AN EVALUATION OF RECREATION OPPORTUNITIES ALONG THE TRIBAL LANDS RECREATIONAL TRAIL IN MUSKOGEE, OKLAHOMA

By

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CHAPTER I

INTRODUCTION

Today there is an increased demand for recreation and exercise. Unfortunately there is a shortage of appropriate areas available that support diverse recreational opportunities. Population growth in our cities and changing trends in recreational interests have greatly expanded the need for bicycling, hiking, jogging, cross-country skiing, and horseback riding opportunities (Rails-to-Trails Conservancy, 1986a).

One proposed alternative to alleviating pressure on existing resources involves converting railroad corridors into recreational trails. These abandoned, or soon to be abandoned corridors can be obtained without land condemnation and can be used in many ways. The definition of a "rail-trail" is simply a trail that has been constructed within the abandoned corridor of a rail line (Rails-to-Trails Conservancy, 1986a).

Rail-trails can provide opportunities for all types of recreational users on surfaced paths that are free from motorized vehicles and follow gentle grades. While following rail corridors, trail users can experience a diverse array of

physical surroundings. Additionally, rail-trails are a way of preserving a railroad corridor for future use if a railroad must be returned to active use.

The President's Commission on American Outdoors has endorsed the Rails-to-Trails program by recommending that thousands of miles of corridor should become hiking, biking, and bridal paths (Rails-to-Trails Conservancy, 1986a). Additionally, Congress supports the concept of preserving railroad rights-of-way for trails. Under federal law, the U.S. Department of Transportation and the U.S. Department of the Interior must encourage the conversion of unused rail lines to trails (The National Trails System Act Amendments of 1983, 16 U.S.C. sec. 1241).

Rails-to-Trails Conservancy

In 1985 the Rails-to-Trails Conservancy (RTC) was created as a non-profit organization by trails enthusiasts. Through a nationwide network of contacts in recreation and conservation communities, the Conservancy notifies trail advocates, local governments, and other groups of upcoming rail road line abandonments, assists public and private agencies in following proper legal procedures to establish trails, and publicizes rails-to-trails issues throughout the country. In the nation's capital, the RTC works on funding programs and simplifying regulations to promote rail-trail conversions. In addition, one of the primary goals of the

Conservancy has been to stop the piecemeal sale of abandoned corridors and to assist in developing abandoned rail lines as recreation trails.

Over the past nine years there has been a great deal of progress in the number of rail-trail creations. According to the RTC, 500 trails are now open to the public for a national total of more than 5,000 miles. In addition, more than 500 additional projects are currently being developed (Rails-to-Trails Conservancy, 1993).

In 1920, the nation's railway system peaked at 272,000 miles and has steadily declined ever since. Over the last few decades the number of abandoned railroad corridors has increased steadily, with many remaining lines so infrequently used that it is probable that they too will be abandoned. Today, there are less than 140,000 miles of rail lines in use and predictions suggest that 3,000 miles each year are abandoned (Olson, 1990). To illustrate this figure, the number of miles abandoned each year is more than the distance between New York City and San Francisco.

Scope of the Study

Railbanking refers to the provision of interim trail uses for inactive lines. Currently, there are 39 miles of rail-line being railbanked here in Oklahoma for the use of the Tribal Land Recreational Trail. Interim trail use allows the lines to be reactivated in the future. The land is

theoretically placed in storage for possible future use. This trail corridor was officially acquired from the Muskogee Port of Authority on December 22nd, 1994. Previously the Port of Authority had acquired 43 miles of abandoned rail-line from the Union Pacific Railroad. Of the original 43 miles, the Muskogee Port Authority required only the first four miles of track located in Muskogee for general operations. The remaining 39 miles has been railbanked for use as a recreation trail, thus giving full responsibility to the three man board of the "Tribal Lands Recreational Trail Organization." The responsibility of the board includes legal matters, trail planning and development, and future trail activities. Currently the Board is located in Muskogee.

The "Tribal Lands Recreational Trail" will be established through a non-profit organization for the benefit of a variety of recreational uses. The date for public notification is scheduled to be June 2nd, 1994. The trail (see Appendix I) will begin at Davis Field in Muskogee and run south and southeast to the town of Stigler in Haskell County. Adjoining towns to be linked include Muskogee, Warner, Porum, Briarton, and Stigler. Along the route the trail will traverse prairie, wetlands, forest, rivers, and streams. Additionally the trail will cross the Canadian River via a 1600 foot bridge that is located within the Interior Least Tern's (an Endangered Species) nesting area.

Oklahoma Conversions

The conversion of railroads to rail-trails can create valuable and unique resources for persons living in Oklahoma. These new recreation areas have a potential to: 1) increase the recreational opportunities in an area; 2) contribute to an area's economic growth by promoting tourism; 3) increase residential property values in areas that are experiencing growth; 4) improve the image and desirability of local communities; and 5) preserve endangered plant and animal habitats while maintaining the historical and cultural heritage of an area (Oklahoma Department of Tourism and Recreation, 1990).

Trail development in Oklahoma has been slow, possibly due to the small number of available lines suitable for conversion. Other problems in Oklahoma are directly related to opposition from a relatively small number of landowners backed by the Oklahoma Farm Bureau. The Farm Bureau claims to be protecting the property rights of land owners who believe that when rail lines are abandoned, the land should revert to their ownership and not to the State. Other concerns of land owners involve issues such as theft and noise. Additionally, urban land owners believe that noise from trail users will disturb their neighborhoods. However, Mazour (1988) notes that hiking and bicycling are both popular and quiet activities. The noise created by these activities would not be greater than the noise produced from

a railroad or street (Mazour, 1988). Legal issues and other problems associated with rail-Trails will be discussed further in the following chapter.

Objectives

The main purpose of this study is to determine who the potential users of the Tribal Lands Recreation Trail will be and to what extent their needs will be met by different types of facilities. In addition, this study will be used to identify possible conflicts perceived by trail users. Information obtained from surveys will be applied in the development of a Recreation Opportunity Spectrum (ROS) for the rail-trail.

An ROS is a classification of various types of recreational opportunities associated with a recreation facility. Within the corridor, recreational activities are zoned to areas appropriate for certain types of use. The trail within the corridor is then classified into different segments which provides different types of recreational opportunities. An example would be where managers zone wheelchair use and walking as opportunities in urban areas.

This study includes four objectives as a means of determining a Recreation Opportunity Spectrum. The objectives are as follows:

1) Identify recreational users.

Management of these areas should provide for the

psychological and emotional needs of the trail's users. In order to fulfill this objective it is important to determine who the trail users are and their characteristics. The collection of information should include sociodemographic and behavioral information.

2) Identification of the needs and desires of trail users. It is important to determine users' needs in order to provide recreation opportunities that people actually desire. Different age groups may desire different types of recreation and different user types may desire special trail characteristics.

3) Identification of conflicts among trail user types. Not all user types may be able to share the trail without conflict. Therefore it is important to determine the type of conflicts that users may experience with other user types so the problems can be avoided.

4) Classification of the trail.

In order to protect the experience of trail users, regulations may be necessary along the trail. Zoning is a possible option in setting priorities for specific uses in certain areas. Examples may include zoning wheelchair use and walking opportunities within urban areas. Biking may be given priority in suburban areas while hiking might be given priority within primitive areas. The results of the study are intended to assist in determining the opportunities on the Tribal Lands Recreational Trail.

CHAPTER II

Literature Review

A large collection of literature exists concerning rails-to-trails planning. The volume of literature is so extensive that it would require a major undertaking to acknowledge all sources and planning methods. Therefore, this review focuses on a cross-section of literature relevant to the rails-to-trails movement.

Most of the literature presented in this review has been gathered from major law journals, trail studies, and publications of the Rails-to-Trails Conservancy. It must be noted that the Rails-to-Trails Conservancy is the major supporter of almost all rail-trails throughout the country. The following is a broad review of literature available concerning the rails-to-trails movement and its legal battles.

Probably the two most important sources of rail-trail information relevant to rail-trail conversion is contained in two manuals prepared by the Rails-to-Trails Conservancy. The first is a guidebook which provides an explanation of the legal process involved in converting abandoned railroad lines into recreational trails (Rails-to-Trails Conservancy,

1986b). The second manual, "Converting Rails-to-Trails," provides the basis of converting railroads to trails. This manual provides methods for establishing support for converting trails (Rails-to-Trails Conservancy, 1986a).

The National Trails System Act

In 1968, Congress enacted the National Trails System Act (National Trails System Act P.L. 90-543; 82 STAT.919: sec. 1070) to establish recreation trails throughout the country. The purpose of the Trails Act is to provide for low cost recreational activities and to facilitate the increasing outdoor recreational needs of an expanding population. The Act promotes preservation of, public access to, and enjoyment and appreciation of the open-air, outdoor areas and historic resources of the nation.

Railbanking

In 1983, Congress amended the Trails Act to provide for the interim trail use of railroad right-of-ways. This approach is consistent with earlier congressional efforts to adapt inactive railroad lines for recreational and other uses (16 U.S.C. sec. 1241). An example of earlier congressional efforts is the Railroad Revitalization and Regulatory Reform Act of 1976, also known as the 4-R Act, to develop interim trail uses for inactive lines so these lines can be

reactivated in the future. Interim trail use on inactive lines is also known as "railbanking." Section 809(b) of the 4-R Act authorizes the Secretary of Interior to assist local governments in converting abandoned railroad lines to recreational uses. Section 809(c) gives the Interstate Commerce Commission (ICC) powers to delay disposition of rail property after an order is served permitting railroad abandonment, if the property is suitable for public purposes. Therefore the 1983 Rails-to-Trails scheme coincides with the purposes and procedures of the 4-R Act (Cain, 1991).

The theory and the legality of "railbanking" has experienced some problems in relation to interpretation and application. Because of such implementation there have been many court cases challenging the constitutionality of the concept. On February 21, 1990, in the case of Preseault v. ICC. (110 S. Ct. sec. 914 1990), the question was put to rest. Paul Preseault, a Vermont developer, claimed that he owned land under a railroad track in Burlington and that it should revert back to his ownership after abandonment by the railroad. Standing in the way of Preseault were the State of Vermont, the RTC, and numerous others who claimed that the idea of railbanking is a reasonable exercise of the government's power to regulate railroads (Lim, 1992).

The unanimous Supreme Court decision in Vermont which upheld railbanking as a valid exercise of congressional power has been hailed as among the greatest legal victories in the history of rail-trail development (Rails-to-Trails

Conservancy, 1990). Even though the majority of existing rail-trails have been purchased fee simple by government agencies rather than being established through railbanking, the decision has unleashed several new projects.

The Preseault decision has prompted the RTC to project positive effects to more than 20 proposed trails in Missouri, California, Iowa, Colorado, Ohio, Indiana, South Carolina, Maryland, Pennsylvania, Kansas, South Dakota and Utah (Rails-to-Trails Conservancy, 1990). According to RTC President David Burwell, "This unanimous decision of the U.S. Supreme Court to uphold the constitutionality of railbanking marks a very real turning point for the rails-to-trails movement" (Rails-to-Trails Conservancy, 1990). Burwell added that after the Preseault decision, the formation of new trails should be much easier.

Rail-Trail History

The rails-to-trails movement began in the Midwest during the mid 1960's. In 1963, the late Chicago naturalist May Theilgaard Watts wrote a letter to the editor of the Chicago Tribune proposing constructive reuse of an abandoned right-of-way outside of the city. She wrote,

> We are human beings. We are able to walk upright on two feet. We need a footpath. Right now there is a chance for Chicago and its suburbs to have a footpath, a long one (Rails-to-Trails Conservancy, 1993, pg 3).

This letter inspired thousands of citizens to push for the

20-year creation of the 55-mile Illinois Prairie Path.

The idea of rail-trail creation spread slowly. One of the first major rail-trail conversions occurred in 1967 with the opening of Wisconsin's Elroy-Sparta Trail. In 1978 Seattle opened the Burke-Gilman Trail. A few years later the first half of Virginia's W&OD began to operate. It was not until 1986 that the Rails-to-Trails Conservancy was established with its primary goal being to help communities establish rail-trails. In 1986 there were only 100 open rail-trails with an additional 90 projects underway (Rails-to-Trails Conservancy, Converting Rails-to-Trails, 1986a). Today, 565 trails are open to the public that include more than 7,000 linear miles (Rails-to-Trails Conservancy, 1994).

