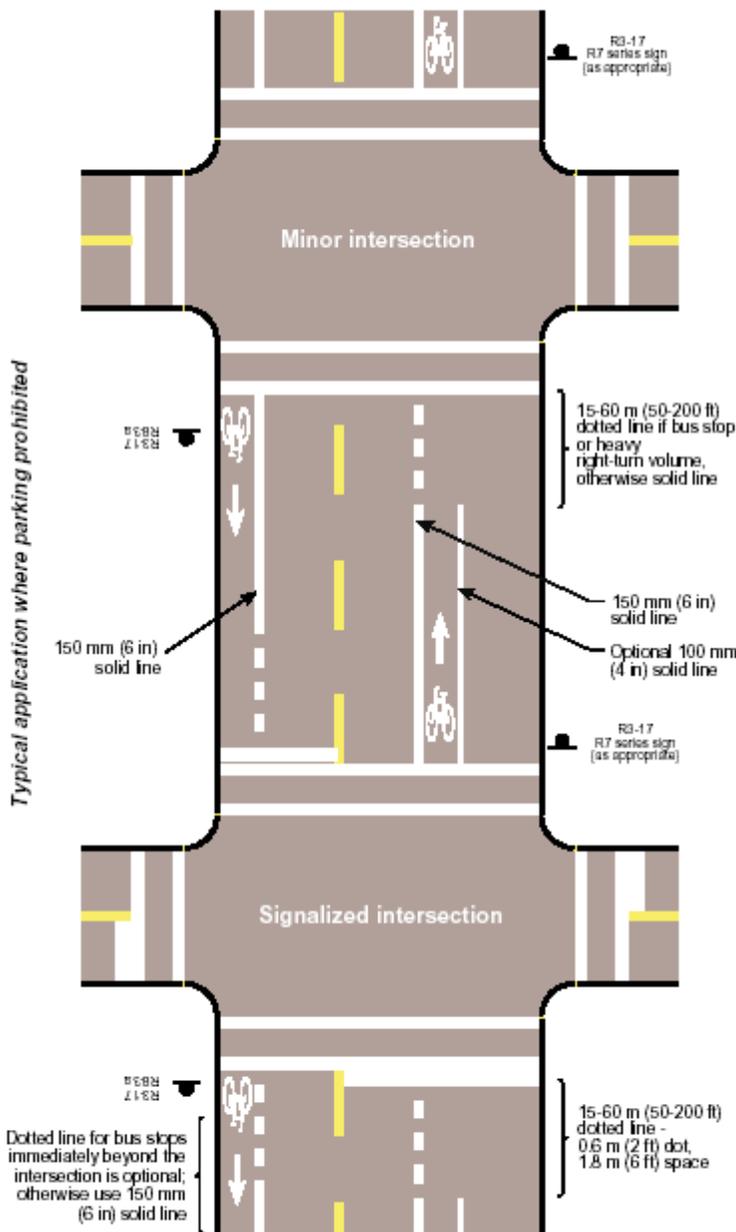


Figure 7. Typical pavement markings for bike lane on two-way street

Signage - There are no special "wide curb lane" sign, however on high volume urban arterials, the designer may choose to install "Share the Road" warning signs (standard bicycle warning plate with a subplate stating SHARE THE ROAD).

Intersection Design - When wide curb lanes approach intersections with turning lanes, the 14 foot wide lane should continue through the intersection as the outside through-lane.

Design Issues

- **Acceptance:** Bicycle programs in numerous communities have found that less experienced bicyclists seldom see a difference when wide curb lanes are provided. Therefore, if the desired outcome is greater numbers of bicyclists or a visible "Pro Bicycle" statement, this option will not satisfy the need.
- **Traffic speeds:** Wider curb travel lanes may tend to increase motorist speeds. Whether a marginal increase in speeds is important in a particular situation should be a subject for analysis.

Paved Shoulders for Bicycle Use

Paved roadway shoulders are not only an excellent way to accommodate bicycles; they are also beneficial to the motoring public. Paved shoulders eliminate problems caused when the pavement edge begins to deteriorate, therefore extending the life of the road surface and requiring less maintenance.

Location and Use - Paved shoulders for bicycles serve the needs of all types of cyclists in rural areas. In urban areas, advanced cyclists prefer paved shoulders versus riding in a traffic lane on roadways with high speeds (over 45 mph). Paved shoulders in rural areas have the additional benefit of providing

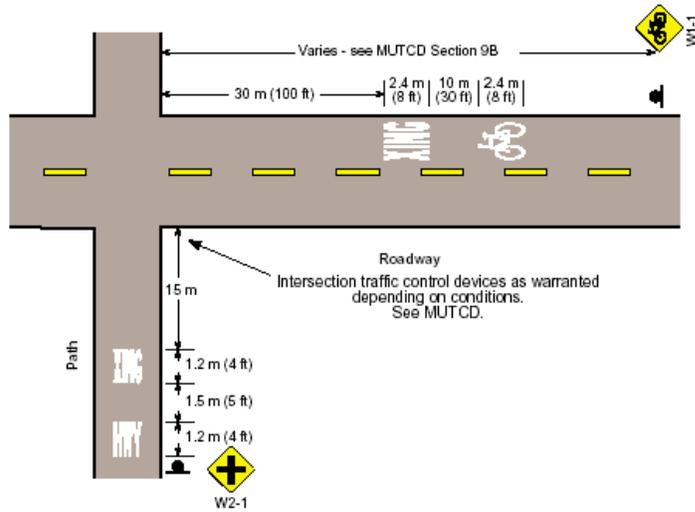


Figure 20. Midblock Type Path Crossing

an area for pedestrian use where sidewalks are not present.

Width - Shoulders should be a minimum of 4 foot wide to accommodate cyclists, depending upon the speed and volume of motor vehicle traffic. Paved shoulders for bicycles can be designed according to typical roadway cross sections for bicycle lanes, with the exception of pavement decals or bicycle lane signage. Although 4 foot of width is preferable, certainly any additional shoulder width is preferable to none at all. Shoulders that are 2 foot-3 foot wide can improve conditions and are recommended in cases where 4 foot widths cannot be achieved. However, shoulders less than 4 foot wide should not be designated as bicycle facilities. "Share the Road" signs would be acceptable in these locations, as they would serve to warn motorists of the likely presence of bicyclists. As with bicycle lanes, paved shoulders should have the same pavement thickness and subbase as the adjacent roadway, and should be regularly swept and kept free of potholes.

Signage - Paved shoulders can include standard bicycle route warning signs, as shown on the previous page. As described above, these "Share the Road" signs may be installed on roads with paved shoulders that are less than 4 foot in width.

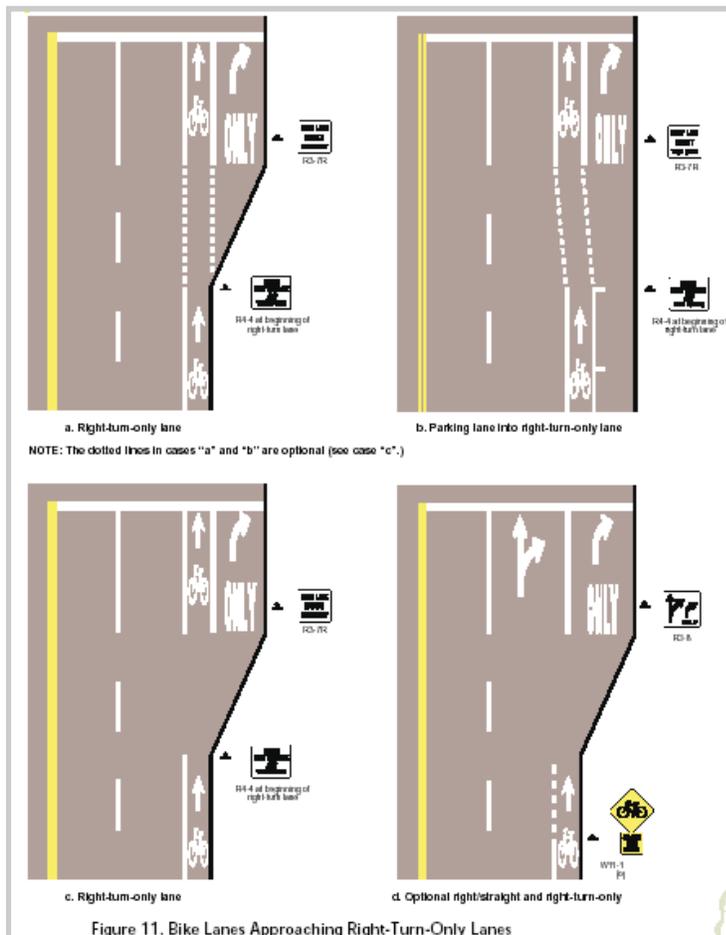


Figure 11. Bike Lanes Approaching Right-Turn-Only Lanes

Bike Lanes

Bicycle lanes should conform to the standards in AASHTO's Guide for the Development of Bicycle Facilities (1999).

Bicycle lanes are an on-road type of facility. They should not be separated

from other motor vehicle lanes by curbs, parking lanes or other obstructions. General standards for

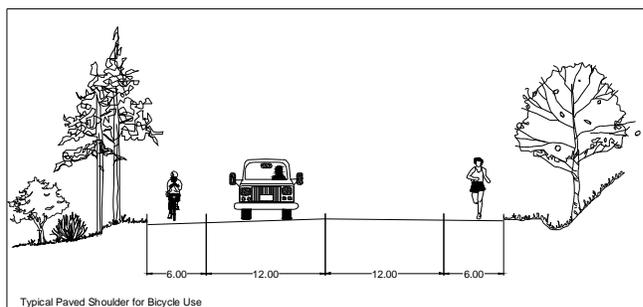
width, striping and intersections are provided below.



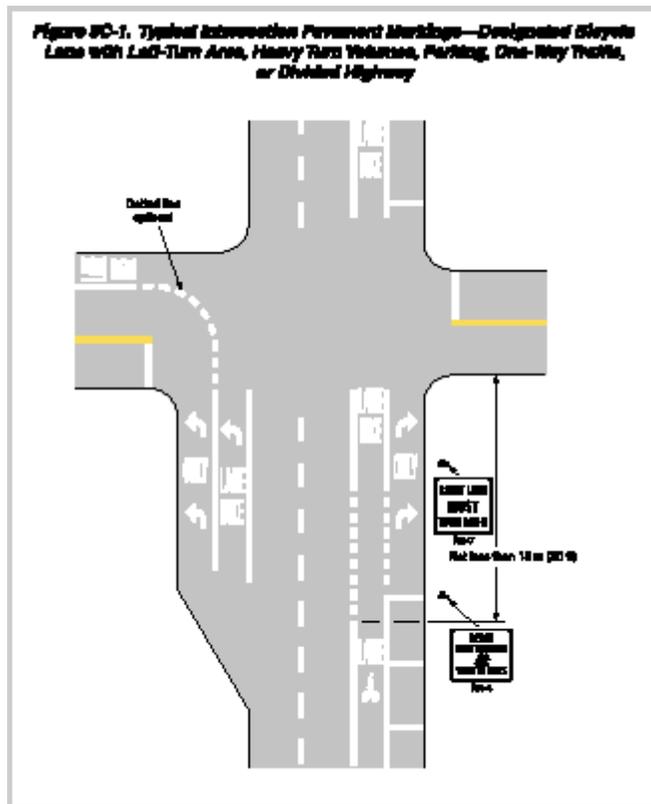
Location and Use - Bicycle lanes serve the needs of experienced and inexperienced bicyclists in urban and suburban areas, providing them with their own travel lane. Bicycle lanes are always located on both sides of the road except when they are constructed on one-way streets. By this design, cyclists are encouraged to follow the rules of the road, which require them to travel in the same direction as adjacent motor vehicle traffic.

Width - The minimum width of bike lanes should be 5 foot. On roads with parallel parking, bike lanes should be a minimum of 6 foot wide, with no striping, and should be installed adjacent to the motor vehicle lanes, rather than between the parking lane and the curb. Along streets with higher motor vehicle speeds (45 mph or greater) and traffic volumes, 6 foot wide bike lanes are recommended.

Signage - The Manual on Uniform Traffic Control Devices (MUTCD) specifies standard signage for bicycle lanes. According to sthe manual, the R3-16 sign should be used in advance of the beginning of a designated bicycle lane to call attention to the lane and to the possible presence of bicyclists (see graphic this page). The MUTCD requires that the diamond lane symbol be used with both the R3-16 and R3-17 signs. R7-9 or R7-9a signs can be used along streets where motorists are likely to park or frequently pull into the bike lane.



Striping - Bicycle lane stripes should be solid, 6 inches wide white lines. Care should be taken to use pavement striping that is skid resistant. Bicycle-shaped pavement symbols and directional arrows should be placed in the bicycle lane to



clarify its use. Pavement letters that spell "ONLY BIKE" are also highly recommended. Symbols should be installed at regular intervals, immediately after intersections, and at areas where bicycle lanes begin.

Bike lane striping at intersections is challenging. Traffic has a tendency to mix at intersections: motorists who are turning right must cross paths with cyclists who wish to continue straight, and cyclists who wish to turn left must cross into left-hand turn lanes. Several intersection striping patterns are provided by AASHTO's [Guide for the Development of Bicycle Facilities \(1991\)](#) and the [MUTCD](#).

Bicycle Routes

A bicycle route is the preferred on-street facility for a cyclist to get from a point of origin to a destination. Bike routes do not necessarily require physical improvements in order to accommodate bicyclists given that they meet minimum safety criteria in their present condition. Bike routes are preferred for bicycling for a number of reasons including directness, scenery, less congestion and lower speed limits.

Location and Use - Bicycle routes may be used by all types of cyclists. In urban areas they are most often designated on collector or residential streets with low traffic volumes, and are typically used to direct cyclists to a destination within the community, or to provide a through-route for bicyclists. In rural areas, bike routes are most often designated on roadways that are popular touring routes for recreational cyclists, or long-distance commuting routes for advanced cyclists.

Safety Criteria - A street does not necessarily have to be physically widened in order to be designated as a bicycle route. A road with standard 12 foot wide lanes (or less) can be designated as a bike

route with the appropriate signage, given that each condition below is met:

- In its present state, or with planned improvements, the roadway sufficiently accommodates cyclists. Roadway width and traffic volume are the main factors to take into account. Candidate bike routes should have good sight distances and adequate pavement conditions. In addition, traffic should not regularly exceed posted speed limits.
- All bicycle hazards have been removed from the roadway or otherwise remedied, including unsafe drainage grates and angled railroad crossings.
- The bicycle route is designated as one segment within an interconnected system of bicycle facilities.
- Traffic signals are either timed or are activated by bicycles.