Conflicts Along Rail-Trails

Over the past few decades there have been several battles over the construction and conversion of rail-trails, many of which have been settled in court (Glosenmeyer v. Missouri-Kansas-Texas R. Co. 685 F. Supp. 1108, E.D. Mo. 1988; National Wildlife Federation v. ICC. 850 F.2d 694. D.C. Cir. 1988; Preseault v. ICC. 110 S. Ct. 914 1990).

At the same time there have been numerous attempts to block the construction of rail-trails by trail opponents. Trail opponents suggest that rail-trails decrease property values, and lead to increases in crime, trash, or are otherwise a burden to land owners. Additional points that

have been debated include the legal position that railbanking is an unconstitutional taking of the adjacent landowners' property.

Arguments in favor of rail-trail development have been made by groups such as the RTC. Information is readily available that suggests rail-trails do not decrease property values, do not increase crime and trash, and are not a burden to adjacent land owners but are rather economically rewarding to communities (Hahn and Eubanks, 1985; Mazour, 1988; Moore et al., 1992; Seattle Engineering Department, 1987; and Wengert, 1989). For example, the Seattle Engineering Department found in a recent study of the Burke-Gilman Trail, a favorable impact on property values, no increased crime or litter, and opponents turning into proponents due to benefits that resulted with construction of the trail (Seattle Engineering Department, 1987).

A earlier study conducted by the Seattle Engineering Department found that trail users actually bring money into the community by purchasing items and spending money on food and lodging. The results show the median income of the trail users is approximately $34,000 a year. Businesses that stand to gain from large numbers of recreation users include campgrounds, food services, grocery stores, convenience stores, bicycle and ski service and rentals, hotels/motels, and automotive service stations (Hahn and Eubanks, 1985). The Minnesota Department of Natural resources conducted telephone interviews with law enforcement and fire department

officials in the counties which were traversed by four individual trails in Minnesota and Wisconsin. Results of the study indicated no serious problems with respect to crimes or nuisances. In fact, several law enforcement officials felt that the trails alleviated the unlawful snowmobile trespass in the winter by providing additional areas for use (Minnesota Department of Natural Resources, undated).

A 1986 study of Wisconsin's Sugar River-Trail indicated that trail users spent around $485,000 along the trail (Hahn and Eubanks, 1985). A later study completed by the University of Wisconsin Extension service found that users on the Elroy-Sparta Trail spent approximately $25 per person. This same survey estimated that trail visitors spent approximately $1,257,000 within the area (Wengert, 1989). This type of data clearly shows that rail-trail users bring money into areas. In today's society, many communities could benefit from increased monetary flow generated by rail-trail users.

Increased monetary flow through businesses located in these communities is not the only positive economic effect of rail-trails. Rail-trails have also shown positive effects on property values. For instance, there are advantages of living next to a safe, traffic free recreational trail. Advantages such as scenic beauty associated with a trail, increased property value of adjacent property value, Therefore, a rail-trail can become a major selling point for property located in the vicinity of the trail. A specific

example is the Prairie Path Trail in Illinois. In the cities of Glen Ellyn and Wheaton, four well-established Realtors were questioned about the effect of the trail on adjacent real estate. All four agreed that the trail represented a community asset and attraction that enhances the value of real estate adjacent to the trail, commercial as well as residential. Additionally, the realtors suggested that the recreational aspect and the scenic beauty of the trail is viewed favorably when advertising homes near the trail (Hahn and Eubanks, 1985).

Additionally, a 1988 study of the Luce Line and Root River trails in Minnesota found that a vast majority of owners (87%) believe the trails either increase the value of their property, or have no financial effect on it (Wengert, 1989). In addition, there are a number of other trails studies that have been completed that suggest trails as being desirable. For example, an impact study on property adjacent to the Root River and Luce Line Trails found that land owners view the two trails as desirable features and are a positive selling point for suburban property (Mazour, 1988). Land owners also claimed that they had not experienced major problems, such as vandalism or crime with the trails.

In 1992, an impact study of users and nearby property owners from three different trails was conducted by researchers at Penn State University (Moore et al., 1992). In all cases, trail users and landowners reported the trails as benefiting their communities in a variety of ways.

Landowners considered health, fitness, and recreation opportunities to be the important while trail users indicated that the trails were most important for providing health and fitness, aesthetic beauty, and undeveloped open space.

In 1989, a state resident attitude study concerning rail-trails was completed by researchers at Oklahoma State University (Canaday, 1989). The results indicated state residents were in favor of constructing a trail in the Henryetta area. However, the Governor later halted construction of the Henryetta trail, due to political reasons.

Recreation Opportunity Spectrum

Although the literature is limited concerning recreation opportunity classifications relative to rail-trails, a large collection of literature exists concerning the United States Forest Service's Recreation Opportunity Spectrum (ROS) for classifying recreation land types. The literature on ROS is so extensive that it would require a major undertaking just to acknowledge all the different types of applications. Therefore, this review examines only literature that was determined to be useful for applying ROS concepts to a potential rail-trail conversion near Muskogee.

ROS History

The increased demand for outdoor recreation has required federal, state, and local land managers to make complex decisions about the types of recreational activities that should be provided, the types of resources to be allocated for these activities, and the capability of resources. To help address these issues, the USDA Forest Service and the USDI Bureau of Land Management developed a systematic framework for recreation planning and management (Perry et.al., 1979). This framework is based on the concept of the Recreation Opportunity Spectrum, a continuum of recreation activities, settings, and experiences, which separates land resources into six different classes based on the recreation opportunity they provide (see Figure 1).

In the 1960's and 70's there was a major effort by U.S. land managing agencies to develop a system that would combine recreation and multiple-use planning. Planners and managers have long wrestled with the complexities of inventorying the supply of recreation resources. Many issues were considered in developing the system that is used today. Examples of issues considered include the assessment of recreation needs/demands and the organization of information for management and decision-making. Both the Forest Service and the Bureau of Land Management have adopted the ROS system for inventory planning, and managing their recreation resources (Buist and Hoots, 1982).

1) Primitive: Area is characterized by essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-induced restrictions and controls. Motorized use within the area is not permitted.

2) Semi-Primitive Non-motorized: Area is characterized by a predominantly natural or natural-appearing environment of moderate to large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized use in not permitted.

3) Semi-Primitive Motorized: Area is characterized by a predominantly natural-appearing environment of moderate-to-large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized use is permitted.

4) Roaded Natural: Area is characterized by predominantly natural-appearing environments with moderate evidences of the sights and sounds of man. Such evidences usually harmonize with the natural environment. Interaction between users may be low to moderate, but with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities.

5) Rural: Area is characterized by substantially modified natural environment. Resource modification and utilization practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by large number of people. facilities are often provided for special activities. Moderate densities are provided far away from developed sites. Facilities for intensified motorized use and parking are available.

6) Urban: Area is characterized by a substantially urbanized environment, although the background may have natural-appearing elements. Renewable resource modification and utilization practices are to enhance specific recreation activities. Vegetative cover is often exotic and manicured. Sights and sounds of humans, on-sight, are predominant. Large numbers of users can be expected, both on-site and in nearby areas. Facilities for highly intensified motor use and parking are available with forms of mass transit often available to carry people throughout the site.

Figure 1. ROS Classification
Source Hammit and Cole 1987

Fredrick L. Olmstead, Sr. developed early concepts concerning recreation options in the late 19th and early 20th centuries. The demand for recreation opportunities continued throughout the following years and recognized the importance of diversity in providing satisfactory recreation experiences. The concept of a recreation opportunity spectrum can be traced to works by such writers as (Carhart, 1961), (J. V. K. Wagar, 1951), and (J.A. Wagar, 1966).

Roderick Nash formulated a definition of wilderness, suggesting that useful delineation could be accomplished by conceiving of environments that range from the purely wild (or "primeval") on the one end to the purely civilized (the "paved") on the other, with the rural (or "pastoral") in the middle (Nash, 1973). This definition seems to have sparked the early idea of creating recreational management systems.

Early inventory management systems attempted to provide a total inventory of land areas and to provide various recreation opportunities on the land. Examples of early inventory systems include the Recreation Inventory Instructions (RII) and the Recreation Opportunity Inventory and Evaluation (ROIE) system (Driver et. al., 1987). However, these early systems have been criticized because they define recreation as opportunities to participate in recreation in isolation fro recreational resources.

ROS Framework

The ROS framework is essentially a method that promotes recreation diversity. This diversity is provided when users become involved in different types of activities within different physical-biological-social-managerial settings in order to realize various experiences (Hammitt and Cole, 1987). An example of this situation could include an urbanite business man and a rail-trail. One day this person may ride his bike through the most remote sections of a rail-trail in order to get away from society and then one week later, this same urbanite may find himself inline skating on the same trail in a more populated area as a means of meeting others. The area of concern here, is that through management of the trail, this person participated in two different and diverse recreation opportunities.

Applications

In order to establish the ROS planning framework, a behavioral definition of recreation was needed. This framework defined recreation as a type of human experience, based on intrinsically rewarding engagements during non-obligated time. Such a definition allowed recreation managers to account for the recreation demands of the public (Driver et. al, 1987). In order for the ROS to be a complete and useful tool in planning and management purposes, the

demand for various recreational opportunities had to be fully integrated into the system (Lichtkoppler, 1988).

There are several studies that examine different types of ROS applications. Examples include hunting (Potter et al., 1973), wildland areas (Marshall, 1933; Lloyd and Fischer, 1972; Helburn, 1977; Driver and Brown, 1978) and parks (Field, 1976; McCool and Elmer, 1975). Each of these are characterized by a range of conditions from modern to primitive (Clark and Stankey, 1979). Other examples include techniques and implications for resource planning and coordination, (Brown, 1979), arid lands, (Brown, Driver, and Berry, 1980), and motorcycle area design, (Bury and Fillmore, 1975).

Recreation Opportunities

According to Clark and Stankey (1979), when considering opportunities for outdoor recreation, people must make choices about the activities in which to engage, settings in which to recreate, and kinds of recreation experiences to seek. By describing the factors that influence or define the range of possible settings and by communicating this information to recreationists, it is possible to choose the experiences desired (Clark and Stankey, 1979).

Clark and Stankey define a recreation opportunity setting as the combination of physical, biological, social, and managerial conditions that give value to a place. Thus,

an opportunity includes qualities provided by nature (vegetation, landscape, topography, scenery), those associated with recreational use (levels and types of use), and conditions provided by management (developments, roads, regulations). By combining variations of these qualities and conditions, management can provide a variety of opportunities for recreationists (Clark and Stankey, 1979).

Recreation opportunity settings imply a choice for recreationists; people must be aware of the opportunities, and the opportunities must be comprised of conditions desired by recreationists. Thus, opportunities are a function of user preference and a product of management actions designed to provide desired settings and to make people aware of their existence (Clark and Stankey, 1979).

Clark and Stankey also mention that the spectrum concept is also reflected in a variety of land management descriptions. A basic recommendation of the Outdoor Recreation Resources Review Commission was for classification of recreational resources along a spectrum from areas suitable for high-density use to sparsely used extensive primitive areas (ORRRC, 1962).

Robert Lucas (1971), a principal Geographer and project leader in Wilderness management Research, suggests that trail users seem neglected in our nation's trail systems. Trail systems are limited and are largely relics of fire control rather than designated for recreation; their total mileage is probably declining. On the other hand, participation in

various kinds of trail oriented recreation is substantial and growing. Most of this activity is for short periods of time close to participants homes. A varied and diffuse trail system, with an emphasis on opportunities near urban areas, is needed (Lucas, 1971).

Classifying the Recreation Opportunity Spectrum

Under formal usage, ROS recognizes five specific criteria: remoteness, size of area, evidence of human activity, user density, and amount or noticeability of managerial control. The criteria are then used to delineate the opportunity settings (Buist and Hoots, 1982). The six different opportunity settings are shown in Figure 1. The classifications mentioned in Figure 1 are primarily used for managing wilderness areas in the West, although there are problems with using this type of management plan within other wilderness areas located in the east. An example is within the Eastern wilderness areas, where there is a lack of primitive wilderness. In the East, it is difficult to find a site that is physically removed from civilization. However, it may not be as difficult to get away from the sounds of civilization due to the topography of the land. This shows that a wilderness feeling can be experienced, although it doesn't quite fit the criteria established for primitive areas in the West (Lichtkoppler, 1988).

CHAPTER III

METHODOLOGY

The methodology used in this study called for two surveys. The first was administered as a mail questionnaire (see Appendix II) and was distributed to members of Muskogee's Rough Riders Bicycle Club. The format of this mail survey followed Dillman's recommendation for questionnaire design and implementation (Dillman, 1978). The second survey was administered at two parks in the City of Muskogee. In order to fulfill the objectives of the study, a series of questions were asked in both surveys that addressed specific areas of interest relating to trail planning objectives. Questions were designed to identify the recreational users, desired trail characteristics and funding methods, and the level of conflict between users.

MAIL SURVEY

A list of persons who have participated in events offered by the Muskogee Roughriders Bicycle Club was used as a mailing list to represent bicycle enthusiasts. The reason bicycle enthusiasts were chosen for the survey is

because they represent a large percentage of rail-trail users across the country. According to the RTC, the two most popular uses of rail-trails are bicycling and walking (Rails-to-Trails Conservancy, 1986A).

PERSONAL SURVEY

A general survey of park users in the Muskogee Area was also carried out (see Appendix III). The objective of this survey was to obtain opinions from various types of park users concerning park facilities within the City of Muskogee and surrounding areas. Surveys were conducted after obtaining permission from the City of Muskogee Parks and Recreation Department and from board members of the Tribal Lands Recreation Trail. The study areas selected were two city parks located within the city limits of Muskogee. Each park was chosen on the basis of location, type of use, and the amount of participant usage. In both locations, park users were surveyed in the same manner. Each park user over the age of 12 was approached and asked if he or she would be willing to answer a few questions concerning park facilities within the Muskogee ares. People were told that the survey would take approximately 10 minutes and that all answers would remain confidential.

Spaulding Park

The first sampling location chosen was Spaulding City Park. Spaulding was selected for the study because of its location and amount of recreational use. Spaulding's location is near the center of Muskogee, within one block of the City Parks and Recreation office. The park frequently receives a large number of visitors including a wide variety of recreational use types. This amount of use can be attributed the number of recreational facilities provided which include a swimming pool, four tennis courts, and a fishing pond equipped with a fishing dock and gazebo. In addition, there is an abundance of picnic sites and other amenities such as playground equipment.

Users of Spaulding park are generally people from nearby residential neighborhoods. Users ranged in age from toddlers to retirees. During interview periods, users were found walking, playing tennis, fishing, and relaxing.

Honor Heights Park

The second park chosen for sampling was Muskogee's Honor Heights Park. Honor Heights receives much attention throughout the year and is known around the state as the location of Muskogee's acclaimed Azalea festival. Because of its high amount of visitation, Honor Heights Park is beautifully landscaped and nicely maintained throughout the

year. The park entrance is located adjacent to the Five Civilized Tribes Museum and the Veterans' Hospital.

Honor Heights offers one of the city's swimming pools, a small lake for fishing and nature observation, playground areas and structures, and an abundance of picnic areas including permanent picnic shelters. During the interview periods, Honor Heights had a large number of people scattered throughout the park. The population of users was quite diverse in the types of recreation activities taking place.

DATA ANALYSIS

The data gathered from the two surveys was analyzed using both descriptive and inferential statistics. The goal of the descriptive statistics was to identify the recreation users along with their needs and desires. Inferential statistics used in the study included both chi-square and a t-test. The goal of the inferential statistics was to identify perceptions of conflict between user types.

CHAPTER IV

FINDINGS

BICYCLE SURVEY FINDINGS

One hundred and eighty surveys with self addressed stamped envelopes were mailed to the members of the Muskogee Rough Riders Bicycle Club. Eighty members returned a completed survey by the survey cut-off date, resulting in a return rate of 44.4%. Results pertaining to the respondents indicated that 66% were male while 34% were female. In addition, the age of respondents ranged from 17 to over 65 years of age. Concentrations were found in the age groups of 31-40 and 41-50. The age breakdown is shown in Table 1.

Table 1
Age of Respondents

	Frequency	Percent
17-20	1	1.3
21-30	6	7.5
31-40	29	36.2
41-50	23	28.8
51-60	14	17.5
> 61	7	8.8

Land Ownership

The survey requested information regarding respondents' land ownership in Oklahoma. If the respondent indicated that he/she was a landowner, they were asked to indicate whether or not their land was located adjacent to a railroad right-of-way. This question was included to determine whether or not landowners adjacent to railroad right-of-ways would oppose the creation of new rail-trails. Table 2 suggests that there is no opposition by bicycle enthusiasts who owned land near railroad rights-of-way. The data shows that 62% did own land in Oklahoma. Only four persons (6.8%) owned land adjacent to a rail road rights-of-way.

Number of Park Visits

Members were also asked questions about the number of times they frequented city parks within the Muskogee area. This question was directed at examining the change in their activity level associated with a potential rail-trail addition. The cumulative responses show that bicyclists do regularly use parks. Therefore, by looking at Table 2 and data from Table 5, the potential for increases in trail visitation looks promising.

Table 2
Number of Park Visits

	Frequency	Percent
Once a week	20	25.0
2-3 times/month	11	13.8
1 time/month	18	22.5
2-3 times/year	23	28.8
1 time/year	1	1.3
<1 time/year	7	8.8

Total Amount Spent on Parks and Recreation Facilities

Bicycle enthusiasts were also asked about the approximate amount they have spent over the last year on parks and recreational facilities within the Muskogee area. This total was to include food, transportation, and miscellaneous expenses. The purpose of the question was to verify whether or not people are willing to spend money on recreation and recreational facilities within the Muskogee area. Table 3 shows that at least 85% of respondents spent at least one to five dollars on recreation each year. In addition, results suggest that over 70% of the respondents spent more than $10 per year on recreation. Although these values are not large, it should be noted that the use of a rail-trail may cost one dollar per day or five dollars per year for access.

Table 3
Total Amount Spent on Parks and Recreational Facilities

	Frequency	Percent
NONE $0	12	15.0
$1-$5	3	3.7
$6-$10	7	8.8
$11-$20	10	12.5
$21-$30	11	13.8
$31-$40	8	10.0
$41-$50	14	17.5
$>$50	15	18.8

Knowledge of Rail-Trails

The question of whether or not a respondent is aware of the process of converting railroad lines to recreational trails or has heard of the Rails-to-Trails movement was asked in order to determine the general public's knowledge of rail-trails. The survey indicated that almost 90% were knowledgeable about rail-trails. This question was also used to determine how respondents first learned of rail-trails. Results show that the respondents first learned of rail-trails from a variety of sources. According to Table 4, only television was not mentioned.

Table 4
First Source of Knowledge

	Frequency	Percent
Friends	19	25.7
Television	1	1.4
Magazines	13	17.6
Newspapers	18	24.3
Television	0	0.0
Other	23	31.1

Concept of New Rail Trails

Since there would be respondents who had never previously been informed of rail-trails, a descriptive statement was included explaining what a rail-trail was and what they are used for. After this explanation, a question to reveal respondents' attitudes concerning rail-trail creation was asked. Of the five possible responses shown in Table 5, no one objected to rail-trail creation. The majority of bicycle enthusiasts indicated that they strongly approve of the creation of new rail-trails. Only two respondents were undecided.

Table 5
Support for the Concept of New Rail-Trails

	Frequency	Percent
Strongly Approve	67	83.7
Approve	11	13.8
Undecided	2	2.5
Disapprove	0	0.0
Strongly Disapprove	0	0.0

Features Desired For The Trail

In order to determine the needs and desires of trail users, specific questions involving trail features were asked. These included questions concerning trail surface types and widths. In addition to trail features, questions addressing funding for the trail were also included in order

to determine the attitudes of park users concerning how rail-trails should be initially funded and supported over time.

Trail Surface Types

Respondents were asked about the type of trail surface they would like to see in the Muskogee area. The trail surface choices included dirt/natural, fine gravel, and asphalt/cement. All three of these trail surfaces types can be found across the country and offer different types of recreation activities. Table 6 shows that bicycle enthusiasts prefer an asphalt or cement trail rather than fine gravel or dirt natural trails.

Table 6
Trail Surface Types Preferred by Bicyclists

	Frequency	Percent
Dirt/Natural	16	20.3
Fine Gravel	6	7.6
Asphalt/Cement	57	72.2

Primary Activities on a Rail-Trail

Bicycling enthusiasts were also asked about their potential use of a rail-trail. The survey forced respondents to select only one activity. Due to the nature of the survey population, the results were quite predictable. Table 7 suggests that almost 90% of the responses claimed that their primary activity would be bicycling. Other choices available

included walking/hiking, jogging, inline skating, horseback riding, or motorized recreational vehicle use.

Table 7
Primary Activities on a Rail-Trail (Bicyclists)

	Frequency	Percent
Walking/Hiking	2	2.5
Bicycling/Mtn Biking	70	87.5
Jogging	2	2.5
Inline Skating	1	1.3
Horseback Riding	4	5.0
Motorized Rec. Vehicles	1	1.3

Width of the Rail-Trail

Park users were asked to indicate the approximate trail width they would like to see for their primary use. desired trail width. Respondents were told that rail-trails vary in width depending on the surface type and primary use of the trail. Rail-trails can range from three to twelve feet, with multi-purpose trails being the widest. The results shown in Table 8 indicate that the majority of park users desired trail widths between five and nine feet. It should also be pointed out that 23% desired the trail to be at least eleven feet or wider.

Table 8
Desired Width of Rail-Trail (Bicyclists)

Width	Frequency	Percent
3-5 feet	7	8.8
5-7 feet	19	23.8
7-9 feet	22	27.5
9-11 feet	14	17.5
> 11 feet	18	22.5

Amount Willing to Contribute for Rail-Trail Development

Respondents were informed that the cost of rail-trail development ranges from $5,000 to $12,000 per mile, depending on surface type and width. Covered in this cost is the development of trail heads, parking lots, and restrooms. Park users were then asked how much they would be willing to contribute to rail-trail development within the Muskogee area, on a one-time basis. As Figure 2 shows, the results suggest that more than a third of the park users would donate more than $40 to the development of a new rail-trail. It should also be noted that less than 8% claimed they would not be willing to donate. This data suggests that park users are generally willing to spend money for the creation of a new rail-trail within the Muskogee area.

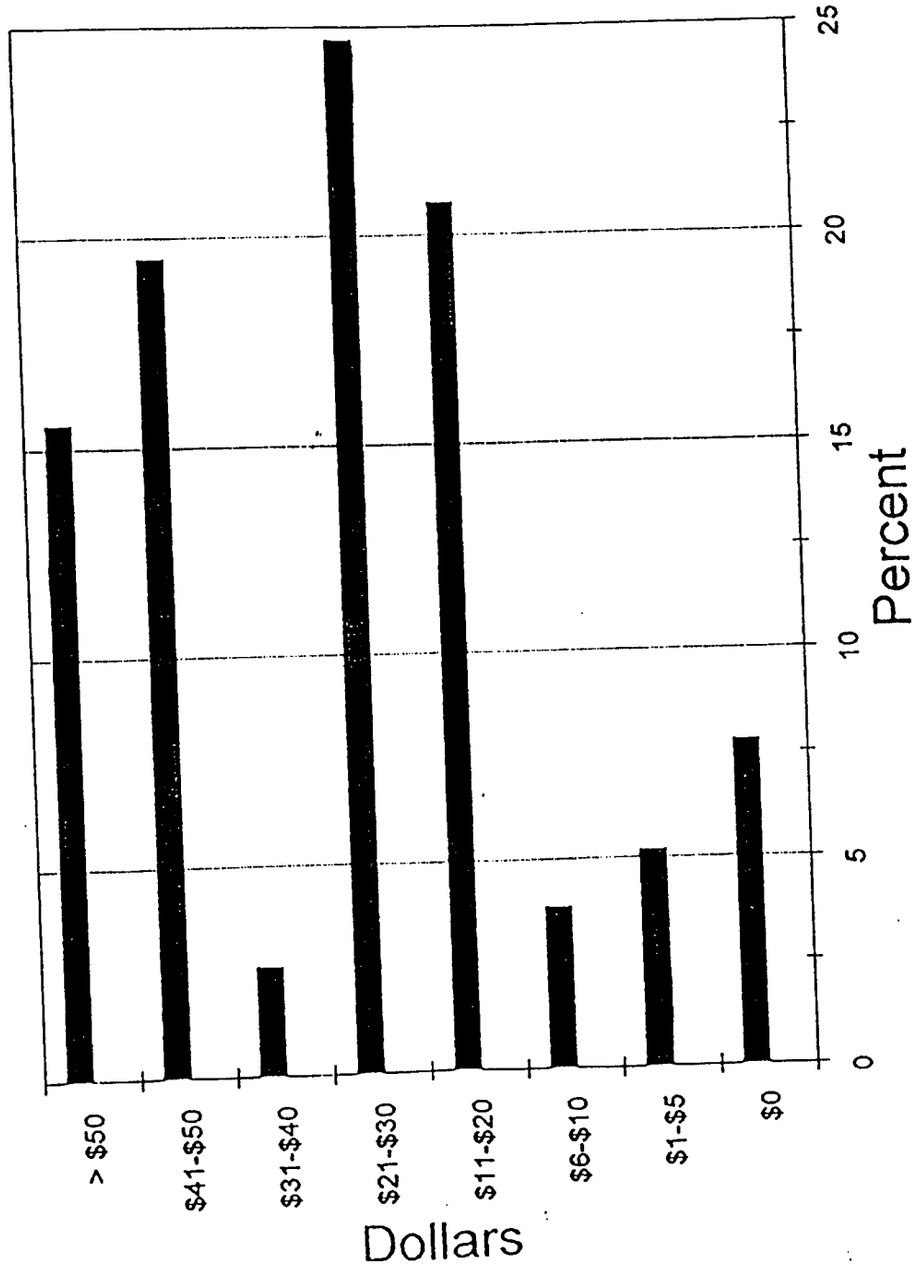


Figure 2. Amount Willing to Contribute for Rail-Trail Development

Methods for Obtaining Maintenance Money

The survey also inquired about respondents perceptions of the cost of rail-trail maintenance. Samples ranging from $800 to $1,500 per mile each year were presented as examples of the possible cost. Park users were then asked if they would be willing to donate each year for rail-trail maintenance. Other options in obtaining funding were also mentioned. Methods included were: trail use fees, special event charges, resale of trail merchandise, a city sales tax increase, and property tax increase. Figure 3 demonstrates that park users indicated a favorable response to each method, except for a city sales tax increase or property tax increase. It should be noted that both of these methods received strong negative remarks.