Signage - Bicycle route signage should be used according to the standards in the MUTCD, which provides several choices in styles. Bicycle route signs should be placed at all areas where new traffic enters the roadway. In urban areas, it is helpful to include directional arrows and captions that indicate nearby destinations, particularly at intersections.

Sidewalks - Sidewalks are a critical need in the City of Shawnee. All sidewalk design and construction should comply with all City sidewalk codes and ordinances. They not only encourage walking, but they also improve the safety of pedestrians. An individual's decision to walk is as much a factor of convenience as it is the perceived quality of the experience. Therefore, pedestrian facilities should be designed with the following factors in mind:

- Sufficient width: Sidewalks should accommodate anticipated volumes based on adjacent land uses, and

- should at a minimum allow for two adults to walk abreast (5 foot min.).
- Protection from traffic: High volume and/or high speed (>35 mph) motor vehicle traffic creates dangerous and uncomfortable conditions for pedestrians. Physical (and perceptual) separation can be achieved through a combination of methods: a grassy planting strip with trees, a raised planter, bicycle lanes, on-street parallel parking, and others.
 - Street trees: Street trees are an essential element in a high quality pedestrian environment. Not only do they provide shade, they also give a sense of enclosure to the sidewalk environment which enhances the pedestrian's sense of security.
 - Pedestrian-scaled design: Large highway-scale signage and lighting reinforces the general notion that pedestrians are out of place. Signage should be designed to be seen by the pedestrian. Street lighting should likewise be scaled to the level of the pedestrian (14 foot tall), instead of providing light poles that are more appropriate on high-speed freeways.
 - Continuity: Pedestrian facilities are often discontinuous, particularly when private developers are not encouraged to link on-site pedestrian facilities to adjacent developments and nearby sidewalks or street corners. New development should be designed to encourage pedestrian access from nearby streets. Existing gaps in the system should be placed on a prioritized list for new sidewalk construction.
 - Clearances: Vertical clearance above sidewalks for landscaping, trees, signs and similar obstructions should be at least 8 foot. In commercial areas the vertical clearance for awnings should be 9 foot. The vertical clearance for building

overhangs which cover the majority of the sidewalk should be 12 foot.

- Conformance with national standards: Sidewalk design should be consistent with Americans with Disabilities Act requirements and/or ANSI requirements. Specific guidance is provided by the Architectural and Transportation Barriers Compliance Board's American's with Disabilities Act Accessibility Guidelines.

Sidewalk Obstacles - Street furniture and utility poles create obstacles to pedestrian travel when located directly on the sidewalk. At a minimum there should be 5 foot of clear sidewalk width to allow wheelchairs to pass. Where possible, utilities should be relocated so as not to block the sidewalk. Benches should not be sited directly on the sidewalk, but set back at least 3 foot.

The design of new intersections or re-design of existing intersections presents an opportunity to improve pedestrian circulation. Street furniture located near intersections can block sight lines. In general, the designer should consider the impact on sight distance for all features located in the vicinity of roadway intersections.

The recommended guidelines in this report meet or exceed the City of Shawnee standards. Should these standards be revised in the future and result in discrepancies with this chapter, the City sidewalk standards should prevail for all design decisions.

Overview

Securing the funding needed to develop and maintain the trails system will be a major challenge. In a time when funding for general operational needs of the city are insufficient due to a slow economy, several departments of the city are vying for support to fund the various needs of the growing community. As the population swells, so does the demand on all city services. Funding sources are currently in place to aid in the development of the city's parks and recreational needs, however, additional funding is needed to meet the demands and desires of a comprehensive trail system for pedestrians and cyclists.

The cost to fully develop the Trails Master Plan estimated at approximately 25 million, (an average of the high and low cost estimates is detailed in Chapter 7. From these projections, it is obvious that additional funding sources must be obtained in order for the city to achieve an trail and alternative transportation system.

Current funding

Funding challenges faced by the City of Shawnee will be to secure existing funding and to find additional funding sources for the development of bike and pedestrian facilities. Currently the development of parks and recreation facilities and trail systems are funded through the City's capitol projects funding and have to compete with all the other departments projects. Below are several examples of additional ways that the City may want to explore as ways to establish continuous funding streams for a trails system:

Park Land Dedication Funds - The city of Fayetteville, AR created a Park Land Dedication Ordinance, adopted in 1981, it was developed as a way to fund park land to Fayetteville citizens as the population increases. The concept behind the Park Land Dedication Ordinance is to require developers to make a reasonable dedication of land for public park facilities, or to make an equivalent monetary dedication in lieu of land for all new residential developments. This type of ordinance could also include dedication based on land and money to establish a greenway system. Included in the appendix is a copy of this ordinance.

Hotel, Motel and Restaurant Tax (HMR) – The city of Fayetteville, Arkansas also established by a popular vote of the citizens in 1995 to enact a HMR tax. The two percent tax on all hotel, motel and restaurant expenditures in the city is split evenly between the Parks Development Fund and the Chamber of Commerce Advertising and Promotions Commission. The one percent dedicated to the Parks and Recreation Division may only be used for the purchase of property, the development of new recreational facilities and for promoting the parks and recreation system. A similar tax could be established to fund a trails program. Included in the appendix is a copy of this ordinance.

Capital Improvement Program Funds –The City of Shawnee has traditionally funded brick and mortar projects through the city's one percent sales tax. The Parks and Recreation Department is allocated a varying amount of that tax depending on the needs of other city divisions.

Projects to be funded by this sales tax are reviewed and approved by the City Commission.

Increased Appropriations of Current Sources

Gaining support for an increase in appropriation of current sales tax and millages is one viable option. In order to fund the Trails Master Plan, effort should be made to acquire a portion of the Hotel Motel tax. Suggestions such as this would be a redirection of an existing tax program and less controversial than requesting an additional tax.

Bond Programs

A frequently used funding option for major capital projects in municipalities is through general bond programs paid back with tax revenue and revenue generated by services provided. The advantage of this type of program is the ability to fund large projects over a short period of time, while spreading the project's cost over a longer period. Funding currently targeted to parks and recreation could be used to pay off the bond over a set number of years or additional taxes could be appropriated that would shorten the life of the bond. This approach would allow residents to utilize and benefit from an alternative transportation and trails system within a short period of time. Just as with any loan, the drawback to a bond program is the high cost of interest. Current conditions make this a more attractive option since interest rates are at an all time low.

Conservation Development:

Conservation Development refers to the flexible approach of allowing development to occur in consort with the preservation of Shawnee's valuable natural resources. When implemented in a coordinated way over a period of years, conservation development can protect an interconnected network of greenways throughout a municipality. Areas that should be targeted for protection are those with noteworthy natural features (mature woodlands, wildlife habitats, prime farmland, groundwater recharge areas, stream corridors, historic sites, scenic view sheds), all of which could provide corridors for trails within an alternative transportation system.

Following sound planning and preservation principles, developers can easily become the community's leading conservationists. As each new subdivision adds another link, an area wide open space system would be created. Best of all, this result can be achieved fairly easily by making several small but significant changes to three basic local land-use documents; the comprehensive plan, the zoning ordinance and the subdivision ordinance. Conservation Development rearranges the density on each development parcel as it is being planned so that only half (or less) of the buildable land is consumed by house lots and streets. Without controversial "down zoning" (decreasing the number of house lots), the same number of homes can be built in a less land-consumptive manner, allowing the balance of the property to be permanently protected and added to an interconnected network of community green spaces. This "density-neutral" approach provides a fair and equitable way to balance conservation and development objectives. *The Natural Lands Trust web site (www.natlands.org) is a great resource for this Conservation Development model referred to as the "Growing Greener" planning initiative.*

Grants

Conservation development is a way to obtain greenway property but a sizable amount of funds are

needed to build and maintain the trail system. Grants are available through federal and state government as well as through both public and private entities. Most grants require the applicant to share in a percentage of the overall cost although a few grants do exist that exclusively fund the project. Some of the non-governmental entities offering smaller grants can be applied collectively to fund projects. Included in this plan is a listing of many grant opportunities for trails and alternative transportation implementation. This listing includes the program objectives, the requirement for the grant as well as application deadlines and funds available. The current list is available within the appendix section of this document.

A popular source for funding trails and alternative transportation options is through grant programs associated with the Federal Transportation Equity Act for the 21st Century, (TEA-21). Shawnee is currently utilizing TEA-21 appropriations for the development of this trails master plan. Requiring a 20 percent local match, the TEA-21 program offers several monetary sources for greenway development, preservation of historic transportation facilities, and alternative transportation opportunities. Section 217 of Title 23 of the U.S. Code calls for the integration of bicycling and walking into the transportation mainstream. More importantly, it enhances the ability of communities to invest in projects that can improve the safety and practicality of bicycling and walking for everyday travel. In 1991, Congress passed landmark transportation legislation, the Intermodal Surface Transportation Efficiency Act (ISTEA), that recognized the increasingly important role of bicycling and walking in creating a balanced, intermodal transportation system.

The National Bicycling and Walking Study, published by the U.S. Department of Transportation in 1994, translated this renewed interest in nonmotorized travel into two specific goals: to double the percentage of trips made by foot and bicycle while simultaneously reducing the number of crashes involving bicyclists and pedestrians by 10 percent.

Subsequent legislation provides the funding, planning, and policy tools necessary to create more walkable and bicycle-friendly communities.

A bicycle transportation facility is "a new or improved lane, path, or shoulder for use by bicyclists and a traffic control device, shelter, or parking facility for bicycles." The definition of a pedestrian includes not only a person traveling by foot but also "any mobility impaired person using a wheelchair." 23 USC Section 217 (j)(1)

Funding Sources for Bicycle and Pedestrian Projects

Bicycle and pedestrian projects are broadly eligible for funding from almost all the major Federal-aid highway, transit, safety, and other programs. Bicycle projects must be "principally for transportation, rather than recreation, purposes" and must be designed and located pursuant to the transportation plans required of States and Metropolitan Planning Organizations.

Federal-aid Highway Program

National Highway System funds may be used to construct bicycle transportation facilities and pedestrian walkways on land adjacent to any highway on the National Highway System, including Interstate highways. *23 USC Section 217 (b)*

Surface Transportation Program (STP) funds may be used for either the construction of bicycle transportation facilities and pedestrian walkways, or nonconstruction projects (such as maps, bro-

chures, and public service announcements) related to safe bicycle use and walking. TEA-21 added "the modification of public sidewalks to comply with the Americans with Disabilities Act" as an activity that is specifically eligible for the use of these funds. *23 USC Section 217 (a)*

Ten percent of each State's annual STP funds are set-aside for **Transportation Enhancement Activities (TEAs)**. The law provides a specific list of activities that are eligible TEAs and this includes "provision of facilities for pedestrians and bicycles, provision of safety and educational activities for pedestrians and bicyclists," and the "preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian and bicycle trails)." *23 USC Section 109 (a)(35)*

Creative Funding

Several excellent funding ideas have been implemented by communities in all 50 states. The American Trails website lists many suggestions from which the following ideas were generated:

Corporate Funding - Shawnee enjoys a number of sizable corporations that have chosen to remain in the region due to the regions high quality of life. These corporations understand the value of drawing competent executives and employees through the benefits gained from a trail and greenway system. An effort should be made to contact these corporations for donations or to develop programs that support the Trails Master Plan. Programs could include:

- Encourage Employee Volunteerism - Involving employees in volunteer efforts such as building or maintaining trails and greenways.
- Encourage Public Donation – Offer to match public donations.
- Adopt a Project – Donate a specific amount of money for a specific aspect of trail development.
- Donate Merchandise – Donate merchandise for silent auctions or fund raising events.
- Donate Supplies – Donate food for volunteer trail development projects.
- Offer a Corporate Challenge – Challenge competitors to donate a percentage of their proceeds for the Trails program. The City can offer awards and publicity to the highest donating corporation.

Local businesses – Communities with developing trails programs have found local businesses to be quite generous and innovative in supporting and funding trail and greenway systems.

- Businesses that sell related merchandise such a bicycle shops and outdoor sports places may be approached about giving a donation for every bicycle or pair of running shoes sold.
- Dry Cleaners can encourage recycling and the trails system by offering 1 cent for every hanger returned.
- Retailers can sell, and possibly match, the proceeds from Enviro-Dollar Coupons sold in support of trails and greenways. Employees selling the most Enviro-Coupons could win a prize for supporting the program. Prizes can be donated by area businesses and corporations.
- Local retailers can donate merchandise for silent auctions or other fund raising events.
- Local restaurants can donate food for volunteer trail development projects.

Other Local Support Opportunities –

- Voluntary donations can be simplified for residents by offering an option to donate a dollar while paying their water and sewer bill.
- The Shawnee Police Department and the Sheriff's Department may offer the use of inmates for maintenance of existing trails. People required to donate time for community service can be directed to use their time to maintain trails and greenways.
- An Adopt-a-Trail Program can be developed where residents are encouraged to adopt a section of the trail through donations. For little cost, the city can imprint the name of the donors in the pavement of the trails or on signage along the trail.

Coordination with local utilities –

- Promote trail corridors as potential lease areas for proposed utility expansion. Not only will these shared easements offer an opportunity to share in the maintenance of the corridor, but by leasing, the city can receive franchise fees that can be targeted towards expenditures.
- Approach local energy companies to support the trail system from the stand point that preserved greenways offset the heat island effect from built infrastructure and alternative transportation systems help to reduce air pollution.



Trail Construction, Taking Shape

Trail Construction, Providing Access
Where Citizens Live

Trail Construction, Final Stages

Overview

The Shawnee Trails Master Plan offers tremendous potential to improve the quality of life for community residents. This system of trails and on-street linkages will provide avenues to popular destinations within a natural setting that encourages increased physical activity within the confines of Shawnee's natural diversity. Not only will these qualities encourage increased use of alternative transportation opportunities, it will do so in an environmentally sensitive way while stimulating economic growth community wide. As the trail system is developed during the coming years, the key to success is implementation. This chapter describes a strategic plan for building, managing, and operating the Trails Plan as well as a guideline for educating the community for a successful and safe alternative transportation system.