Length of Trail to be Developed

Respondents were asked to indicate how much of the potential 43 mile trail they would like to see developed into a rail-trail. Results in Table 9 show that 80% would like all 43 miles developed, while only 1% claimed they would like only 5-10 miles developed. Results of the survey in no way showed indications of opposition toward the creation of a new rail-trail. Therefore, there were no indications of 0 miles.

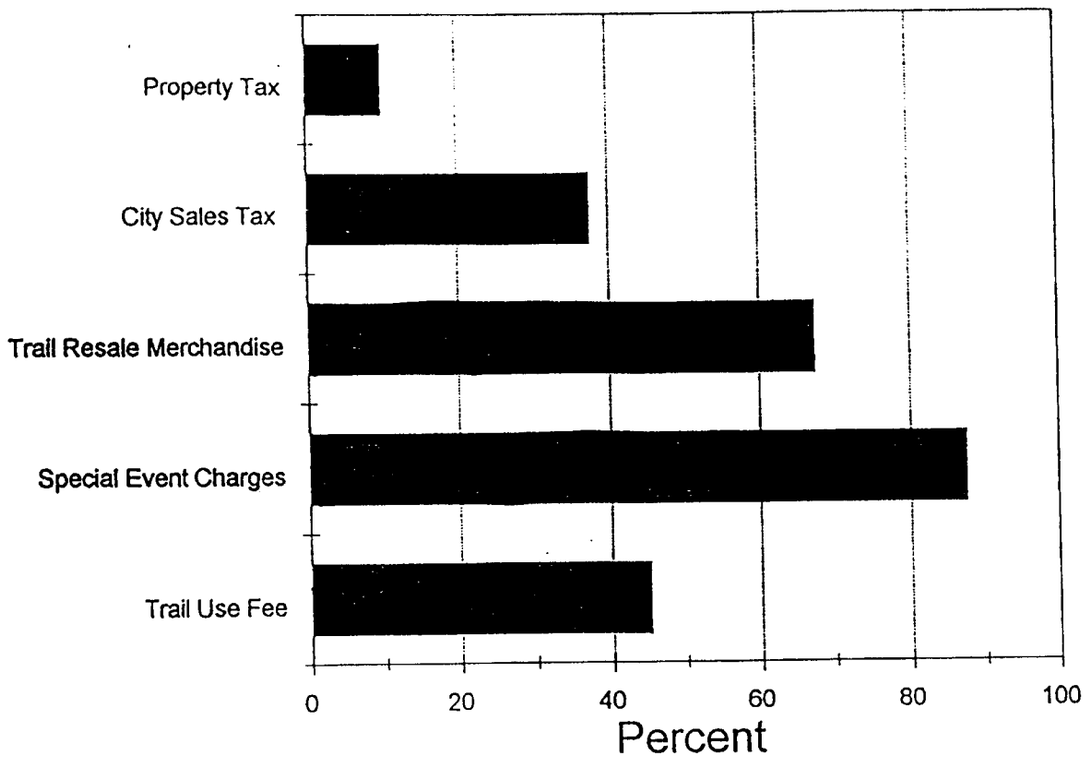


Figure 3. Preferred Method for Supporting Rail-Trail Maintenance

Table 9
Length of Trail to be Developed

	Frequency	Percent
All 43 miles	64	80.0
20-43 miles	8	10.0
10-20 miles	7	8.8
5-10 miles	1	1.3

Time of Trail Development

Bicyclists were also asked whether or not they would like to see the entire trail constructed at one time with minimum improvements or see the trail constructed over several years with all segments fully developed. The results showed mixed feelings toward the schedule for trail construction. 54% of respondents indicated that they would like to see the entire trail developed at one time with minimal improvements, while 46% wanted the trail fully constructed over a span of years.

Group Conflicts in Trail Use

Bicycle enthusiasts were asked to indicate whether or not they felt there would be conflicts with other user types. Figure 4 indicates that bicyclists believe there would not be conflicts with either joggers/hikers or inline skaters. When comparing use with motorized recreational vehicles the results indicated no clear concensus. This also seems to be the case in other recreational areas. According to Hammit

and Cole, the use of off-road motorized recreational vehicles are usually confined to a single concentrated area due to conflicts with other uses (Hammit and Cole, 1987). By determining what types of users can not recreate in harmony with each other, managers can plan for certain types of use on the trail. The information gathered from this question can also help in the process of devising a Recreation Opportunity Spectrum (ROS).

Desired Trail Amenities

Respondents were asked to indicate which trail amenities they would like to see along the rail-trail. Findings from the data were mixed as Figure 5 suggests. The majority of bicycle enthusiasts claimed they would not need bicycle locking areas or camping facilities along the trail, however, the majority of bicyclists indicated that the presence of restrooms and drinking fountains would be greatly appreciated along the trail.

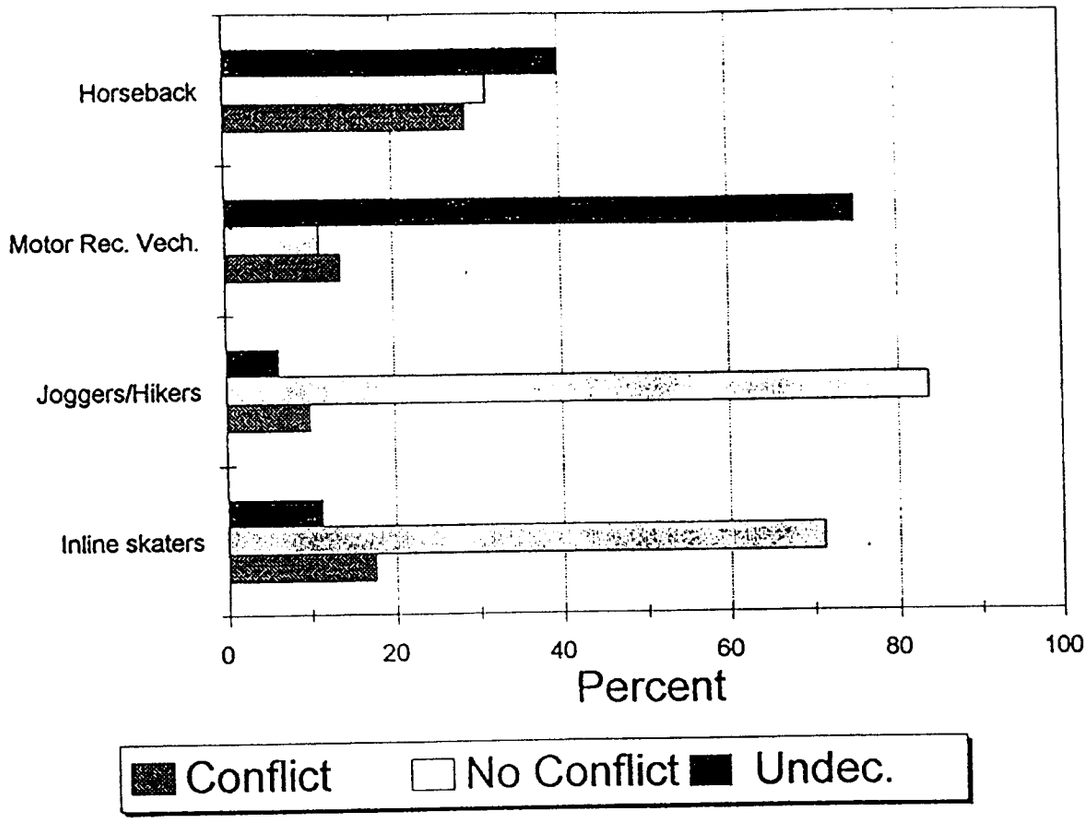


Figure 4. Perceived Conflicts by Bicyclists

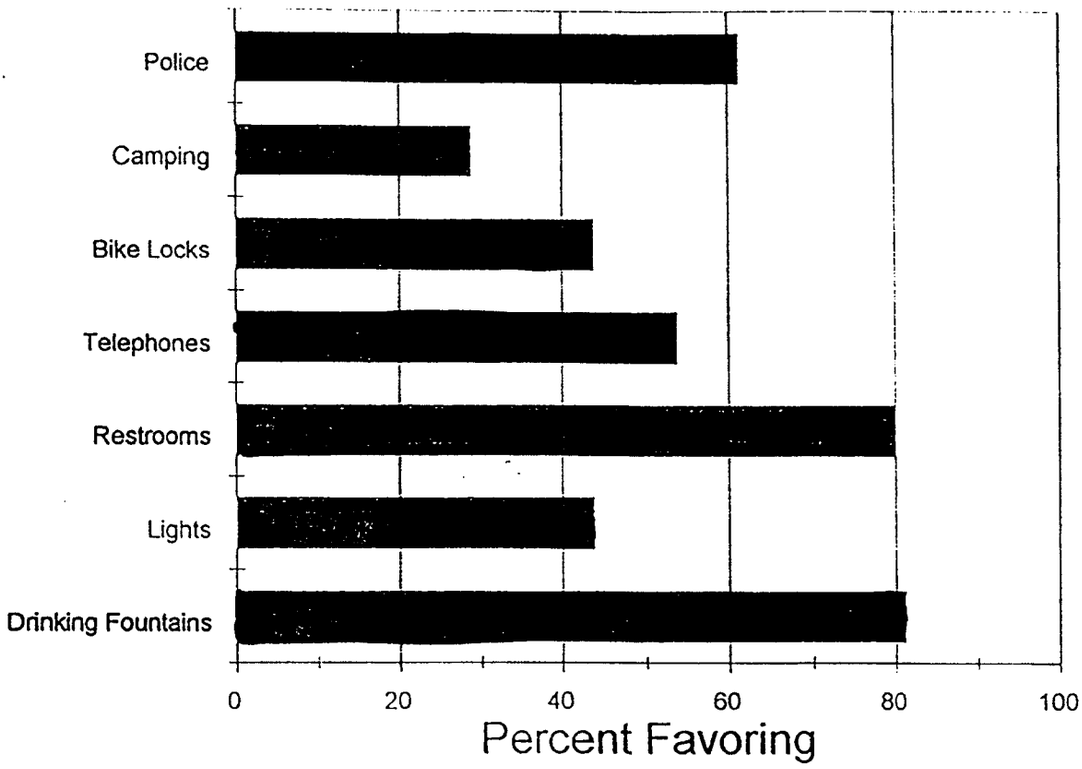


Figure 5. Favored Percentages of Trail Amenities

PERSONAL SURVEY FINDINGS

There was a total of fifty-six persons interviewed at the two Muskogee parks. Of the fifty six interviews, eight were disregarded because of incomplete information. The remaining forty eight surveys were used for analysis. Of the forty eight surveys, 54% were male and 46% were female. The majority of park users surveyed were between the ages of thirty-one and fifty. According to Table 10, the ages were well represented in other categories. It should be noted here that children under the age of 12 were not surveyed.