Building the Shawnee Trails Plan

The groundwork of this Plan is the foundation for future development of a trails system for Shawnee. The actual location of conceptual trail corridors was established through public input workshops and with the review of the Shawnee Trails Master Plan Steering Committee. Two public workshops were held and a website was created, both, generating the input of citizens throughout the community. An evaluation of existing street conditions and natural greenway opportunities was combined with popular destination points established by the public to develop the conceptual trail corridors and on-street linkages.

As trail corridors are prioritized and rights-of-way acquired, detailed design work will be required before actual construction of individual trail segments can begin. During the detailed design process, attention to trail amenities such as parking, lighting, landscaping, trail furnishings, and signage will be determined. The specific horizontal and vertical alignment for the trail will depend on site specific surveys and existing conditions. The cost estimates for each trail segment will be refined once drainage and erosion issues are defined and specific trail amenities are determined necessary.

The Shawnee Trails Plan proposes the development of approximately 79 miles of trails and 59 miles of



Utility Easement



Connecting Parks



Connecting Schools

on-street linkages as defined in Chapter 4, Description of the Proposed Trail Plan.

Detailed design and construction documents for each of the trail segments will be necessary. Planning staff will coordinate with Parks and Recreation staff and Engineering on the detail design of all trail locations and on-street linkages.

Trail Development Priorities

With limited resources and over 139 miles of trails and on-street linkages, it is important to determine a logical order for the implementation of the trails and linkages. In an effort to evaluate each corridor objectively, criteria were developed to assist in determining the order of multi-use trail and linkage development for the next 15 years. The Shawnee Trails Master Planning Steering Committee, along with the City's planning staff, identified the most critical evaluation factors for future development of the Plan. These factors were developed into a "Trail Phasing Evaluation Matrix" that will rate the priority and implementation of each trail segment. Trail segments that rate highest will be constructed in the first phase of developing the Plan. The following section defines the criteria utilized in the Trail Phase Evaluation Matrix.

Right of Way Availability - The availability of rights-of-way or easements to construct trails is a critical cost and timing factor. If rights-of-way or easements cannot be secured voluntarily to construct a trail within a corridor, the trail cannot be built unless rights can be purchased. Purchasing rights-of-way can be very expensive and in many cases can make constructing a trail cost prohibitive. Corridors which have necessary rights-of-way in the public domain have the highest rankings.

Parks Connected - Trails which connect parks can offer the public a safe opportunity to access park and recreational facilities. Parks can also serve as trail heads. The higher the number of parks and park amenities served by a trail corridor, the higher the ranking.

Schools Served - Trails which connect schools offer the communities a safe op-



Airport Trail
Provide Connections to Existing Trails



Partnering with Others to Spread Funding Further



Shawnee Mall
A popular destination point

portunity for children to walk or ride their bikes and can serve as logical trail heads. The higher the number of schools served by a trail corridor, the higher the ranking.

Connections to Existing Trails - A proposed trail is considered more useful if it makes connections to existing trails and on-street linkages. Proposed trails which connect to existing transportation facilities receive higher rankings.

Scenic Quality – One of the obvious benefits of greenways and important criteria for attracting tourists is natural beauty and scenic quality. The abundance of Shawnee’s natural diversity creates a wealth of beautiful and unique natural features that can satisfy a multitude of subjective tastes. The segments of the Plan that offer the highest quality view sheds or areas of unique geological features, will rate higher in this criteria.

Opportunity for Additional Funding – Funding opportunities such as grants, private donations, or land acquisition potential all impact the feasibility of actually getting a trail project in the construction phase. Segments of the trail where funding opportunities are most prevalent will rate highest in this criteria. Examples might include developing a trail where a private land owner has agreed to donate an easement or along a riparian buffer where a grant from the Soil and Conservation Fund may be obtainable.

Regional Connectors - Connecting nearby towns and cities makes good economic sense for the City of Shawnee. These types of connections may provide commuters a way to work or even the visitor who is looking for an outdoor adventure a place to travel to, from their home town.

Community Connectors - Connecting neighborhoods, popular destination points, and neighboring community trails is the



Trail Construction



Chapel Ridge Apartments
Dense Residential Development



TDK Corporation

impetus behind utilizing trails for an alternative transportation. Trails which connect major points of interest receive higher marks than those which do not.

Opportunity to coordinate with other construction projects - In some instances the trail corridors identified are the same corridors in which other public improvements will be or have been built, such as a street, highway, water or sewer line, drainage channel, etc. In cases where a trail can be constructed in conjunction with these types of projects, the trail construction will be expedited and great costs savings can result. In some cases, if a trail is not designed in conjunction with other public improvements, (ie. street widening, force main construction, etc.) it can be very difficult and expensive to try to construct a trail at a later date. Corridors in which future public improvements are funded or planned receive higher rankings than those corridors without such public improvements.

Population Served - Another method of looking at the potential number of trail users is the average population served per mile of trail. For this criteria the population within one half mile of the trail corridor was used. Trails within densely populated areas rank highest.

Jobs Served Per Mile - To help predict the potential use of the trail for commuting purposes, the average number of jobs served by the corridor was utilized. For this evaluation, jobs within one half mile of the trail corridor were used.

Segments of the Shawnee Trails Master Plan will be prioritized and phased for construction utilizing a priority matrix. The matrix criteria were developed by the Steering Committee. The Plan will prioritize trail and on-street linkages into three phases, near term, midterm and long term

Near Term Phase - includes trails and on-street linkages whose design can be started within two years and constructed within a

period of five years. All of the projects in this category received high scores in the most important evaluation factors of the matrix, as selected by the Trails Master Plan Steering Committee.

Mid Term Phase – includes segments of the Plan that ranked further down on the evaluation matrix and whose design would commence within the next five years and be constructed within ten years.

Long Term Phase – includes segments that ranked the lowest on the matrix, may or may not ever be built, but if selected, design would commence within the next ten years and be constructed within fifteen years.

The Matrix, the incorporated evaluation criteria, and the associated phasing, are meant to be reviewed and updated on a regular basis to ensure the community's needs are represented. These updates should occur every ten years or sooner as the community evolves. Each corridor is objectively compared to all other corridors with the resulting ranking order established by the matrix on the following pages.

The advantage of the evaluation matrix is that the city can update it as often as needed. For example if a new road project is introduced along a designated trail corridor, that corresponding segment would be re-evaluated. Funding could be reprioritized and the construction cost could be shared with the road project. This system of construction timing could save an enormous amount of funds that then could be leveraged to build other trail segments.

Trail Corridor Evaluation Matrix

Length IN MILES	RANK	ID	NAME	ROW AVAILABLE	COORDINATION	REGIONAL CONNECTOR	SCENIC QUALITY	TOTAL POP. SERVED *	POP. SERVED PER MILE *	TOTAL JOBS SERVED *	JOBS SERVED PER MILE *	SCHOOLS SERVED *	PARKS SERVED *	OTHER DESTINATIONS *	FUNDING OPPORTUNITY	TOTAL SCORE	
3.64	1	12	INDEPENDENCE ST	15	0	15	1	12	10	5	3	10	9	9		89	
3.96	2	15	UNION AVE	15	0	10	1	12	15	2	2	15	9	6		87	
1.95	3	4	MAIN ST	15	0	10	1	12	15	3	3	15	6	6		86	
2.18	4	5	FARRALL ST	15	0	10	1	12	15	2	1	15	6	6		83	
12.28	5	21	NORTH/SOUTH RAILROAD	10	0	10	3	12	10	5	3	15	9	6		83	
5.00	6	10	MACARTHUR ST	15	0	5	1	12	10	3	3	15	9	3		76	
8.32	7	13	KICKAPOO AVE	15	0	10	1	12	10	3	2	10	6	6		75	
2.40	8	28	BROADWAY AVE	15	0	5	1	12	15	2	2	10	9	3		74	
8.38	9	7	HARRISON AVE	15	0	10	1	12	10	5	3	5	6	6		73	
2.04	10	17	HIGHLAND ST	15	0	5	1	12	15	2	1	10	6	3		70	
2.00	11	6	CENTER AVE	15	0	5	1	12	15	2	1	5	6	3		65	
1.66	12	9	FEDERAL ST	15	0	5	1	12	15	2	2	5	3	3		63	
1.44	13	19	AIRPORT	15	0	10	1	4	10	2	2	5	6	6		61	
19.24	14	11	EAST/WEST RAILROAD	10	0	10	3	12	5	3	2	5	3	6		59	
4.08	15	3	BRYAN AVE	15	0	0	1	12	10	2	1	15	3	0		59	
6.98	16	1	45TH ST	15	5	5	1	8	5	2	1	10	3	3		58	
1.01	17	29	11TH ST	15	0	0	1	12	15	2	1	5	6	0		57	
2.89	18	18	DOCKERY PARK/LEO AVE	15	0	5	1	8	10	2	1	0	6	3		51	
2.80	19	25	MACARTHUR to ROCK CREEK	15	0	0	3	8	10	2	1	5	6	0		50	
0.91	20	26	RAILROAD SPUR to INDEPENDENCE ST	15	0	0	3	8	15	2	1	0	6	0		50	
9.72	21	16	TWIN LAKES TRAIL	0	0	10	3	8	5	2	1	5	3	6		43	
0.77	22	8	BRADLEY ST	15	0	0	1	4	10	2	1	0	3	0		36	
5.74	23	2	ROCK CREEK	15	0	0	3	8	5	2	1	0	0	0		34	
3.66	24	22	NORTH CANADIAN RIVER HORSE TRAIL	0	0	5	3	4	5	2	1	5	6	3		34	
3.73	25	27	NORTH CANADIAN RIVER	0	0	5	3	4	5	2	1	5	6	3		34	
0.39	26	20	SCHOOL	15	0	0	1	4	5	2	1	5	0	0		33	
0.82	27	14	SHAWNEE MALL DR	15	0	0	1	4	5	2	1	0	0	0		28	
15.32	28	24	SHAWNEE RESERVOIR	10	0	0	3	4	5	2	1	0	0	0		25	
6.18	29	23	SQUIRREL CREEK/TECUMSEH LAKE	0	0	0	3	4	5	5	3	0	3	0		23	
* Number denotes the score, not actual number of amenities along the corridor.																	
139.52																	
TOTAL POPULATION PER MILE SERVED				SCHOOLS SERVED				Connection to trails									
1	<=10%			1	>=1					0	none						
2	<=33%			2	>=2					1	one end to funded						
3	>33%			3	>=3					2	one end to existing						
										3	both ends funded						
TOTAL JOBS SERVED				PARKS SERVED				4 one end funded, one existing									
1	<=10%			1	>=1 <2					5	both ends existing						
2	<=33%			2	>=2 <4												
3	>33%			3	>=4												
JOBS SERVED PER MILE				OTHER DESTINATIONS													
1	<=10%			1	>=1												
2	<=33%			2	>=2 <3												
3	>33%			3	>=3												

Developing the Trail Plan

On the following pages are several spreadsheets showing the costs of the individual trail segments and on-street linkages that have been identified in Chapter 4. The costs listed are general in nature and are based on average cost of trail construction in this area. As segments are selected, detailed design and cost estimates must be prepared.

Near Term Trail Phasing Cost

Length in Miles	Rank	ID #	Name	Type	Low	High
3.64	1	12	INDEPENDENCE ST	On-Street	\$43,652	\$65,478
3.96	2	15	UNION AVE	On-Street	\$47,470	\$71,206
1.95	3	4	MAIN ST	On-Street	\$23,425	\$35,138
2.18	4	5	FARRALL ST	On-Street	\$26,125	\$39,188
12.28	5	21	NORTH/SOUTH RAILROAD	Trail	\$3,071,165	\$4,606,747
Near Term Total Cost * **					\$3,211,838	\$4,817,756

* This cost does not include land acquisition

** All cost based on 2007 dollars

Mid Term Trail Phasing Cost

Length in Miles	Rank	ID #	Name	Type	Low	High
5.00	6	10	MACARTHUR ST	On-Street	\$60,057	\$90,085
8.32	7	13	KICKAPOO AVE	On-Street	\$99,873	\$149,809
2.40	8	28	BROADWAY AVE	On-Street	\$28,757	\$43,135
8.38	9	7	HARRISON AVE	On-Street	\$100,595	\$150,893
2.04	10	17	HIGHLAND ST	On-Street	\$24,466	\$36,699
2.00	11	6	CENTER AVE	On-Street	\$24,048	\$36,072
1.66	12	9	FEDERAL ST	On-Street	\$19,939	\$29,908
1.44	13	19	AIRPORT	On-Street	\$17,320	\$25,981
19.24	14	11	EAST/WEST RAILROAD	Trail	\$4,809,186	\$7,213,778
4.08	15	3	BRYAN AVE	On-Street	\$48,930	\$73,394
6.98	16	1	45TH ST	On-Street	\$83,736	\$125,605
1.01	17	29	11TH ST	On-Street	\$12,136	\$18,205
Mid Term Total Cost * **					\$5,329,042	\$7,993,564

* This cost does not include land acquisition

** All cost based on 2007 dollars

Long Term Trail Phasing Cost

Length in Miles	Rank	ID #	Name	Type	Low	High
2.89	18	18	DOCKERY PARK/LEO AVE	On-Street	\$34,739	\$52,108
2.80	19	25	MACARTHUR to ROCK CREEK	Trail	\$700,994	\$1,051,491
0.91	20	26	RAILROAD SPUR to INDEPENDENCE ST	Trail	\$228,646	\$342,969
9.72	21	16	TWIN LAKES TRAIL	Trail	\$2,430,303	\$3,645,455
0.77	22	8	BRADLEY ST	On-Street	\$9,266	\$13,899
5.74	23	2	ROCK CREEK	Trail	\$1,436,174	\$2,154,261
3.66	24	22	NORTH CANADIAN RIVER HORSE TRAIL	Trail	\$914,441	\$1,371,662
3.73	25	27	NORTH CANADIAN RIVER	Trail	\$933,333	\$1,400,000
0.39	26	20	SCHOOL	On-Street	\$4,709	\$7,064
0.82	27	14	SHAWNEE MALL DR	On-Street	\$9,784	\$14,676
15.32	28	24	SHAWNEE RESERVOIR	Trail	\$3,829,877	\$5,744,815
6.18	29	23	SQUIRREL CREEK/TECUMSEH LAKE	Trail	\$1,545,928	\$2,318,892
Long Term Total Cost * **					\$12,078,195	\$18,117,292