Table 10
Age of Park Users

AGE	Frequency	Percent
12-16	3	6.3
17-30	4	8.4
31-40	15	31.3
41-50	15	31.3
51-60	8	16.7
>60	3	6.2

Land Ownership in Oklahoma

Volunteers were asked to indicate whether or not they owned land in Oklahoma and if so, whether or not the land was located adjacent to a rail road right-of-way. The purpose of this question was to determine if landowners adjacent to railroad rights-of-way would object to the construction of a rail-trail near their property. Results showed that 58% of respondents did own land in Oklahoma, although, there were

only two persons who claimed their land was adjacent to a railroad right-of-way. Results indicated that there was only one objection to the concept of creating new rail-trails. The two respondents who indicated that they own land adjacent to a railroad right-of-way did not object to the concept of rail-trails.

Visitation to Muskogee Area City Parks

Respondents were asked how often they use Muskogee city parks. The question was used to determine the level of use that city parks receive on a regular basis. Table 11 suggests that almost 92% of park users surveyed visit city parks at least two or three times a year. In addition, results suggest that over 56% visit city parks two or three times per month.

Table 11
Park Visitation (Park Users)

	Frequency	Percent
Once a week	16	33.3
2-3 times/month	11	22.9
one time/month	7	14.6
2-3 times/year	10	20.8
1 time/year	3	6.2
<1 time/year	1	2.1

Amount Spent on Parks and Recreation in the Muskogee Area By Park Users

Park users were asked to indicate the amount they spend each year on Muskogee's parks and recreation facilities. Respondents were asked to include the cost of food, transportation, and miscellaneous expenses in their estimate. Table 12 shows that over 50% spent at least $30 per year and almost 30% spent more than $50.

Table 12
Amount Spent on Parks and Recreation in the Muskogee Area (Park Users)

	Frequency	Percent
None	8	16.7
$5-$15	7	14.6
$20-$25	7	14.5
$30-$50	13	27.0
>$50	13	27.1

Process of Converting Railroads to Rail-Trails

Volunteers were also asked if they are aware of the process of converting railroad lines into recreational trails or the Rails-to-Trails Movement. If their answer was "yes," they were then asked to indicate their first source of rail-trail knowledge. As shown in Table 13, 63% of individuals surveyed had never heard of the concept prior to the survey. Those who had heard of rail-trails before the survey showed a mixed response to their original source of knowledge. One

fact that clearly stands out on both surveys is that television has not been an important source of information about rail-trails.

Table 13
First Source of Knowledge

	Frequency	Percent
From a Friend	4	22.2
Magazine	3	16.7
Newspaper	4	22.2
Television	0	0.0
Other	7	38.9

Concept of Creating New Rail-Trails

Park users were asked to express their opinion concerning the concept of creating new rail-trails. The results showed that nearly 90% of respondents either strongly approved or approved of rail-trails. According to Table 14 there was only one respondent who indicated disapproval for rail-trail creation. The data obtained from park users suggests strong support from the general public toward rail-trails within the Muskogee area.

Table 14
Park Users Concept of Creating New Rail-Trails

	Frequency	Percent
Strongly agree	25	52.1
Agree	18	37.5
Undecided	4	8.3
Disapprove	1	2.1

Primary Use Type of the Rail Trail

Park users were asked to indicate their primary activity on a the new rail-trail with walking/hiking, bicycling/mountain biking, jogging, inline skating, horseback riding, or using motorized recreational vehicles as choices. Table 15 shows that nearly 80% of park users would use the trail for walking/hiking and bicycling. The remainder of park users chose either horseback riding or motorized recreational vehicles as their primary activity.

Table 15
Park Users Primary Use of Rail-Trail

	Frequency	Percent
Walking/hiking	22	45.8
Bicycling	16	33.3
Jogging	1	2.1
Horseback riding	4	8.3
Motor Rec. Veh.	4	8.3
Other	1	2.1

Trail Surface Type

In order to determine an appropriate surface type, park users were asked to indicate which type of trail surface they would like to see used on a rail-trail. The participants were shown photographs of the three different types of trail surfaces. Results shown in Table 16 indicate that over 50% preferred an asphalt/cement trail surface over dirt/natural or a fine gravel surface. It should be noted that park users

and bicycle enthusiasts both preferred the asphalt/cement surface type.

Table 16
Trail Surface Type

	Frequency	Percent
Dirt/natural	14	29.2
Fine gravel	9	18.8
Asphalt/cement	25	52.1

Appropriateness of Activities on Various Trail Types

Individuals were asked to use the photos and rate trail surface types on a scale of 1 to 5 according to how appropriate each trail would be for each of the activities indicated. These activities included walking/hiking, jogging, inline skating, biking, horseback riding, and motorized recreational vehicle use. A rating of one indicated that a trail surface was less appropriate for a particular activity while a rating closer to five indicated that the trail was more appropriate for an activity. Figure 6 suggests, that of the three possible trail surfaces, respondents indicated that the most appropriate trail surface for walking would be an asphalt/cement trail surface.

According to Figures 7, 8, 9, & 11, the survey found that park users felt that the asphalt/cement trail surface was the most appropriate for jogging, inline skating, and biking. However, according to Figure 10, respondents indicated that the dirt/natural trail would be more appropriate for horseback riding.

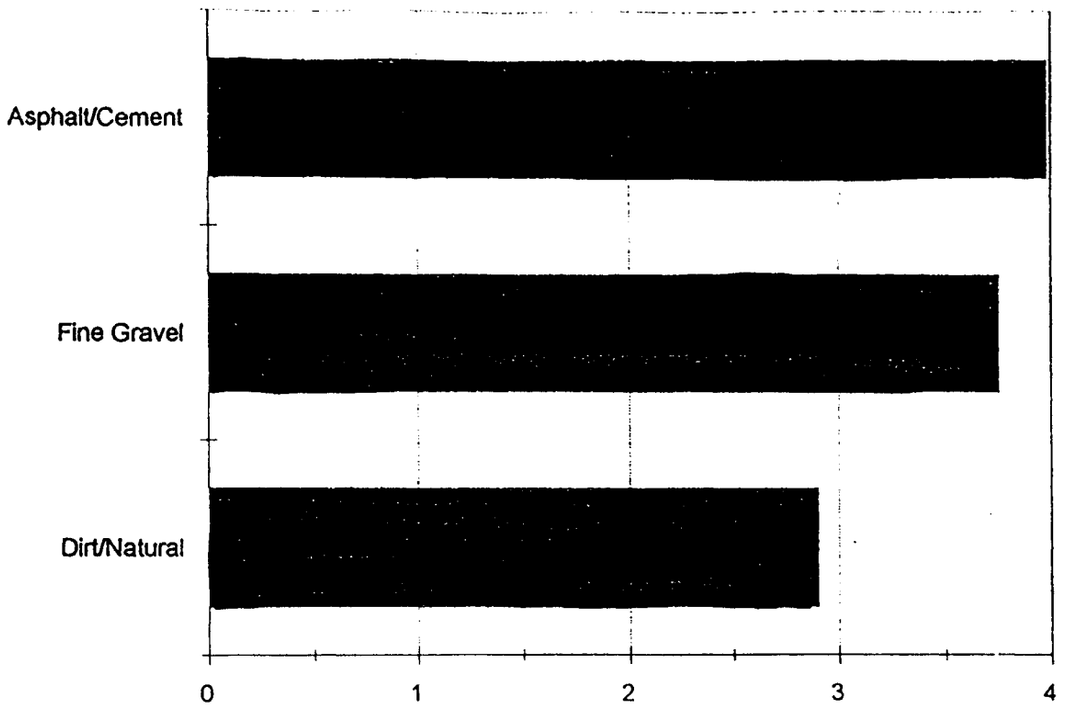


Figure 6. Average Value of Appropriateness for Walking on the Trail Surfaces

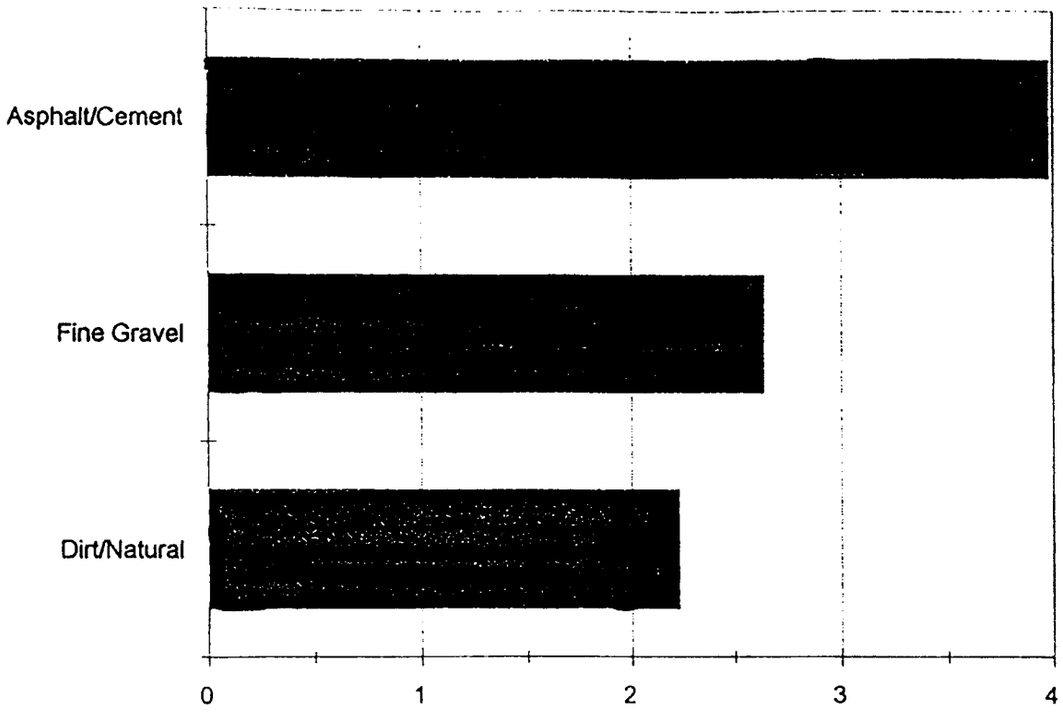


Figure 7. Average Value of Appropriateness for Jogging on the Trail Surfaces

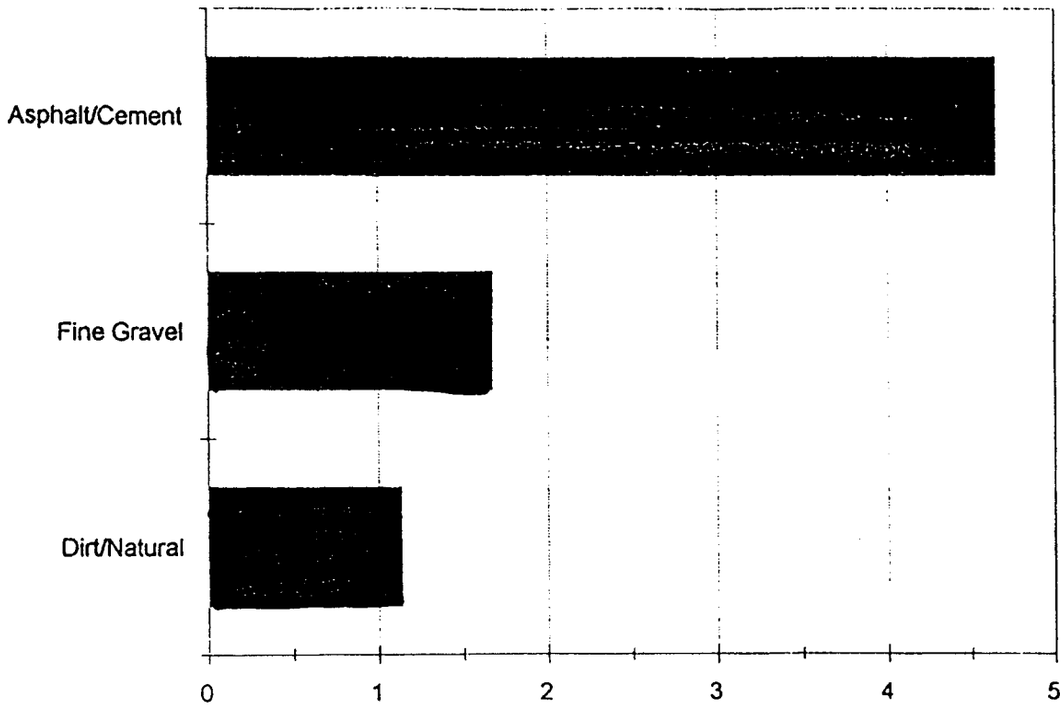


Figure 8. Average Value of Appropriateness for Inline Skating on the Trail Surfaces

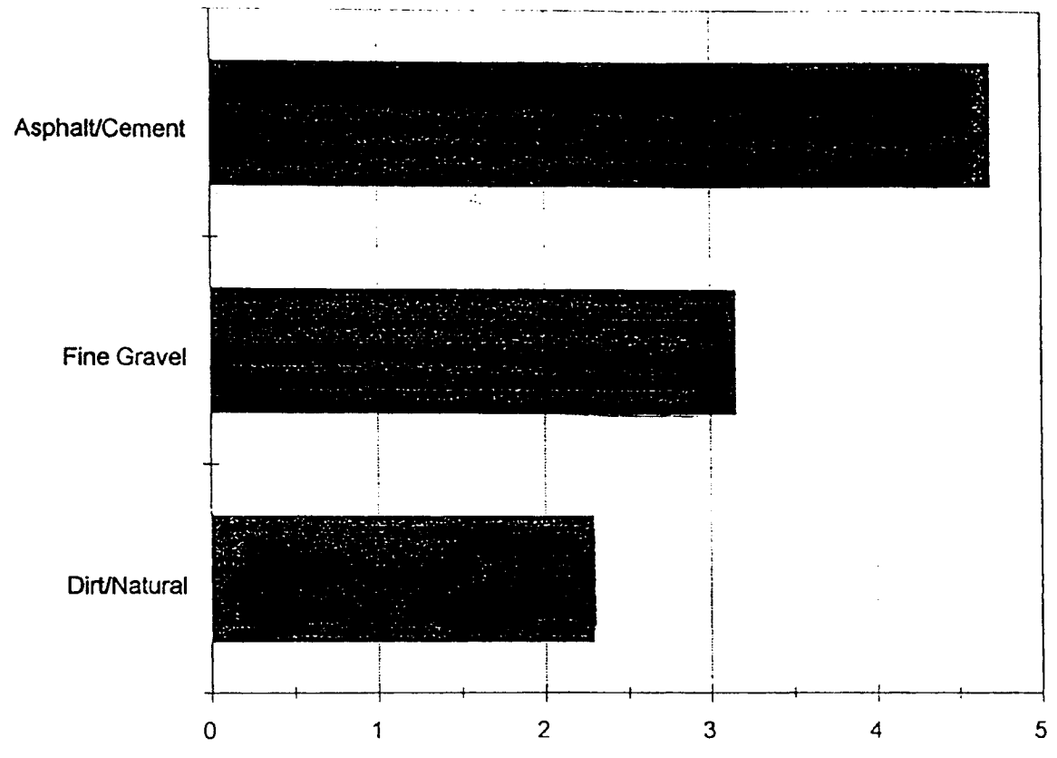


Figure 9. Average Value of Appropriateness for Biking on the Trail Surfaces

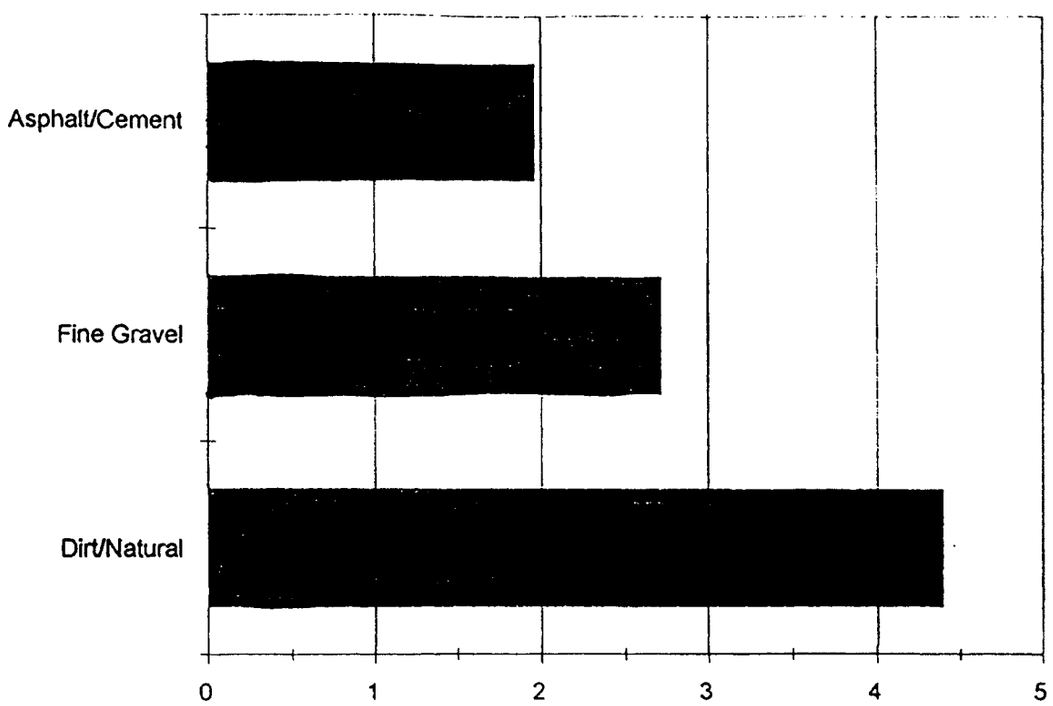


Figure 10. Average Value of Appropriateness for Horseback Riding on the Trail Surfaces

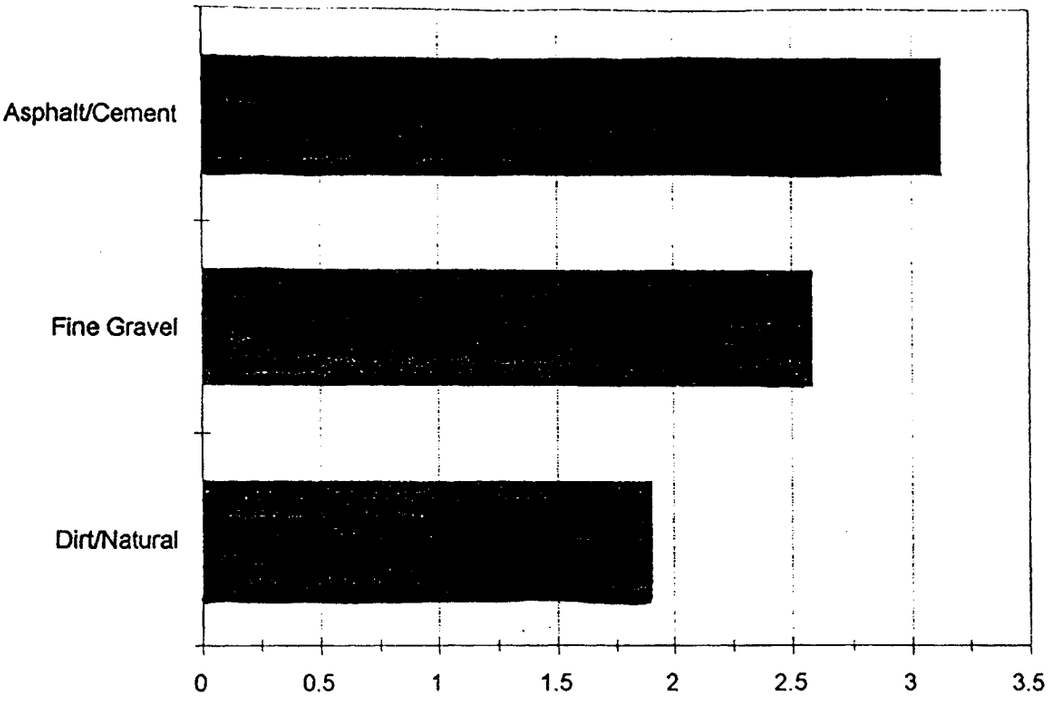


Figure 11. Average Value of Appropriateness for Motorized Recreational Use on the Trail Surfaces

Likelihood of Using Different Types of Trails

Another set of questions requested that park users determine how likely they would be to use a particular type of trail based on photographs of each trail type. Figure 12 shows that park users indicated they would be more likely to use the asphalt/cement trail than the other two types of trails. However, it should be noted that some park users suggested that they would use any of the three.

Rail-Trail Width

As a means of determining the appropriate width of the new rail-trail, park users were asked to indicate the approximate trail width they would like to see. Park users were told that rail-trails vary in width depending on the surface type and primary use of the trail. Rail-trails can range from three to twelve feet, with multi-purpose trails being the widest and single use activity trails being more narrow. The results shown in Table 17 indicate that the majority of park users desired trail widths between five and nine feet wide. It should also be pointed out that 23% desired the trail to be at least eleven feet or wider.

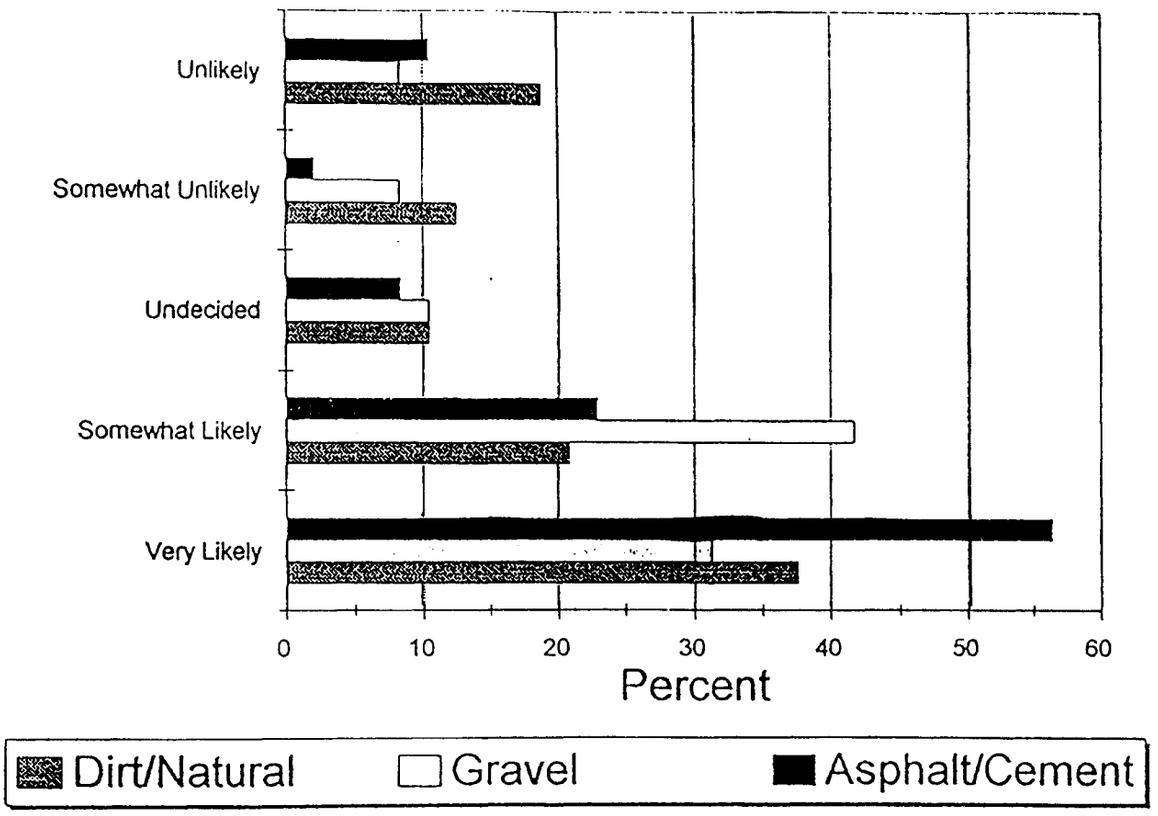


Figure 12. Likelihood of Trail Use

Table 17
Width of Rail-Trail

	Frequency	Percent
3-5 feet	6	12.5
5-7 feet	13	27.1
7-9 feet	14	29.2
9-11 feet	4	8.3
> 11 feet	11	22.9

Per Capita Willingness to Contribute for
Rail-Trail Development by Park Users

Park users were informed that the cost of rail-trail development ranges from $5,000 to $12,000 per mile, depending on surface type and width. Covered in this cost is the development of trail heads, parking lots, and restrooms. (Trails heads are small parks, that may provide parking or warm up areas at the beginning of a trail). Park users were then asked if they would be willing to make a personal contribution for rail-trail development on a one-time basis. According to Table 18, 21% of park users were not willing to donate. 29% of the park users surveyed did indicate they would donate between $1 and $5. It should also be noted that 79% of park users indicated they would donate money for the development of a new rail-trail. This suggests that most current park users are willing to spend money for the creation of a new rail-trail within the Muskogee area.