* This cost does not include land acquisition

** All cost based on 2007 dollars

Trail Phasing Cost

Length in Miles	Rank	ID #	Name	Type	Estimated Cost	
					Low	High
3.64	1	12	INDEPENDENCE ST	On-Street	\$43,652	\$65,478
3.96	2	15	UNION AVE	On-Street	\$47,470	\$71,206
1.95	3	4	MAIN ST	On-Street	\$23,425	\$35,138
2.18	4	5	FARRALL ST	On-Street	\$26,125	\$39,188
12.28	5	21	NORTH/SOUTH RAILROAD	Trail	\$3,071,165	\$4,606,747
5.00	6	10	MACARTHUR ST	On-Street	\$60,057	\$90,085
8.32	7	13	KICKAPOO AVE	On-Street	\$99,873	\$149,809
2.40	8	28	BROADWAY AVE	On-Street	\$28,757	\$43,135
8.38	9	7	HARRISON AVE	On-Street	\$100,595	\$150,893
2.04	10	17	HIGHLAND ST	On-Street	\$24,466	\$36,699
2.00	11	6	CENTER AVE	On-Street	\$24,048	\$36,072
1.66	12	9	FEDERAL ST	On-Street	\$19,939	\$29,908
1.44	13	19	AIRPORT	On-Street	\$17,320	\$25,981
19.24	14	11	EAST/WEST RAILROAD	Trail	\$4,809,186	\$7,213,778
4.08	15	3	BRYAN AVE	On-Street	\$48,930	\$73,394
6.98	16	1	45TH ST	On-Street	\$83,736	\$125,605
1.01	17	29	11TH ST	On-Street	\$12,136	\$18,205
2.89	18	18	DOCKERY PARK/LEO AVE	On-Street	\$34,739	\$52,108
2.80	19	25	MACARTHUR to ROCK CREEK	Trail	\$700,994	\$1,051,491
0.91	20	26	RAILROAD SPUR to INDEPENDENCE ST	Trail	\$228,646	\$342,969
9.72	21	16	TWIN LAKES TRAIL	Trail	\$2,430,303	\$3,645,455
0.77	22	8	BRADLEY ST	On-Street	\$9,266	\$13,899
5.74	23	2	ROCK CREEK	Trail	\$1,436,174	\$2,154,261
3.66	24	22	NORTH CANADIAN RIVER HORSE TRAIL	Trail	\$914,441	\$1,371,662
3.73	25	27	NORTH CANADIAN RIVER	Trail	\$933,333	\$1,400,000
0.39	26	20	SCHOOL	On-Street	\$4,709	\$7,064
0.82	27	14	SHAWNEE MALL DR	On-Street	\$9,784	\$14,676
15.32	28	24	SHAWNEE RESERVOIR	Trail	\$3,829,877	\$5,744,815
6.18	29	23	SQUIRREL CREEK/TECUMSEH LAKE	Trail	\$1,545,928	\$2,318,892
Total Cost * **					\$20,619,075	\$30,928,612

* This cost does not include land acquisition

** All cost based on 2007 dollars

Estimated Costs for Development

Cost estimates for typical construction requirements experienced within our region have been defined below. The cost estimates are general in nature and are based on national industry standards or where possible, from bid documents retrieved from local construction companies. A listing of these cost averages that were used to determine “low” or “high” estimates, are provided below and on the following pages. The purpose of these cost estimates is to provide general guidance for budgeting and developing trail segments. Locally, we have found higher material and labor costs due possibly to the fact that few trails have been constructed within the region and contractors are somewhat unaware of trail construction constraints. Specific site development factors unique to each segment of the Plan will influence final design development costs. More detailed costs should be developed as a part of project specific conceptual plans. Final construction cost estimates should be based on final design plans.

Preliminary construction cost estimates are provided for the Near-Term, Mid-Term and Long-Term Plan projects. The unit costs defined below and on the following pages are provided for budgeting purposes only. Adjustments will have to be made to these costs on a project-by-project basis to compensate for changes in unit price trends over time

Multi-Use Trail and Greenway Trail Costs –

Category/Description of Facility	Unit	Unit Costs
<u>Trail Treads</u>		
6-foot Bare Earth Hike/Mtn. Bike Trail	linear feet	\$6
8-foot Bare Earth Equestrian Trail	linear feet	\$9
8-foot Woodchip Pedestrian Trail	linear feet	\$12
10-foot Soil-Cement Trail	linear feet	\$35
10-foot Aggregate/Stone Trail	linear feet	\$20
10-foot Asphalt Multi-Use Trail	linear feet	\$50
12 foot Asphalt Multi-Use Trail	linear feet	\$55
10-foot Concrete Multi-Use Trail	linear feet	\$65
10-foot Wood Deck/Boardwalk Trail	linear feet	\$300
<u>Signage</u>		
Information Signs	each	\$1,200
Direction Signs	each	\$200
Warning Signs	each	\$200
Mile/Kilometer Markers	each	\$250
<u>Furniture/Furnishings</u>		
Benches	each	\$600
Trash Receptacles	each	\$400
Security Bollards	each	\$275
Bicycle Racks	each	\$300

Fencing (Board-on-Board)		linear feet	\$25
Gates		each	\$750
Drinking Fountains		each	\$3,500
Furniture/Furnishings (cont'd)	Unit	Unit Costs	
Restrooms	each	\$70-100,000.00	
Landscaping	per mile	\$25,000.00	
<u>Parking Lots</u>	Unit	Gravel Lot	Asphalt Lot
10 cars	each	\$7,500.00	\$20,000.00
20 cars	each	\$15,000.00	\$38,000.00

On Street Linkage Costs

Restriping

Conducted as part of a regularly scheduled roadway re-surfacing project and does not include right-of-way acquisition and changes to signal actuation.

Bicycle Lanes	\$7,200/mi
Wide Outside Lanes	\$6,450/mi

Independent Projects

The following listing is for development of various facility types as independent projects. These costs do not include right-of-way acquisition. Real estate values fluctuate dramatically and will need to be adjusted on a parcel-by-parcel basis as right of way is needed.

Share the Road Bike Routes

(signage, pavement symbols, bicycle actuated signals)	\$15,000/mi
Urban Bike Lanes (4' wide, both sides)	\$200,000/mi
Rural Bike Lanes (4' wide, both sides)	\$110,000/mi
Paved Shoulders (4' wide, both sides)	\$110,000/mi
Wide Curb Lane (14' wide, both sides)	\$130,000/mi

Other Bicycle Facilities

Class I Bicycle Parking (Bicycle Lockers - per 2 bicycles)	\$500-\$1500
Class II Bicycle Parking (Secure wheels and frame-per bike)	\$65-\$150
Bike Route/"Share the Road" sign (each)	\$250

Typical Costs for Pedestrian Facilities

Sidewalks (6' wide, 2 sides)	\$200,000/mi
Pedestrian Signal Heads (for 2 corners)	\$1,800/ea
Pedestrian Signal Heads (for 4 corners)	\$3,700/ea

Other Pedestrian Facilities

Prefabricated Pedestrian Bridge/Overpass	\$100/sq ft
Constructed Bridge/Overpass	\$ 65/sq ft
Crosswalk Striping	\$250 each
Curb Extensions	\$4,500 each



Hands-on Bike Education



Making it Fun



Holding Their Interest and Teaching Safe Bicycling Skills

Education

The prevention of roadway accidents and the endorsement of the plan as a safe mode of transportation are two important reasons why a comprehensive education program is needed as a compliment to this master plan. A program that will not only encourage courteous and lawful behavior on the part of the cyclists but also increase awareness and appreciation for bicycle use on the part of the motorist. Since cyclists and motorists are a diverse group of young and old, education will be more challenging and more rewarding.

There are three main components of bicycling safety education:

- Developing safe cycling skills in children
- Teaching adult cyclists their rights and responsibilities; and
- Teaching motorists how to more effectively share the road with cyclists.

Cycling Skills in Children:

Typically local school districts or local bicycle groups have taken an active role in teaching area children the rules of the road and bicycle safety. This effort can be partnered with the Police Department and with the Safe Kids coalition. An implementation of these efforts with additional support by the City of Shawnee and neighborhood associations will ensure steady support for cycling skills in children. An additional effort can be started by interested citizens to encourage the schools to incorporate bicycle safety in their curriculum so that all children are reached in a setting they are comfortable with and where age-appropriate safety messages and learning skills are applied.

Regardless of the tactics involved, the following messages should be consistently taught:

- **Wear a helmet.** In the event of a bicycle crash, wearing a helmet reduces the risk of serious head injury by up to 85%. It could save your life.
- **Obey all traffic laws.** Bicyclists have the same rights and responsibilities as motorists.
- **Look left, then right, then left again before crossing streets. Always be alert.** Make eye contact with drivers and always be aware of what's going on around you.



Opportunities to Educate Visitors
About the History of the Area



Outdoor Educational Opportunities



Provide For Safe Travel

- **Always ride with the flow of traffic.**
- **Be predictable.** Always signal your intentions.
- **Be visible.** Wear light-colored clothing and bright or reflective clothing and always use a front light and rear reflectors at night.
- In addition, very young children (seven or younger) should ride with supervision.

Teaching adult cyclists

Educating adults is always more of a challenge than educating children. Education efforts must recognize this and tailor messages to each group. Is your audience an occasional recreational rider or are they a competing cyclist and are they riding for exercise, recreation or for transportation. Each type of cyclist has his/her own concerns and philosophy about how bicycles fit into the transportation system.

It is also important to reach as wide a range of people as possible. Since adults do not often group together as a captive audience as school children do, it is important to offer a wide range of opportunities to improve their knowledge and skills related to bicycling.

The following messages should be consistently taught:

- **Be alert.** Watch for other users and sudden behavior changes. Also, pay careful attention to potential road hazards, such as potholes and gravel. Adjust speed to maintain control of the bicycle. Make eye contact with drivers to ensure that they have seen you.
- **Obey all traffic laws.** Though it is tempting to run through traffic signals and stop signs, do not do it. Bicyclists have the same rights and responsibilities as motorists. Disobeying traffic laws gives cyclists a bad reputation and is potentially dangerous.
- **Always ride with the flow of traffic.** Ride where motorists and others expect cyclists, and never against traffic.
- **Be visible.** Wear light-colored, bright or reflective clothing and use front lights and rear reflectors or lights at night.
- **Wear a helmet.**
- **Stay off sidewalks, whenever possible.** Bicycles are legally classified as vehicles and should follow the same rules of the road. Sidewalks are intended for use by pedestrians not cyclists. When using sidewalks, bicyclists should warn pedestrians audibly when passing, yield the right-of-way in conflict situations and travel at a walking speed at

driveways and intersections when a motor vehicle is approaching. Remember, motorists are not expecting cyclists coming at them at driveways or approaches.

- **Do not drink alcohol and ride.** You are operating a vehicle. Take it seriously.
- **Be predictable.** Signal your turns, do not weave in and out of traffic and stay as far to the right as is practicable, except when:
 - traveling the same speed as traffic (as in downtown)
 - avoiding hazardous conditions
 - preparing to make a left turn, passing another vehicle or using a one-way street (in which case riding alongside the left curb is permitted)
 - the roadway is too narrow for a bicycle and a motor vehicle to travel safely side by side

Teaching motorists to share.

Motorists are probably the most difficult group to reach with bicycle education. Gaining the attention of the motorist is most effective if done during existing programs such as driver's training courses, driver's licensing exams and traffic school courses for violators. Motorists should learn to look for cyclists in traffic just as they check for cars, especially when switching lane position, turning or going through an intersection. They should look for cyclists in parking lots, and when entering and exiting roadways. Motorists should pay special attention to child cyclists, particularly in residential areas and near schools. Children often ride on the sidewalk, so motorists should check for them when entering or exiting driveways. The cyclist is a silent partner of the road and motorist must make the extra effort to see what they cannot detect with sound. Other than cyclist awareness, topics to teach include:

- Bike lanes and how to operate motor vehicles around them.
- Why bicyclists choose to ride on arterials and collectors.
- How to safely pass a bicyclist.
- Why crashes happen and how to prevent them.
- Importance of sharing the road and respecting other road users.
- Why people bicycle—for health and fitness, transportation, recreation, the environment and to save money .
- Why bicyclists sometimes swerve (to avoid road hazards such as broken glass or potholes).

Crashes

The number of deaths nationwide due to bicycle-motor vehicle crashes has declined 20% in the past 10 years, from 859 in 1990 to 690 in 2000. The number of reported injuries is also decreasing, but this number is less reliable. From research in hospital records, it has been shown that many injuries from bicycle crashes are not reported to the police, and therefore do not show up in statistics. Approximately 40% of bicycle fatalities occur in 4 states: California, Florida, New York and Texas.

By analyzing the causes of nationwide bicycle-motor vehicle crashes, it is revealed that 21.6% of crashes are caused by a motorist failing to yield to a bicyclist. Just over 12% are caused by a motorist turning or merging into the path of a cyclist. Less than 9% are caused by a motorist overtaking a cyclist. About 28% are caused by a bicyclist failing to yield to a motorist, and 7% by a bicyclist turning into the path of a motorist.

Action Steps:

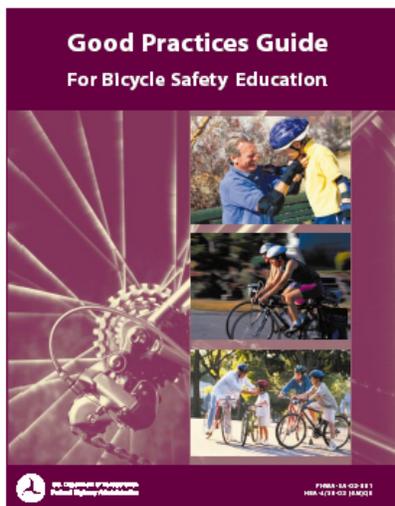
- Continue to monitor and improve the data available on bicycle crashes.
- Identify locations and corridors with more than one crash reported, and look for potential improvements.
- Train law enforcement staff in the investigation of crashes involving bicyclists.