Table 18
Per Capita Willingness to Contribute for Rail-Trail Development by Park Users

	Frequency	Percent
$0	10	20.8
$1-$5	14	29.2
$6-$10	2	4.2
$11-$20	8	16.7
$21-$30	3	6.2
$41-$50	8	16.7
> $50	3	6.2

Park users were informed that the cost of rail-trail maintenance ranges from $800 to $1,500 per mile each year. They were then asked about methods for obtaining funding for trail maintenance such a trail use fees, special event charges, resale of trail merchandise, a city sales tax increase, or a property tax increase. Figure 13 demonstrates that park users indicated a favorable response to each method, with the two exceptions of a city sales tax increase and a property tax increase. It should be noted that both of these methods received strong negative remarks.

Amount Willing to Contribute for Trail Maintenance by Park Users

Park users were asked to approximate the annual maximum dollar amount they would be willing to donate for rail-trail maintenance. Table 19 shows that 25% indicated they would not contribute to trail maintenance. The majority (75%) claimed they would be willing to donate between $1 and $20 a year for trail maintenance.

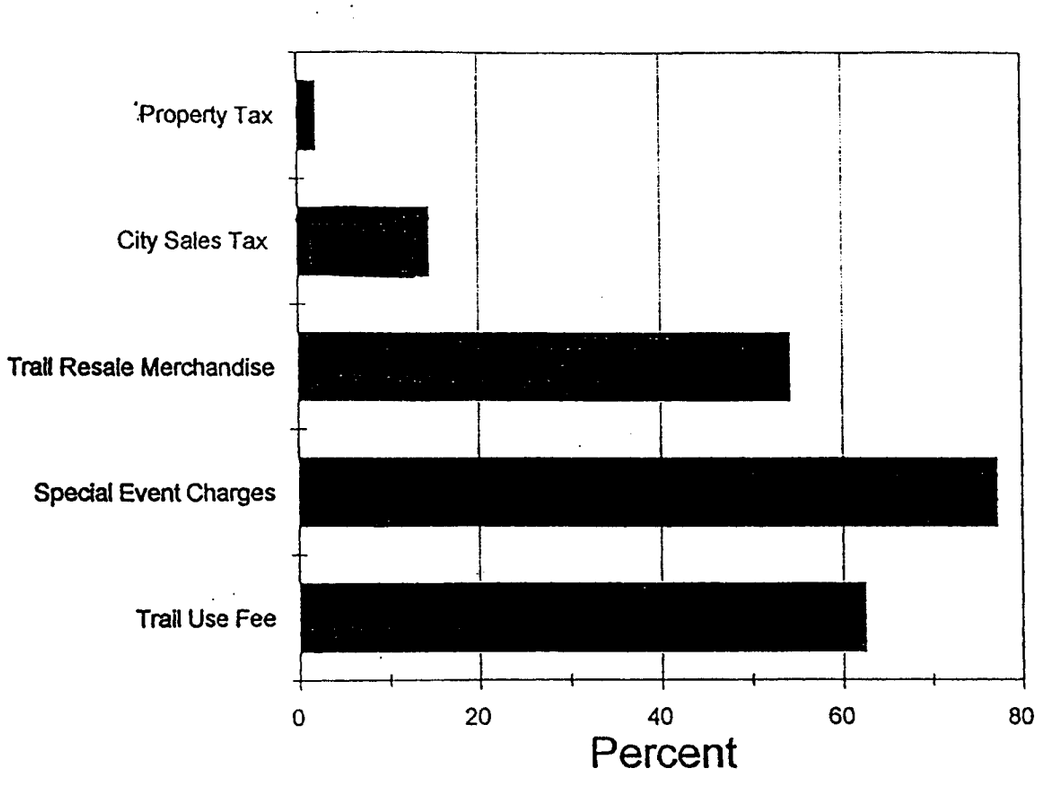


Figure 13. Preference for Trail Maintenance Support

Table 19
Amount Willing to Contribute for Trail Maintenance

	Frequency	Percent
$0	12	25.0
$1-$5	11	22.9
$6-$10	9	18.8
$11-$20	7	14.6
$21-$30	2	4.2
$41-$50	6	12.5
> $50	1	2.1

Length and Development Period for Trail Development

In order to determine the appropriate length of the trail to be developed, respondents were asked about their perceptions concerning potential lengths. Table 20 indicates that 67% of park users preferred the concept of the entire 43 miles being developed. Respondents were also asked if they preferred the trail developed all at one time with minimum improvements or through individual segments being developed over time. The results also suggested that 68% of the park users surveyed would prefer the trail to be developed over time rather than as a single project.

Table 20
Length of Trail to be Developed

	Frequency	Percent
All 43 miles	32	66.7
20-43 miles	5	10.4
10-20 miles	8	16.7
1-5 miles	3	6.2

Conflicts Between User Types

A question was asked to determine possible conflicts between trail users. In determining whether or not conflicts exist, trail managers can improve the effectiveness of opportunities provided. In order to determine possible conflicts, park users were asked to indicate whether or not they felt there would be a conflict between different types of users along a rail-trail. To simplify the analysis the two groups of walking/hiking and jogging were combined to make a single group corresponding to joggers/hikers. The remainder of the groups were paired together to test whether or not park users could foresee a problem with simultaneous use along the trail. The results previously presented in Figure 13 suggested that park users felt there would be problems with motorized recreational vehicles and any other type of shared recreational use. Results also indicated there could be problems with horses and other types of recreational activities. It should be noted that there were no problems foreseen with bicyclists, inline skaters, or joggers/hikers.

Amenities Provided Along the Trail

Park users were asked to indicate which of the following trail amenities they would like to see along the trail: drinking fountains, lighted trails, restrooms, telephones,

bicycle locking areas, camping facilities, and police patrols on bikes. The results shown in Figure 14 indicate that most amenities would be favored with the two exceptions of bicycle locking areas and camping facilities. Amenities that were strongly favored included drinking fountains, restrooms, and lighting along the trail.

t-TESTS

Using the data obtained from park users, t-Tests were carried out to determine whether there were significant differences between primary user types concerning the likelihood users would use the three different trail types. Since the question was set up using a Likert scale format, the t-Test was determined to be an appropriate method to identify differences between user types. The t-Test is a measurement of two groupings of data, and determines whether or not there is a significant difference in the means within two data sets.

Given the limited number of survey respondents, two groups of primary users were formed (group A and group B). Group A included walking/hiking/bicycling/jogging and group B included horseback riding/motorized recreational vehicles.

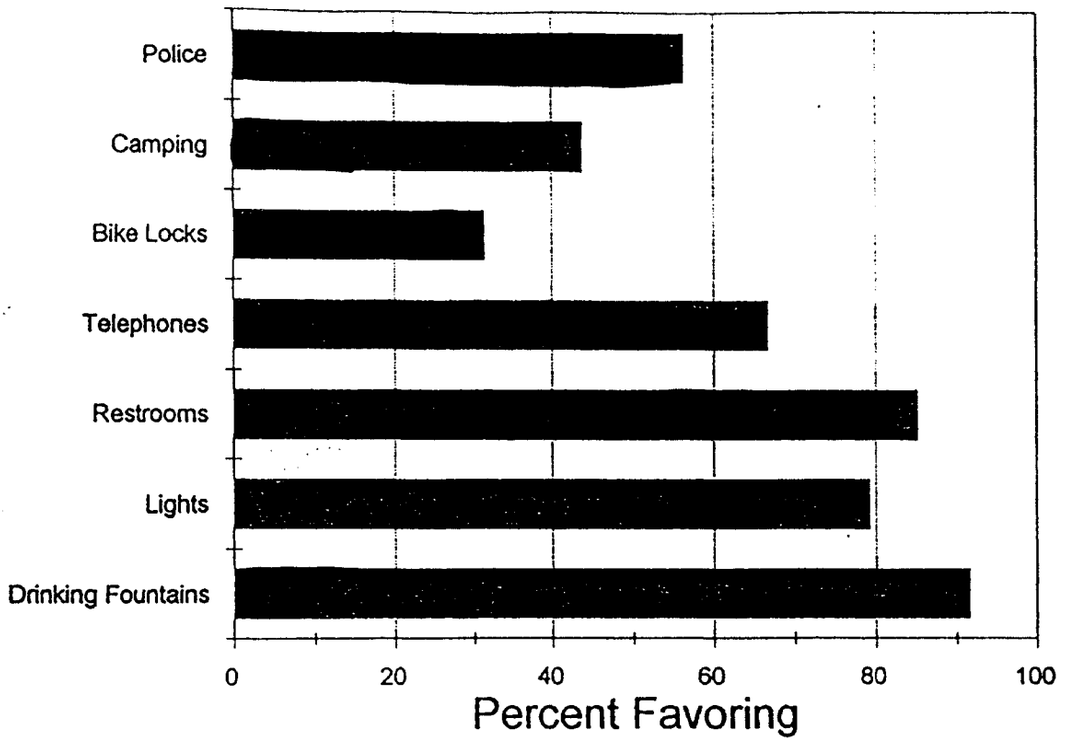


Figure 14. Favored Percentages of Trail Amenities

The groups were formed in this manner to test for a significant difference between two types of user groups. The intention of the survey was to determine if the more passive trail users (group A) wanted different types trail characteristics than the more aggressive trail users (group B).

Table 22, showing the results of the T-Tests, indicated that there was a significant difference between user types concerning the likelihood that they would use a trail surface type. The results indicated that one group rated the asphalt/cement trail surface higher than the other group. By looking at Figures 7-11, the data suggests that the group A indicated higher values for the asphalt/cement trail surface than group B. In addition, results found no indication of a significant difference between groups A and B in respect to the dirt/natural surface or the fine gravel surface.

Table 21
Comparison of User Types and Likelihood of Trail Surface Use

	Prob>F
Dirt/Natural	0.4458
Fine Gravel	0.6056
Asphalt/Cement	0.0176**

**significant at the .05 level
**t-Test may not be an accurate test because the population is greater than 30.

A second t-Test was administered to test for differences between groups A and B on their attitude toward the creation of a new rail-trail. In this situation, the t-Test showed no

statistical significance, indicating that there was no difference between groups.

Chi-Square Tests

Several tests were administered to the survey data in order to determine whether there were significant differences between the groups of recreational users. The chi-square test provides the basis for deciding whether two or more groups are significantly different with respect to a nominal level variable. In order to reduce the number of cells there were two groups of recreational users were formed. Group A consisted of walking/hiking/jogging/biking and Group B consisted of horseback riding/motorized recreational vehicle. In this study, the chi-square test was used to determine differences between group A and group B.

RESULTS

Analysis of Bicycling and Inline Skating

Chi-square demonstrated that there was a significant difference in the perceptions held by group A and group B concerning a conflict between inline skaters and bicyclists. The chi-square probability was 0.019 (which is significant at the .05 level). Group A indicated that there were no perceived conflicts between bicycling and inline skating while group B indicated that there may be a conflict.

Analysis of Horseback Riding and Hikers/Joggers

Chi-square also determined that there was a significant difference between perceptions held by group A and group B concerning a possible conflict between horseback riders and hikers/joggers. The chi-square probability was 0.053 suggesting that there is a conflict in attitudes of group A and group B. Respondents in group A indicated that there should not be conflict while respondents in group B claimed that there may be conflict.

Analysis of Joggers/Hikers and Bicyclists

Additional chi-square tests were used to determine significant relationships between the perceived conflicts of group A and group B. There were no significant relationships between group A and group B when considering the combined use of joggers/hikers and bicyclists. Both groups A and B indicated there would not be a conflict between joggers/hikers and inline skaters.

Analysis of Joggers/Hikers and Inline Skaters

Chi-square analysis for groups A and B and their perceptions of conflict between joggers/hikers and inline skaters showed no significant relationship. Both group A and group B indicated that there should not be a conflict between the two types of use.

Analysis of Motorized Recreational Vehicles

Chi-square determined that there were no significant relationships between groups A and B concerning possible conflict between motorized recreational vehicles and all other types of use. In all cases both group A and group B indicated that there would be conflict with motorized recreational vehicles.