Developing a Plan

Providing the public with bicycle education programs builds a strong foundation on which to promote increased bicycle use, safety and awareness. Determining which type of education programs becomes the challenge for communities nationwide. The United States Department of Transportation has created an excellent guide for developing bicycle safety education programs entitled Good Practices Guide For Bicycle Safety Education. The guide includes examples of several existing programs plus guidance on how to develop your own program. The following information is included in their guide:

- **Funding Your Program** - This subsection describes Federal Section 402 funding, as well as the other types of funding sources that programs have used. In addition, this subsection includes basic tips for finding alternative funding sources as well as preparing and organizing information for writing grant proposals.
- **Bicycle Safety Education in the Public Schools** - This subsection discusses how programs have been accepted into public schools and the rationale for their acceptance.
- **Developing Partnerships**—This subsection provides examples of partnerships and offers ideas for partnering that might enhance a bicycle program.
- **Alternative Venues and Subjects** - This subsection examines programs surveyed, including educational goals and methods that include and extend beyond those in a conventional bicycle safety curriculum.
- **Evaluation Methods** - This subsection describes the purpose of evaluation in educational programs and the various evaluation methods that may be appropriate in bicycle safety education.
- **Publicity** - This subsection describes effective examples of how organizations have gained publicity for their program and for safe bicycling practices in general.

Maintenance



Operating, maintaining and managing the trails and on street linkages will depend on a coordinated effort among city departments, private organizations and individuals as well as innovative partnerships with local businesses, the Universities and with county and state detention facilities. Important elements of this operation and management program include Chapter 21; Parks and Recreation, of the City of Shawnee codes and regulations, land acquisition policies, safety and security policies, trail rules and regulations, a risk management plan, and an Adopt-a-Trail program. Information on the policies is defined in greater detail in Chapter 8 of this master plan.

- **Operations** – The Parks and Recreation Department may ultimately be responsible for all operations of the trail system. Determining certain management aspects of trail development and maintenance will be one aspect of trail operations.
- **Management aspects may include:**
 - Controlling improper use of the trail system such as the presence of motorized vehicles or other unacceptable modes of transportation within the trail corridor.
 - Controlling vandalism in secluded areas on or within trail corridors.
 - Reducing environmental impacts in highly sensitive areas along the trail corridors.

- Providing for the various and sometimes opposing needs and visions of the individual trail users
- Establishing a maintenance plan for all of the trails within the system and determining a budget for future planning.

Low Impact Trails - Discussions are on-going concerning the development of a management policy for environmentally sensitive areas and lands obtained for preservation as well as trail use. Since the intent behind the preservation of natural systems is to not alter nature’s succession, the main goal for this type of trail development and maintenance policy is to reclaim, maintain and enhance natural systems as well as to avoid potentially hazardous situations. Although preserving and enhancing environmentally sensitive sites require less frequent maintenance visits, the tasks involved are more detailed and time consuming.

- Maintenance - Maintenance and management of individual trail segments will be the responsibility of the City of Shawnee and volunteers. Maintenance of on-street linkages may be shared by both the Transportation Department and the Parks and Recreation Department. It is anticipated that these maintenance and management duties can be shared among trail supporters in the public and private sectors. It will be necessary for the Parks and Recreation Department to develop a maintenance management plan for trails. This maintenance management plan will provide the framework to plan, prioritize, schedule, and track maintenance work through the following steps:
 - Setting specific maintenance goals and standards for levels of service. Assign maintenance levels to trails based on criteria such as amount of use, potential to affect resources, safety considerations, etc. Once maintenance levels are established, they should be reviewed and updated annually.
 - Developing the necessary maintenance programs which will provide those levels of service.
 - Executing those programs using the most efficient combination of resources.
 - Controlling and evaluating the effectiveness of the maintenance work in relation to the desired level of service.
 - Furnishing cost data from which budgets can be built.

Maintenance of the Trails system will require additional staffing and an increase in the Parks and Recreation Department operational budget. It may be possible to substantially lower the cost of maintaining trails through the development of an Adopt-a-Trail Program as mentioned in Chapter 8. Volunteers have been proven effective in performing some of the routine park maintenance activities through Adopt-a-Park Programs in other cities.

The following maintenance and management costs are provided as a guide to establishing a budget for the operation, maintenance and management of trail segments within The Shawnee Trails Master Plan.

Maintenance Costs

(For a 1-Mile Paved Trail)

Drainage and storm channel maintenance (4 x/year)	\$700.00
Sweeping/blowing debris off trail tread (24 x/year)	\$1,600.00
Pick-up and removal of trash (24 x/year)	\$1,600.00
Weed control and vegetation management (10 x/year)	\$1,350.00
Mowing of 3-ft grass safe zone along trail (24 x/year)	\$1,750.00

Shawnee Trails Plan	Implementation and Education
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Minor repairs to trail furniture/safety features	\$500.00
Maintenance supplies for work crews	\$300.00
Equipment fuel and repairs	<u>\$800.00</u>

Estimated Maintenance Costs per Mile of Paved Trail **\$8,600.00**

Re-Surfacing

Re-Surfacing of Asphalt Trail Tread (10 year cycle)	\$50,000-60,000/mile
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Public/Private Partnerships

Some maintenance and construction costs can be reduced through Public/Private Partnerships. The private sector has a vital role to play in the design, development, management, operations and maintenance of the trails system. The private sector includes businesses, merchants, corporations, civic organizations and individuals. The private sector offers a wealth of resources that can assist in the implementation of the trails system, and will be the primary beneficiaries of a successfully developed and managed system. Below are a few instances where the private sector can prove to be stewards of the development and success of the trail system

- Local businesses and corporations might consider sponsoring a segment of trail for development.
- Businesses and corporations might also consider a gift or donation of construction material, finished products that could be used on the trail, or labor to help build the trail. Additionally, businesses and corporations could provide reduced cost materials, finished products, machinery and/or labor to assist in trail project development.
- Employers can provide incentives for employees who commute using the trails system. Among the incentives are bike racks, showers, lockers and cash reimbursements in lieu of employer paid parking subsidies.
- Local civic groups and organizations can contribute the time and labor of their members to assisting with staffing trails events, adopting segments of the trail for maintenance and management, sponsorship of trail segments for construction of trail tread, boardwalks, education exhibits and rest areas. There are endless ways in which local civic groups can become involved with trails, and the best way is to match the goals and objectives of the organization to the needs of the trails system.
- Shawnee residents interested in the development and management of the system can offer their time, labor and expertise. Individuals might partner with a friend or neighbor to volunteer their services to help patrol trails during the daytime. Individuals could volunteer to plant native trees, shrubs and groundcovers along the trail to improve the appearance of a newly developed trail segment. Individuals could volunteer to keep a particular stretch of a trail segment clean of debris, litter and trash. All volunteer efforts should be recognized through an Adopt-A-Trail program.



Typical Rules and Regulations



Keep dogs on a leash

Overview

Policies are essential tools put in place to assist citizens, city staff, and elected officials in responding to typical trail and greenway management issues. Additional issues may arise during the development and implementation of the trail system that will result in additional rules and policies.

User Rules and Regulations

Shawnee Trails System will fall under the rules and regulations established by *Chapter #21: Parks and Recreation* of the City of Shawnee's codes and ordinances. Additional policies are outlined within this chapter that pertain specifically to trails and the greenway system.

A list of rules and regulations has been developed for all park land within the city of Shawnee. Those rules will apply to all facilities within the trails system and include the following:

- Trash must be placed in proper receptacles
- No alcoholic beverages allowed.
- No soliciting, vending or peddling.
- No motorized vehicles.
- Park in designated areas only.
- No disfiguration or removal of property.
- No fires except in fireplaces or grills.
- No hunting.
- No overnight camping.
- Observe City of Shawnee noise control regulations.
- Leash and clean up after pets.

The Shawnee Trails System shall be open for use by any person wishing to utilize the trail system for recreational and transportation use 365 days a year – subject to specific situations that may arise and are governed by the municipality. Trails that are under construction are off limits for public use. Trail segments are not considered officially open to the general public until the trail has been formally dedicated by ceremony and the opening is completed. Individuals using a trail segment while under construction without express permission by the municipality shall be in violation of the city rules and regulations and will be considered as trespassing.

Hours of operation generally will be from sunrise to sunset except where specifically designated. The hours of operation for each trail segment will be posted on the trail. Bike routes and lanes, which are contiguous with the city's roads, will be open 24 hours a day.



Walking and Jogging



Baby Strollers



Cycling

Safety Rules on the Trails

Multiuse conflict is a national problem for community and regional trail systems. Typically, this conflict can be resolved with a well conceived safety program that provides individual users with a Code of Conduct for the trails. These rules shall be displayed on a trails brochure and in designated locations within the trail system.

- **Be Courteous:** All trail users, including bicyclists, joggers, walkers, wheelchairs, skaters, and skateboarders, should be respectful of other users regardless of their mode of travel, speed or level of skill.
- **Keep Right:** Always stay to the right while using the trail, or stay in the lane that has been designated for your user group. The exception to this rule is when you need to pass another user.
- **Pass on the left:** Pass other users going your direction on the left. Look ahead and behind to ensure that your lane is clear before pulling out and around the other user. Pass with ample separation. Do not move back to the right until you have gained distance and speed on the other user. Faster traffic should always yield to on-coming traffic.
- **Give an audible signal when passing:** Users should give a clear warning sign before passing. This signal can be given by voice, bell or soft horn. Always be courteous when providing an audible signal.
- **Be predictable:** Travel in a consistent and predictable manner. Always look behind before changing direction on the trail, regardless of your mode of travel.
- **Control your bicycle:** Lack of attention, can cause an accident. Maintain safe and legal speeds at all times.
- **Do not block the trail:** When in a group, including your pets, do not use more than half of the trail, so as not to block the trail for other users. If your group is approached by users from both directions, form a single line or stop and move to the far right of the trail for ease of passage for others.
- **Yield when entering or crossing trails:** When entering or crossing another trail or roadway at an uncontrolled intersection, yield to traffic already using the other trail or road.
- **Do not use the trail under the influence of drugs or alcohol:** It is illegal to use the trail if you have consumed alcohol in excess of the



No motorized vehicles on rail easements



Adjacent Property Owners

statutory limits or if you have consumed illegal drugs.

- The use of lights: When using the trail at night, where allowed within the system, be equipped with the proper light. Cyclists should have a white light that can be seen for five hundred feet from the front, and a red or amber light that can be seen for five hundred feet to the rear. Other trail users shall use white lights (bright flashlight) visible from two hundred feet to the front and wear light colored or reflective clothing.

Right of Public Access Policy

The general public is to have full access to and use of all of the trails and greenways held by the City of Shawnee. All access and use is governed by existing local government policies. The use of all trails is limited to non-motorized uses including hiking, biking, running, jogging, wheelchair use, skate boarding, roller blading, mountain biking and for equestrian use in designated areas.

Cross Access Policy

Adjacent landowners have the right to access the trail at any time. Please note that access to the trail cannot be blocked for other trail users other than for temporary purposes such as transporting equipment or allowing livestock to cross. If a landowner finds that they need to access the trails for movement of livestock, materials, or equipment on a regular basis, signage will be installed to warn users of the trails to yield to such activity. Adjacent landowners are responsible for acts and omissions which could cause injury to third party users of the trails.

Land Acquisition Policies

Land acquisition can occur in several ways.

(Example) Green Space Ordinance – The City of Fayetteville, Arkansas Park Land Dedication Ordinance, adopted in 1981, was developed as a way to provide open space and park land to Fayetteville citizens as the population increases, and in areas of the city where growth is most prevalent. The concept behind the Park Land Dedication Ordinance is to require developers to make a reasonable dedication of land for public park facilities, or to make an equivalent monetary dedication in lieu of land for all new residential development.

Shared Easements – Use of easements can



Utility Easement / Shared Use



(Example) Clabber Creek Corridor,
Fayetteville, AR
By Private Land Owner Donation

be accomplished by utilizing existing utility and access easements within private properties (with owner's permission) or utilizing publicly owned utility, drainage and access easements.

Private Land Dedications – The City of Shawnee and non-profit organizations working in conjunction with the City may accept donations of land or easements for use as trail and greenway corridors. In the event that a private property owner wishes to dedicate land or easements for public trail use, the municipality can negotiate on an individual basis in accordance with existing policies pertaining to the acquisition of land for public use.

Conservation Easements – A conservation easement is a voluntary agreement between willing landowners and the city that can restrict the type of development or use that may take place on the property in the future. The conservation easement does not necessarily exclude all development, but may restrict any development that restricts the public benefits. The landowner continues to own the property; they may sell it, live on it, use it, or leave it to heirs, but the agreed upon restrictions remain with the land forever. Conservation easements can result in income tax and estate tax benefits. In some instances, the IRS also considers tax benefits for easement donations that conserve scenic open space, wildlife habitat, and land that provides public access for recreation, education, or historic preservation. While tax benefits can be sizeable, some residents have found the greatest satisfaction in knowing that the land they cherish will always be protected. Much like donations of land, the city is actually seeking conservation easements that create positive public/private partnerships that will provide the community with an increase in quality of life benefits. The extent that the city will share in the maintenance and liability will be negotiated on an individual basis in accordance with existing policies.

Naming of Greenways and Trails Policy

Upon acquisition and development of a trail corridor, the Panning Director shall assign a temporary working name for the park facility until a permanent name is decided upon. Once construction of the trail begins,



Rail with Trail Potential



Utility Easements



Preserving Natural Features

the Parks and Recreation Department will receive and forward trail name suggestions to the Parks and Recreation Commission for review.

The Commission will discuss the recommendations at their monthly meeting and will leave the issue on the table until the next monthly meeting. This one month duration will allow time for the public to comment on the proposed names.

The following items should be considered when proposing names for any trail facility:

- Geographic location of the facility.
- Outstanding natural features within or surrounding the facility.
- Commonly recognized historical event, group, or individual.
- Individual or group who contributed significantly to the acquisition or development of a facility.
- Individual who provided an exceptional service to the trail system.

For an individual to be considered, the recommended name must be accompanied by a biological sketch which provides evidence of historical significance or contributions to the trail system or City of Shawnee.

Fencing and Vegetative Screening Policy

Fencing or vegetative screening between private property and the public trails system can be beneficial for privacy and to accomplish a more naturalistic feel to the trail system. Certain situations can arise where such screening efforts create or cause safety issue for users on and off the trail. It will be the municipality's responsibility to work on an individual basis to determine if screening is appropriate and required. The City may agree to fund the installation of a fence or screening vegetation in some instances, however if located on private property, it will be the private property owner's responsibility to maintain the screen in perpetuity, including replacement of such screening in the event of failure or deterioration.

Proposed Adopt-A-Trail Program Policy

An Adopt-A-Trail Program can be established to encourage public involvement in the trails system to assist in maintaining safe and clean trails. Organizations and individuals are permitted to adopt a trail segment for the purpose of assisting with funding and maintenance projects and to receive recognition of their participation in the program. Maintenance projects will be selectively chosen to capture the public's attention and

to encourage enhancement of the trails appearance.



Pocket Park

- The adoption period is for one year and is renewable at the request of the organization. The adopting organization must complete a minimum of three work days a year at their adopted trail segment.
- If the adopting organization has not conducted a work day at the end of the first six month period, the Parks and Recreation Department can cancel the agreement and remove any signs that relate to the adopting group.
- Each organization shall designate a representative who will be responsible for scheduling the work days with the Parks and Recreation Department. The department will coordinate the maintenance activities with the adopting organization and monitor the organizations activities relative to safety.
- A meeting will be conducted prior to each scheduled work day to review the nature of work to be performed.
- The Parks and Recreation Department will furnish the adopting organization with the necessary supplies for maintenance projects.
- The Parks and Recreation Department will erect an Adopt-A-Trail sign at the trail segment to provide public recognition of the adopting organization for their participation in the program.
- News media coverage will be encouraged to promote the Adopt-A-Trail Program and to recognize participation organizations.
- Upon successful completion of participation in the program, the adopting organization will be presented with a certificate of recognition by the Parks and Recreation Department.

Liability

Liability is a common concern for government entities that manage trails and greenways, as well as to the private property owner that is adjacent to the trail corridor. In general, not only are there legal protections for these circumstances but the real threat of such liability is not common on trail and greenway systems across the country.

Protection for the Private Property Owners

It is common for people who own land adjacent to a trail to fear that people using the trail may be endangered by conditions on their land. Potential hazards such as a pond, a ditch or a dead tree may cause a landowner to worry about liability for a resulting injury. There are some basic steps that the city can take in coordination with private property owners to reduce that liability.



Example of Fencing and Vegetative Screening



Airport Trail

- Trail designers and property owners can work together to locate the trail away from potential hazards
- Property owners can make it clear to trail users that they are not invited onto the adjacent land. The trail designer can assist by designing fences, or a vegetative screen. These situations will be assessed individually by the city to determine if it is appropriate and necessary.
- In the event a hazardous situation does exist near a trail that cannot be remedied, signs should be developed to warn trail users.

In addition to these basic steps, the Council of State Governments created Recreation Use Statutes in 1965. The purpose of the Recreation Use Statutes is to encourage land owners to make land and water areas available to the public for recreational purposes by limiting their liability toward persons entering thereon for such purposes. ARUS only apply where fees are not assessed for the use of the recreation facility.

Oklahoma Recreational Use Statute

OKLAHOMA STATUTES

TITLE 76. TORTS

10. Definitions

As used in this act:

(a) "Land" means land which is used primarily for farming or ranching activities, roads, water, watercourses, private ways and buildings, structures, and machinery or equipment when attached to realty which is used primarily for farming or ranching activities.

(b) "Owner" means the possessor of a fee interest, a tenant, lessee, occupant or person in control of the premises.

(c) "Recreational purpose" includes, but is not limited to, any of the following, or any combination thereof: hunting, fishing, swimming, boating, camping, picnicking, hiking, pleasure driving, nature study, water skiing, winter sports, and viewing or enjoying historical, archaeological, scenic, or scientific sites.

(d) "Charge" means the admission price or fee asked in return for invitation or permission to enter or go upon the land.

11. Entry upon farm or ranch lands for recreational purposes--Duty of owner

Except as specifically recognized by or provided in Section 5 of this act, an owner of land which is used primarily for farming or ranching activities owes no duty of care to keep the premises safe for entry or use by others for recreational purposes, or to give any warning of a dangerous condition, use, structure, or activity on such premises to persons entering for such purposes.

12. Use of property without charge--Liability of owner



Multi-Use Trail



Private Property Owner



Private Property Marker

Except as specifically recognized by or provided in Section 5 of this act, an owner of land which is used primarily for farming or ranching activities, who either directly or indirectly invites or permits without charge any person to use such property for recreational purposes, does not thereby:

- (a) Extend any assurance that the premises are safe for any purpose.
- (b) Confer upon such person the legal status of an invitee or licensee.
- (c) Assume responsibility for or incur liability for any injury to person or property caused by an act or omission of such persons.

13. Agricultural lands, historic places and lands leased to the state

Unless otherwise agreed in writing, the provisions of Sections 11 and 12 of this title shall be deemed applicable to the duties and liability of an owner of land which is used by the owner primarily for farming or ranching activities, is on or adjoins land entered upon the National Register of Historic Places and for which an easement has been granted to the Oklahoma Historical Society, or is leased to the state or any sub Department thereof for recreational purposes.

14. Willful or malicious failure to warn--Charges to enter land

Nothing in this act limits in any way any liability which otherwise exists:

- (a) For willful or malicious failure to guard or warn against a dangerous condition, use, structure or activity.
- (b) For injury suffered in any case where the owner of land charges the person or persons who enter or go on the land for the recreational use thereof, except that in the case of land leased to the state or a sub Department thereof, any consideration received by the owner for such lease shall not be deemed a charge within the meaning of this section.

15. Duty of care or ground of liability not created-- Persons

using lands not relieved

Nothing in this act shall be construed to:

- (a) Create a duty of care or ground of liability for injury to persons or property.
- (b) Relieve any person using the land of another for recreational purposes from any obligation which he may have in the absence of this act to exercise care in his use of such land and in his activities thereon, or from the legal consequences of failure to employ such care.

§ 15.1. Agricultural land--Trespass--Duty owed

A. An owner, lessee, or occupant of agricultural land:

- 1. Does not owe a duty of care to a trespasser on the land; and
- 2. Is not liable for any injury to a trespasser, except for willful or wanton acts of negligence or gross negligence by the owner, lessee, or other occupant of the land.

B. Agricultural land is defined as any real property that is used in production of plants, fruits, wood, or farm or ranch animals to be sold off the premises.

Protection for the Municipality - Trails and on-street linkages are no greater liability than parks and other recreation facilities. The City's current insurance policy should be adequate to protect the community from financial loss that might occur through development and operation of a trails system. The City also is protected from lawsuits under Sovereign Immunity. The concept holds that the sovereign entity (the City) is generally immune

from liability.

Regardless of these assurances, it is the City of Shawnee's responsibility, and one that is taken very seriously, to reduce risk of injury to individuals and properties.

Safety and Security Policy/Risk Management

Developing a Risk Management Plan is an important element to any trail system. It is the City of Shawnee's responsibility to develop a guideline to reduce the chance of accidents and injury to users of the facilities. It is impossible to guarantee that all risk will be eliminated, however, establishing and implementing a proactive safety plan is a fundamental step in assuring the safety of the trails' users.

Trails that are properly designed, managed and maintained, is the best defense against accidents and injury. Risk management should play a role in all stages of implementing the trails plan and should be reviewed for effectiveness on a regular basis.

During design and development:

- Develop an inventory of potential hazards along the corridor.
- Create a list of users that will be permitted on the trail and the risks associated with each.
- Design and locate the trails and on-street linkages such that obvious dangers are avoided. Warning of potential hazards should be provided and mitigated where possible.
- Trail design and construction is to be completed by persons who are knowledgeable about design guidelines, such as those listed in AASHTO and MUTCD documents.
- Safety rules shall be posted in specific locations along the trail system.

Management and Maintenance:

- Regular inspections of the trail are to be performed by a qualified person who has the expertise to identify hazardous conditions and maintenance issues.
- Maintenance problems are to be corrected as quickly as possible and documented as to the problem and the solution applied. Where hazards cannot be promptly corrected, warnings for users should be posted.
- An Emergency Response Plan should be developed in conjunction with the Shawnee Police Department, The Shawnee Fire Department, and Emergency Management Services.
- A record system shall be set up to track inspections, hazardous found, and the solution applied.

These risk management steps will not only help ensure that hazardous conditions are identified and minimized, but it will also serve to protect the adjacent property owners and the City of Shawnee in the event of a liability case.

Maintenance

Operating, maintaining and managing the trails and on street linkages will depend on a coordinated effort among city departments, private organizations and individuals, as well as innovative partnerships with local businesses, the Universities and with city and state detention facilities. Important elements of this operation and management program include Chapter 21; Parks and Recreation, of the City of Shawnee codes and regulation, land acquisition policies, safety and security policies, trail rules and regulations, a risk management plan, and an Adopt-A-Trail program. Information on the policies is defined in greater detail in Chapter 7 of this master plan.

Operations – The Parks and Recreation Department will ultimately be responsible for all operations of the trail system. Determining certain management aspects of trail development and maintenance will be one aspect of trail operations.

Management aspects may include:

- Controlling improper use of the trail system such as the presence of motorized vehicles or other unacceptable modes of transportation within the trail corridor.

- Controlling vandalism in secluded areas on or within trail corridors.
- Reducing environmental impacts in highly sensitive areas along the trail corridors.
- Providing for the various and sometimes opposing needs and visions of the individual trail users
- Establishing a maintenance plan for all of the trails within the system and determining a budget for future planning.

Low Impact Trails - Discussions are on-going concerning the development of a management policy for environmentally sensitive areas and lands obtained for preservation as well as trail use. Since the intent behind the preservation of natural systems is to not alter nature’s succession, the main goal for this type of trail development and maintenance policy is to reclaim, maintain and enhance natural systems as well as to avoid potentially hazardous situations. Although preserving and enhancing environmentally sensitive sites require less frequent maintenance visits, the tasks involved are more detailed and time consuming.

Maintenance - Maintenance and management of individual trail segments may be the responsibility of the City of Shawnee Parks and Recreation Department and volunteers. Maintenance of on-street linkages will be shared by both the Transportation Department and the Parks and Recreation Department. It is anticipated that these maintenance and management duties can be shared among trail supporters in the public and private sectors. It will be necessary for the Parks and Recreation Department to develop a maintenance management plan for trails. This maintenance management plan will provide the framework to plan, prioritize, schedule and track maintenance work through the following steps:

- Setting specific maintenance goals and standards for levels of service. Assign maintenance levels to trails based on criteria such as amount of use, potential to affect resources, safety considerations, etc. Once maintenance levels are established, they should be reviewed and updated annually.
- Developing the necessary maintenance programs which will provide those levels of service.
- Executing those programs using the most efficient combination of resources.
- Controlling and evaluating the effectiveness of the maintenance work in relation to the desired level of service.
- Furnishing cost data from which budgets can be built.

Maintenance of the trails system will require additional staffing and an increase in the Parks and Recreation Department operational budget. It may be possible to substantially lower the cost of maintaining trails through the development of an Adopt-a-Trail Program as mentioned in Chapter 7. Volunteers have been proven effective in performing some of the routine park maintenance activities through our Adopt-A-Park Program.

The following maintenance and management costs are provided as a guide to establishing a budget for the operation, maintenance and management of trail segments within the Shawnee Trails Plan.

Maintenance Costs (For a 1-Mile Paved Trail)

Drainage and storm channel maintenance (4 x/year)	\$700.00
Sweeping/blowing debris off trail tread (24 x/year)	\$1,600.00
Pick-up and removal of trash (24 x/year)	\$1,600.00
Weed control and vegetation management (10 x/year)	\$1,350.00
Mowing of 3-ft grass safe zone along trail (24 x/year)	\$1,750.00
Minor repairs to trail furniture/safety features	\$500.00
Maintenance supplies for work crews	\$300.00
Equipment fuel and repairs	<u>\$800.00</u>

Estimated Maintenance Costs per Mile of Paved Trail**\$8,600.00**Re-Surfacing

Re-Surfacing of Asphalt Trail Tread (10 year cycle)

\$50,000-\$60,000/mile

Public/Private Partnerships

Some maintenance and construction costs can be reduced through Public/Private Partnerships. The private sector has a vital role to play in the design, development, management, operations and maintenance of trail system. The private sector includes businesses, merchants, corporations, civic organizations and individuals. The private sector offers a wealth of resources that can assist in the implementation of the trails system, and will be the primary beneficiaries of a successfully developed and managed system. Below are a few instances where the private sector can prove to be stewards of the development and success of the trail system

- Local businesses and corporations might consider sponsoring a segment of trail for development.
- Businesses and corporations might also consider a gift or donation of construction material, finished products that could be used on the trail, or labor to help build the trail. Additionally, businesses and corporations could provide reduced cost materials, finished products, machinery and/or labor to assist in trail project development.
- Employers can provide incentives for employees who commute using the trails system. Among the incentives are bike racks, showers, lockers and cash reimbursements in lieu of employer paid parking subsidies.
- Local civic groups and organizations can contribute the time and labor of their members to assisting with staffing trails events, adopting segments of the trail for maintenance and management, sponsorship of trail segments for construction of trail tread, boardwalks, education exhibits and rest areas.
- Shawnee residents interested in the development and management of trails can offer their time, labor and expertise. Individuals might partner with a friend or neighbor to volunteer their services to help patrol trails during the daytime. Individuals could volunteer to plant native trees, shrubs and groundcovers along the trail to improve the appearance of a newly developed trail segment. Individuals could volunteer to keep a particular stretch of a trail segment clean of debris, litter and trash. All volunteer efforts should be recognized through an Adopt-A-Trail program.

Maintenance

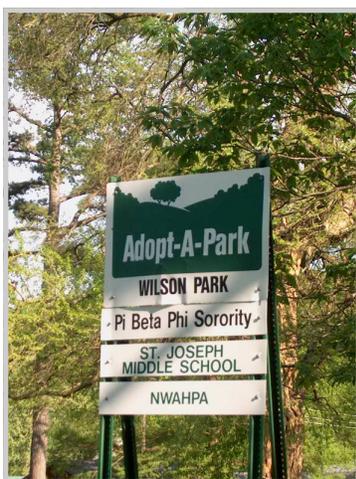
A routine maintenance program is necessary to ensure bicyclist and pedestrian safety and to prolong the life of the facility. Maintenance activities should be prioritized, keeping safety concerns at the top of the list. This is true for both trails and on-street linkages. A maintenance and procedure schedule can be found below.



Boy Scouts Volunteering To Clear a Trail Corridor



Clean up Day on a Rails to Trails Project



Program Participation Recognition

Trails Maintenance and Procedure Schedule

Task	Frequency/Year
Drainage and Storm Channel Maint.	4
Sweeping and Blowing Debris	24
Pick-Up and Removal of Trash	24
Weed Control and Vegetation Mgt	10
Mowing of 3-ft Grass Safe Zone	24
Minor Repairs to Trail Furniture	4
Inspection of Trail Surface	52
Tree Trimming	As Needed

On-Street Linkage Maintenance and Procedure Schedule

Task	Frequency/Year
Check and Clean Drainage Grates	4
Sweeping (with Streets)	N/A
Paint and Re-Stripe Surfaces	10
Minor Repairs to On-street Signage	As Needed
Safety Inspections	52
Tree Trimming	As Needed

Definitions

AASHTO—American Association of State Highway and Transportation Officials, the preeminent source of technical information on the design, construction, and maintenance of highways and other transportation facilities.

BICYCLE— A vehicle propelled solely by human power upon which any person may ride, having two tandem wheels, except scooters and similar devices.

BICYCLE FACILITIES—A general term denoting improvements and provisions made by public agencies to accommodate or encourage bicycling, including parking and storage facilities, and shared roadways not specifically designated for bicycle use.

BICYCLE LANE or BIKE LANE—A portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

BICYCLE PATH or BIKE PATH—See Multi-Use Trail.

BICYCLE ROUTE SYSTEM—A system of bikeways designated by the jurisdiction having authority with appropriate directional and informational route markers, with or without specific bicycle route numbers. Bike routes should establish a continuous routing, but may be a combination of any and all types of bikeways.

BIKEWAY—A generic term for any road, street, path or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

HIGHWAY—A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

MUTCD—Manual on Uniform Traffic Control Devices, provided by the United States Department of Transportation, Federal Highway Administration

RAIL-TRAIL—A multi-use trail, either paved or unpaved, built within the right-of-way of an existing or former railroad.

RIGHT-OF-WAY—A general term denoting land, property or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

RIGHT OF WAY—The right of one vehicle or pedestrian to proceed in a lawful manner in preference to another vehicle or pedestrian.

ROADWAY—The portion of the highway, including shoulders, intended for vehicular use.

RUMBLE STRIPS—A textured or grooved pavement sometimes used on or along shoulders of highways to alert motorists who stray onto the shoulder.

SHARED ROADWAY—A roadway which is open to both bicycle and motor vehicle travel. This may be an existing roadway, street with wide curb lanes, or road with paved shoulders.

MULTI-USE TRAIL or SHARED USE TRAIL—A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. Multi-use trails may also be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users.

SHOULDER—The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use and for lateral support of sub-base, base and surface courses.

SIDEWALK—The portion of a street or highway right-of-way designed for preferential or exclusive use by pedestrians.

SIGNED SHARED ROADWAY (SIGNED BIKE ROUTE)—A shared roadway which has been designated by signing as a preferred route for bicycle use.

TRAVELED WAY—The portion of the roadway for the movement of vehicles, exclusive of shoulders.

UNPAVED TRAIL—Trails not surfaced with asphalt or Portland cement concrete. May also be referred to as a *Soft-Surface Trail*

ON-STREET LINKAGE—Shared-use trail, bikeway, or bicycle lane that predominately follow a street. May also be referred to as a *Connector or Connection*

GREENWAY—A linear open space established along either a natural corridor, such as a stream, or overland along a road. It is any natural or landscaped course for pedestrian and/or bicycle passage.

FUNDED PROJECT—A trail or trail facility or on-street linkage that has received funding for design and construction through a variety of means such as grants, Capitol Improvement Funds, or donation.

Online Trails Survey

The city of Shawnee is looking for your input on a variety of trail related issues. Your answers along with those of other citizens will assist us in making this trails master plan reflect the wants and desires of the community. The results of this survey will be included in the trails master plan and will become a tool to promote and justify funding trail related amenities and activities. All input will only be utilized in the completion of the trails master plan.

Are You a Citizen of Shawnee Oklahoma?

Yes No

What age group are you in?

Under 21 21-35 36-50 51-65 66-80 81 and over

Factors that would influence your trail use?

Please rank each on a scale from 1 to 5 with 5 being the highest

Trail close to home

1 2 3 4 5

The availability of trail amenities, such as parking, drinking fountains, benches, etc.

1 2 3 4 5

Organized programs that utilize the trails as part of a ongoing physical fitness effort.

1 2 3 4 5

Trail located in an area with natural scenic qualities

1 2 3 4 5

Access to other recreational opportunities

1 2 3 4 5

The ability to utilize the trail to get somewhere, avoid the car for short trips.

1 2 3 4 5

What type of trail surface would you prefer?

Please rank each on a scale from 1 to 5 with 5 being the highest

Asphalt

1 2 3 4 5

Concrete

1 2 3 4 5

Dirt

1 2 3 4 5

Gravel

1 2 3 4 5

What types of activities would you and your family participate in along a trail?

Please rank each on a scale from 1 to 5 with 5 being the highest

Walking

1 2 3 4 5

Jogging

1 2 3 4 5

Biking

1 2 3 4 5

Rollerblading

1 2 3 4 5

How many times per month do you exercise?

Less than 5 5-10 11-20 20-30 31 or over

How do you think Shawnee should pay for alternative transportation and trail improvements?

Sales Tax Property Tax Bond Issue Private Donations A Combination of all the above Other (Explain below)

If there were well marked on-street bicycle facilities would you use them? (i.e. bike lane, wide curb lane, wide shoulder, etc.)

Yes No

Do you think it is important to prioritize future transportation infrastructure to include bicycle and walking facilities? (i.e. Bike lanes, side walks, etc.)

Yes No

What Types of trails would you and your family use most?

Please rank each on a scale from 1 to 5 with 5 being the highest

Mountain Bike Trails

1 2 3 4 5

Multi-Use Trails (hard surfaced)

1 2 3 4 5

Hiking Trails (soft surfaced)

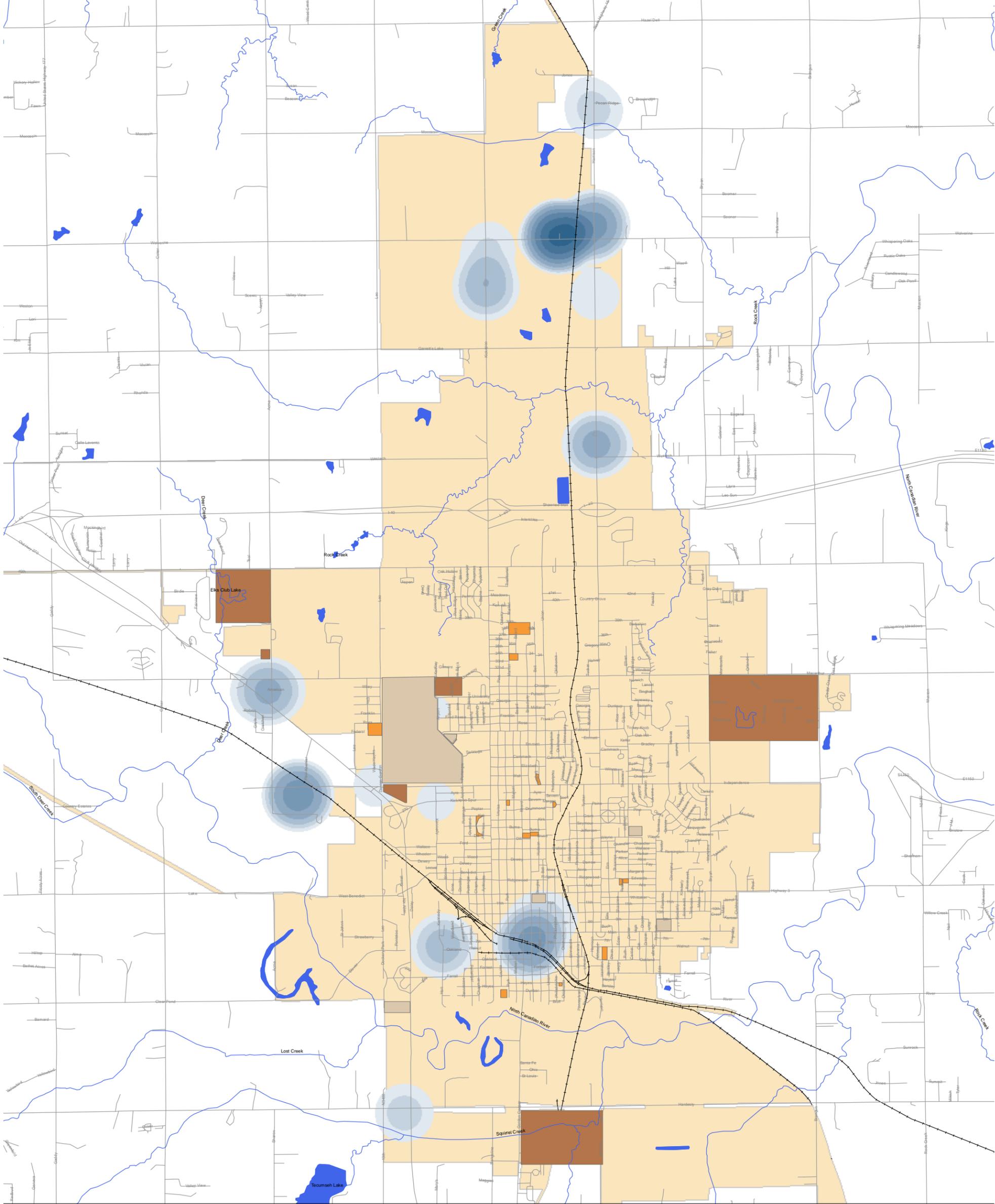
1 2 3 4 5

Equestrian Trails

1 2 3 4 5

Comments

Please use the box below to make additional comments concerning the trails master plan.



Legend

Employment Density

- 510-500
- 450
- 400
- 350
- 300
- 250
- 125-150
- 80-82
- 24-60
- 3-17

Parks

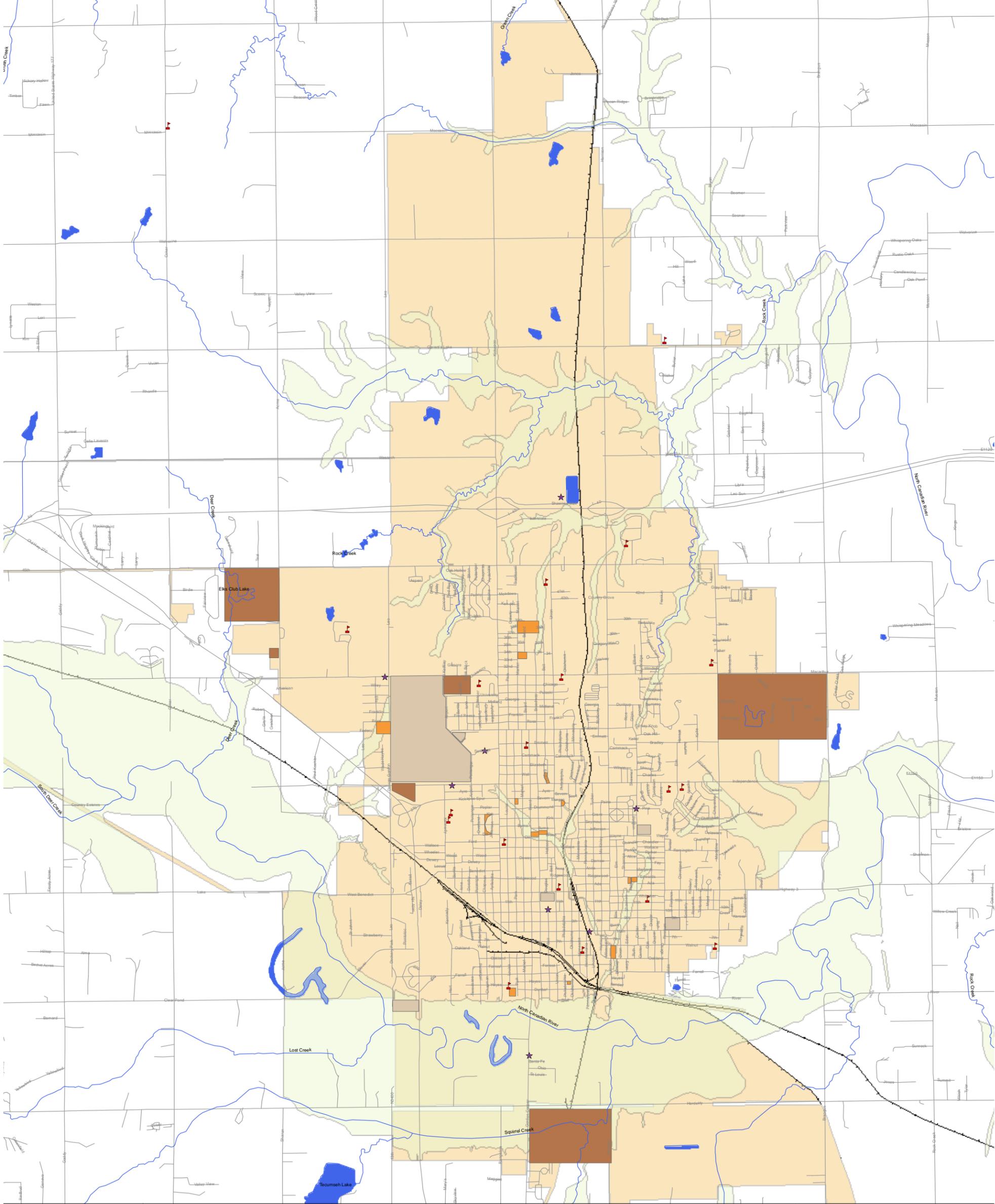
- park-type-Neighborhood
- park-type-community-park
- park-type-special-use
- Streets
- Rail Roads
- Streams
- City Limits



Employment Density City of Shawnee Trails Master Plan



12/2007



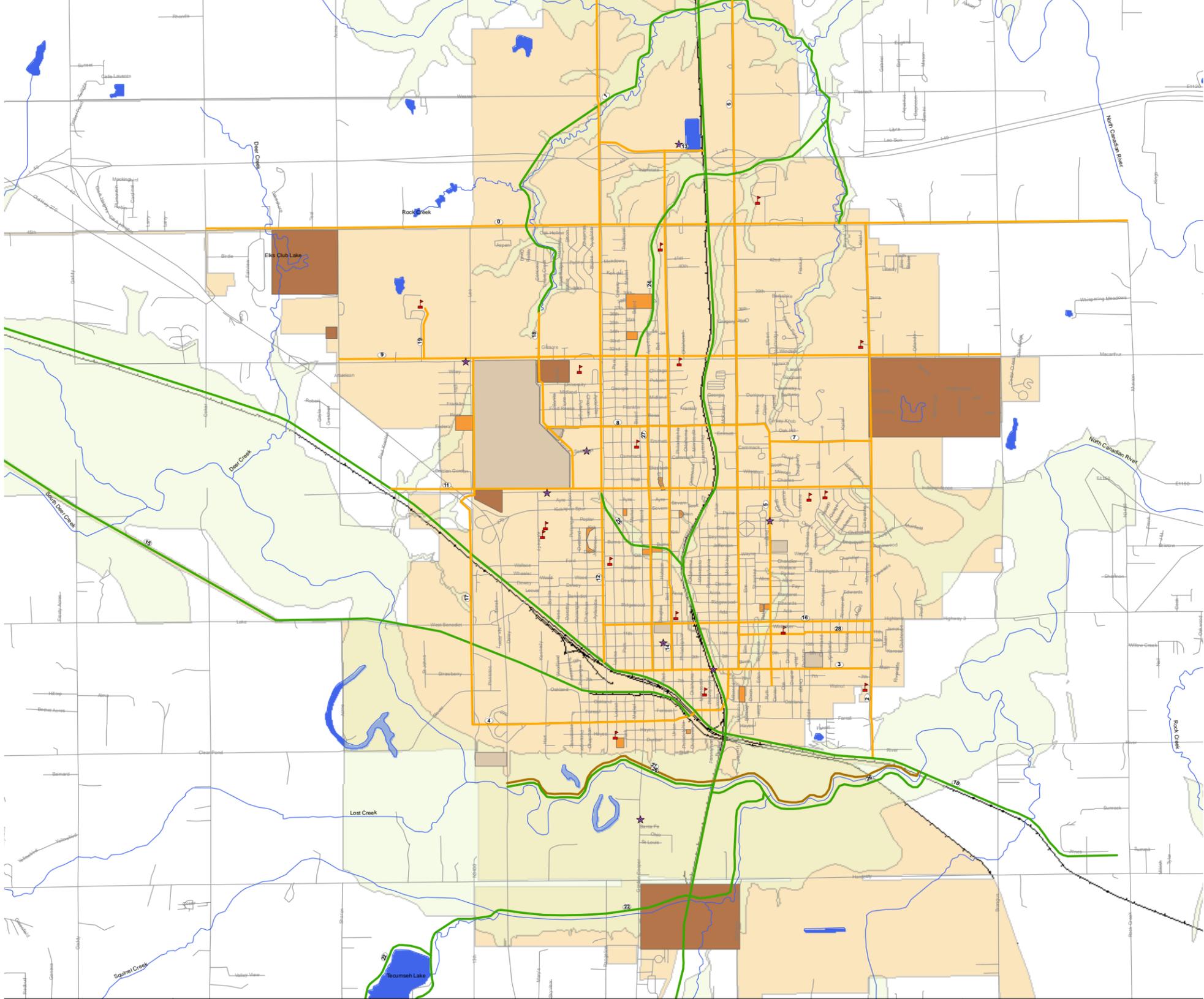
Existing Conditions City of Shawnee Trails Master Plan



- Legend**
- ★ Community Attractions
 - ▲ Schools
 - Streams
- Parks**
- park-type-Neighborhood
 - park-type-community-park
 - park-type-special-use
 - Streets
 - approx flood Zone
 - Rail Roads
 - Water
 - City Limits

Trail Legend

Length in Miles	Rank	ID #	Name	Type
6.98	16	1	45TH ST	On-Street
5.74	23	2	ROCK CREEK	Trail
4.08	15	3	BRYAN AVE	On-Street
1.95	3	4	MAIN ST	On-Street
2.18	4	5	FARRALL ST	On-Street
2.00	11	6	CENTER AVE	On-Street
8.38	9	7	HARRISON AVE	On-Street
0.77	22	8	BRADLEY ST	On-Street
1.66	12	9	FEDERAL ST	On-Street
5.00	6	10	MACARTHUR ST	On-Street
19.24	14	11	EAST/WEST RAILROAD	Trail
3.64	1	12	INDEPENDENCE ST	On-Street
8.32	7	13	KICKAPOO AVE	On-Street
0.82	27	14	SHAWNEE MALL DR	On-Street
3.96	2	15	UNION AVE	On-Street
9.72	21	16	TWIN LAKES TRAIL	Trail
2.04	10	17	HIGHLAND ST	On-Street
2.89	18	18	DOCKERY PARK/LEO AVE	On-Street
1.44	13	19	AIRPORT	On-Street
0.39	26	20	SCHOOL	On-Street
12.28	5	21	NORTH/SOUTH RAILROAD	Trail
3.66	24	22	NORTH CANADIAN RIVER HORSE TRAIL	Trail
6.18	29	23	SQUIRREL CREEK/TECUMSEH LAKE	Trail
15.32	28	24	SHAWNEE RESERVOIR	Trail
2.80	19	25	MACARTHUR to ROCK CREEK	Trail
0.91	20	26	RAILROAD SPUR to INDEPENDENCE ST	Trail
3.73	25	27	NORTH CANADIAN RIVER	Trail
2.40	8	28	BROADWAY AVE	On-Street
1.01	17	29	11TH ST	On-Street



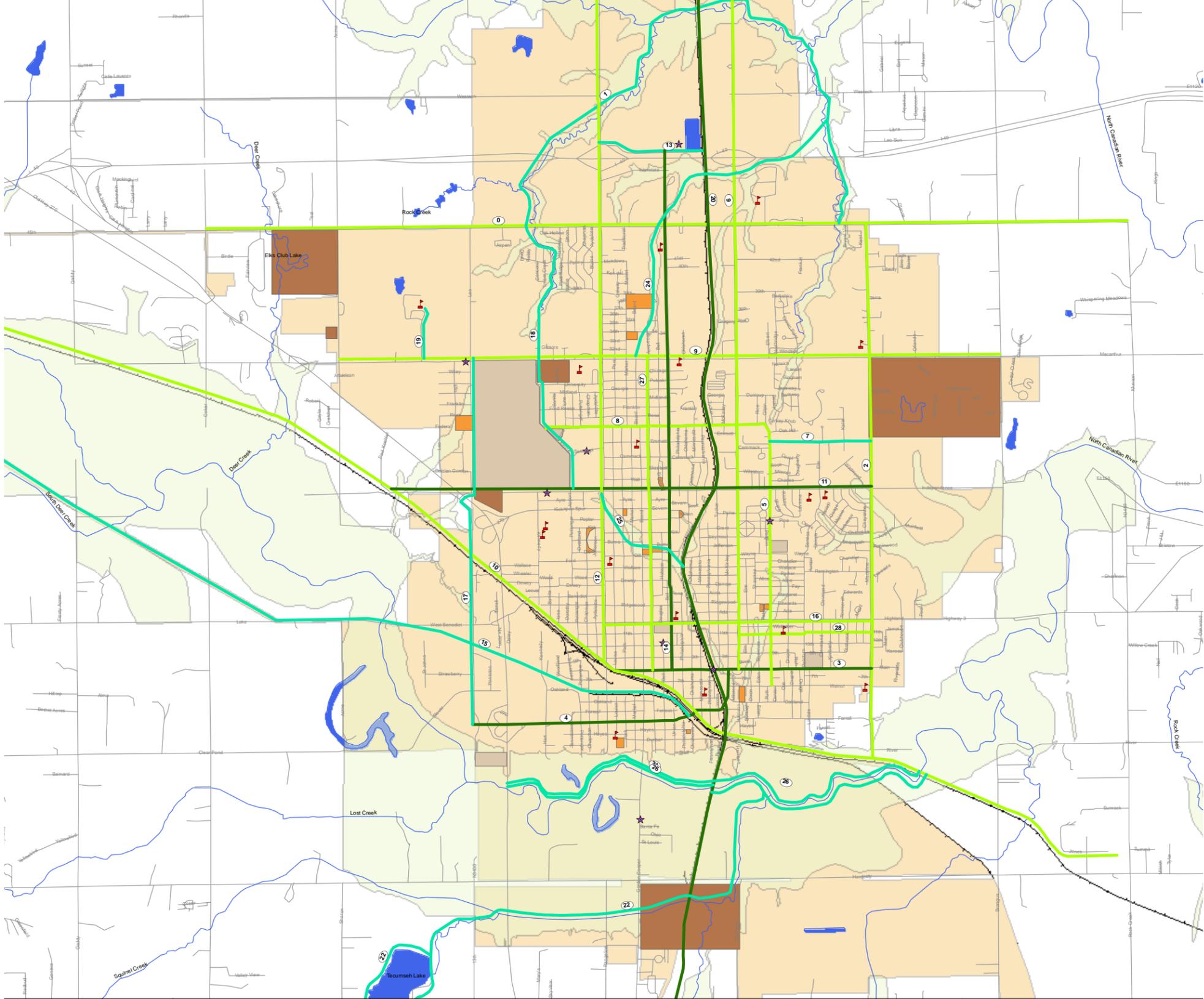
Proposed Trails City of Shawnee Trails Master Plan



- Legend**
- ★ Community Attractions
 - 🏫 Schools
 - ON-STREET
 - TRAIL
 - EQUESTRIAN
 - Streams
- Parks**
- 🟠 park-type-Neighborhood
 - 🟡 park-type-community-park
 - 🟤 park-type-special-use
 - Streets
 - 🟩 approx flood Zone
 - Rail Roads
 - 🟦 Water
 - 🟠 City Limits

Trail Legend

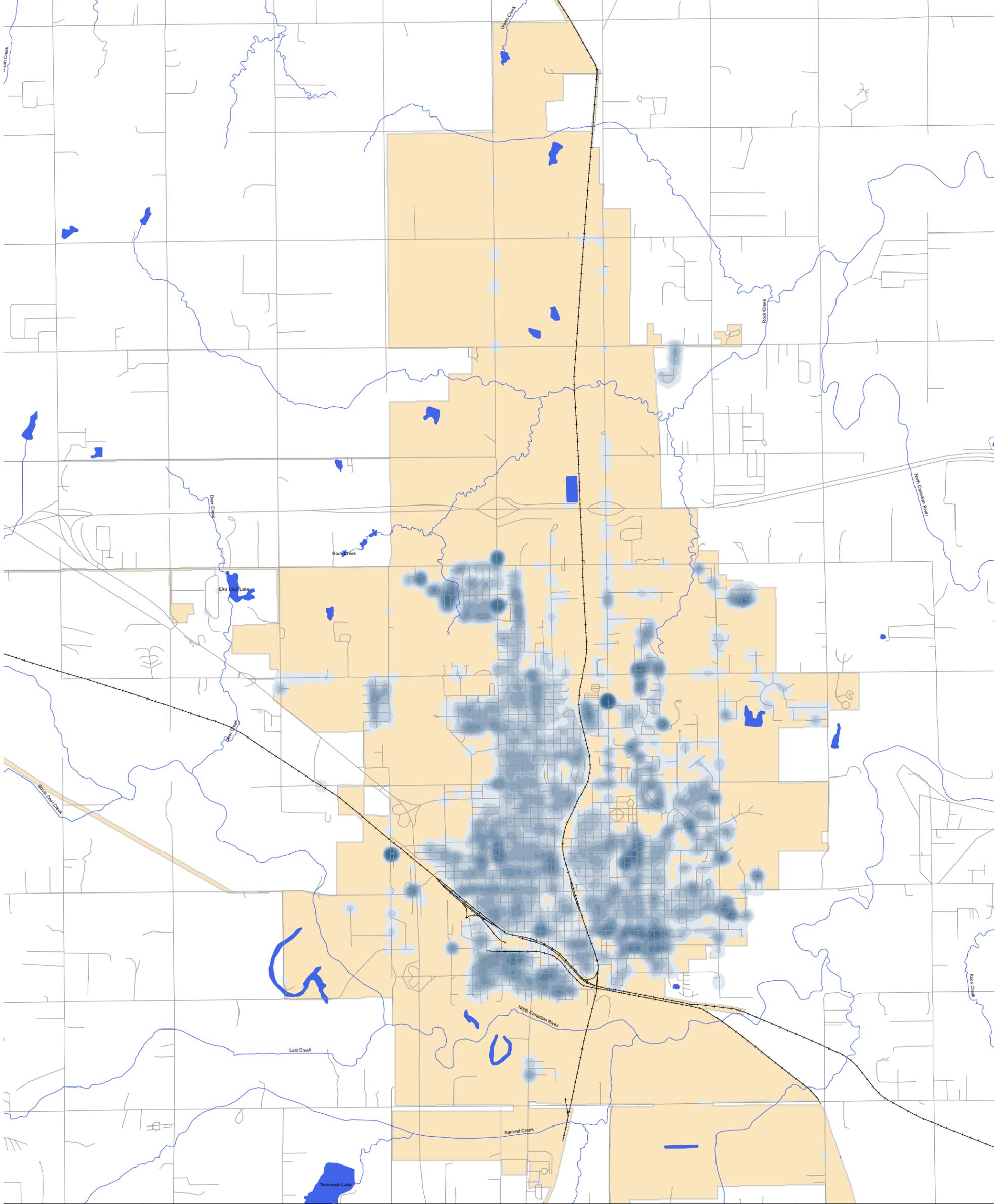
Length in Miles	Rank	ID #	Name	Type
6.98	16	1	45TH ST	On-Street
5.74	23	2	ROCK CREEK	Trail
4.08	15	3	BRYAN AVE	On-Street
1.95	3	4	MAIN ST	On-Street
2.18	4	5	FARRALL ST	On-Street
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5.00	6	10	MACARTHUR ST	On-Street
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3.64	1	12	INDEPENDENCE ST	On-Street
8.32	7	13	KICKAPOO AVE	On-Street
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3.73	25	27	NORTH CANADIAN RIVER	Trail
2.40	8	28	BROADWAY AVE	On-Street
1.01	17	29	11TH ST	On-Street



Phasing Plan City of Shawnee Trails Master Plan



- Legend**
- Trail-Phasing phase**
- Near (green line)
 - Mid (yellow line)
 - Long (orange line)
- Schools**
- Schools (red flag icon)
- Community Attractions**
- Community Attractions (star icon)
- Parks**
- park-type-Neighborhood (orange square)
 - park-type-community-park (light brown square)
 - park-type-special-use (dark brown square)
- Other Features**
- Streets (grey line)
 - Streams (blue line)
 - approx flood Zone (light green area)
 - Rail Roads (black line with cross-ticks)
 - Water (blue area)
 - City Limits (orange area)



Residential Density City of Shawnee Trails Master Plan



- Legend**
- Residential Density High
 -
 -
 -
 -
 -
 -
 -
 -
 - Low
 - Streams
 - Streets
 - Rail Roads
 - Water
 - City Limits