Analysis of Horseback Riding

Analysis of groups A and B perceptions of conflict toward horseback riding and inline skaters, suggests that there is no significant relationship between the two groups. Both groups A and B believe that there would be conflict between horseback riding and inline skating. Additionally, chi-square indicated that there is no relationship between horseback riding and bicyclists. Both groups believe there would be a conflict between horseback riding and bicycling.

Primary Use Groups and Surface Type

In order for a smaller number of cells in chi-square analysis, both group A and group B were used as they were in the first test. In addition, two surface groups were formed (group one and group two). Group one combined fine gravel/ dirt/natural trail surfaces while group two was the

asphalt/cement trail surface.

Chi-square showed no significant relationships between the types of trail surfaces preferred by group A and group B. Both group A and group B indicated that the preferred trail surface was the asphalt/cement surface.

Primary Use Groups and Width of Trail

In this test, both group A and group B were again used as they were for earlier tests. In addition, two groups of trail widths were formed. The two groups of trail widths include group one as being three to nine feet wide and group two being greater than nine feet. Analysis indicated that there were no significant relationships between group A and B concerning the trail width they desired. Both groups A and B indicated that they would prefer a trail nine feet wide or wider.

STATISTICAL TEST SUMMARY

There were a number of statistical tests run on data received from the surveys. Results of the tests did not indicate many significant relationships among use groups A and B concerning their perceived attitudes. It is most likely that the most significant finding of the survey is that recreational users perceive the use of motorized recreational vehicles will result in conflict with other types of use. Because of this finding it may be a good idea

to not permit the use of motorized recreational vehicles. However, the statistical results did define who the recreational users are and what they desire. The analysis of the data sets also gave an insight to the attitudes of future trail users.

CHAPTER IV

SUMMARY AND RECOMMENDATIONS

This study addressed four objectives as a means of developing a Recreation Opportunity Spectrum for the Tribal Lands Recreational Trail. The first objective was to identify recreational users within the Muskogee area. Survey results from both park users and bicycle enthusiasts suggest that the majority of users will be either bicyclists or walkers and joggers. The survey also suggested that there were no significant differences among age groups in these two groups of users. In fact, all age groups were represented and it seemed that all heavily favored the idea of a trail.

The second objective of the study was to identify the needs and desires of rail-trail users. A variety of survey questions were used as tools to determine opportunities desired by the public. Questions of need concerning the trail addressed issues such as the type of trail surface and width preferred, amenities desired by the public, and methods for trail funding that are acceptable to the public.

Results obtained indicate that the preferred trail surface is an asphalt/cement surface for all groups of users with the exception of horseback riding. However, the results

for trail width were not as distinct. As a matter of fact, the desired width ranged across respondents.

A question concerning acceptable methods of trail funding was also asked in both surveys. The results from both were quite similar. Both groups indicated that an increase in either property tax or city sales tax would be unacceptable. In several cases, comments were received expressing negative opinions concerning the addition of any tax. Methods that were more acceptable included special event charges and the resale of trail merchandise. The concept of charging trail use fees received mixed support suggesting that trail use fees might not be the most acceptable alternative. However, few people indicated that they should be charged for recreational use.

In both surveys a list of amenities was provided and respondents were asked to indicate which they would like to see along the trail. Results suggested that nearly everyone would like to see drinking fountains and restrooms. In addition, telephones and police patrols were also favored. On the other hand, bicycle locking areas and camping areas did not receive strong support. Therefore it seems safe to say that the addition of drinking fountains and restrooms would satisfy the needs of recreational users.

The third objective of the study was to identify perceived conflicts among the different types of trail users. In both surveys, the majority of respondents showed no indications that there would be a conflict between the

combined use of bicyclists, walkers/joggers, or inline skaters. However, respondents did indicate that both horseback riding and motorized recreation vehicles would not be compatible with other types of users. Results clearly indicate that the use of motorized recreational vehicles should not be permitted along the trail. It should be noted that there might not be sufficient data to support this claim. The survey did not survey contain respondents from among motorized recreational vehicle users.

Horseback riding was perceived to have a potential conflict with other types of use. However, it should be mentioned that the survey did reveal a small percentage of respondents who indicated that horseback riding would be their primary use on the trail. A possible solution to this conflict is to permit horseback riding in certain areas. The area best suited for horseback riding is located near the town of Warner. It should also be mentioned that there have been indications that monetary help could be available for trail construction if horses were allowed.

The fourth and final objective of the study was to classify the trail to set aside certain areas of the corridor for specific uses. Because access to the trail was limited until the opening date of June 2nd, detailed trail studies have not yet been completed. However, data received from the survey has produced good results.

Nonetheless, there is enough recreational user information to classify recreation opportunities available

along the trail. According to the results, the only notable trail regulations that should be strictly enforced include those that address the use of motorized recreation vehicles and horses. According to the survey data, bicyclists, walkers/joggers, and inline skaters should be able to recreate in harmony with little or no conflicts. To ensure harmony between users, regulations can be placed upon the trail which specify specific uses for certain areas. Examples may include setting priorities for wheelchair use and walking in and near urban areas. Biking could be given priority in suburban areas, rural areas, and some primitive areas. It should also be mentioned that if a particular use is given priority in one area, that does not necessarily mean that this use will be restricted from other or all areas on the trail. It means that it will be allowed but will not have priority over other uses. For example, in an urban area the trail width will be much wider than in primitive areas. The wider trail can support several types of recreational opportunities such as wheelchair use and inline skaters, while the primitive, more narrow trails will make recreation more accessible for hikers and bicyclists.

Creation of a Recreation Opportunity Spectrum for the Muskogee Tribal Lands Recreational Trail

The ROS for the Muskogee Tribal Lands Recreational Trail will provide recreational opportunities within five different classes. Classifications will differ from the USFS classifications (Figure 1) due to resource characteristics available. Currently there are no areas adjacent to the trail that would fall under the classification of back country nor are there any areas that would necessitate the classification of semi-primitive motorized due to the fact that motorized vehicles are not wanted and may not be permitted upon the trail.

The classifications that will be placed upon the trail include urban, suburban, rural, roaded natural, and primitive (Figure 14 and 15). The classification of urban will be characterized by a substantially urbanized landscape possibly containing a natural-appearing element. All recreational activities will be permitted in the urban areas with the exceptions of horseback riding and the use of motorized recreational vehicles. In order to support the numbers of recreational users and the types of use, the urban area trail will be wider than it will be in other areas. Here the trail will be approximately 9-12 feet, allowing accessibility for all types of use. However, in the urban setting there will be certain activities that will receive priority over other activities. Activities receiving priority in urban areas

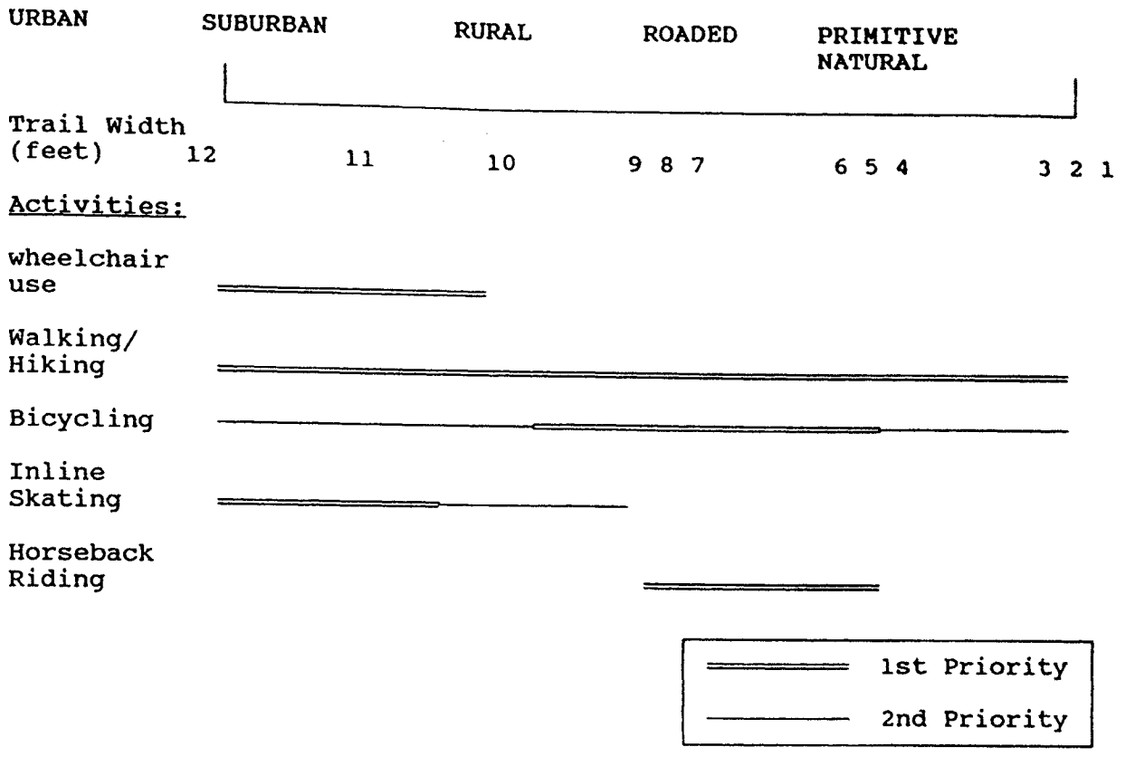


Figure 14. ROS Classification

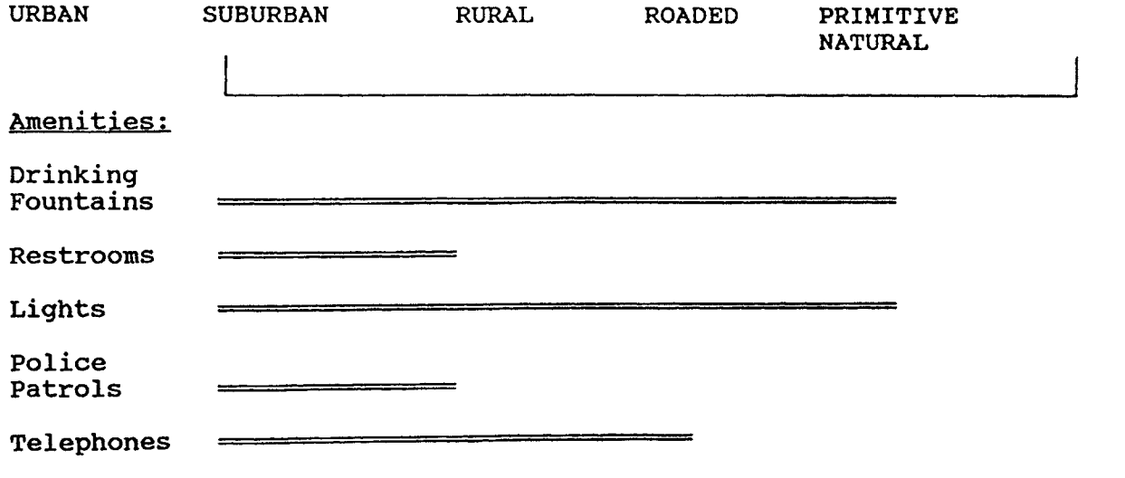


Figure 15. ROS Amenities

will include such uses as wheelchairs, walking/hiking, and inline skating.

Currently the only specific site where the urban classification can be applied is near Davis Field in Muskogee. Davis Field is adjacent to the proposed trail head. The urban classification will feature an area with expectations of high concentrations of recreational users. In addition, there will be management controls and regulations in effect. Law enforcement personnel will be highly visible and parking areas will be available.

A suburban classification will also be used in this ROS classification scheme. The addition of a suburban classification is a change from what is used by the USFS ROS classification but it must be added to compensate for the suburban areas where the trail will traverse. The same recreational activities will receive the same priority as set in the urban classification. Still, areas receiving a suburban classification will also receive many of the same management elements as the urban classification. For example, suburban areas should have law enforcement personnel highly visible and parking areas should be available. However, suburban areas will not need to enforce the numerous visitor management controls and regulations that will be necessary for urban areas.

The third classification will consider rural areas. Rural classification will cover areas that are characterized by substantially modified natural environments. The location

of rural areas for the trail will be defined as being located outside of city limits and city-like surroundings. Rural areas along the trail should include social interaction characteristics including numerous sights and sounds of other recreational users including common interactions such as simple conversations between recreational users. Recreational activities receiving priority include walking/hiking and bicycling, with the addition of horseback riding near the city of Warner.

The fourth classification divides areas of the trail as a roaded natural zones. This classification is characterized by areas that hold predominantly natural-appearing environments with moderate evidence of human existence. Recreational users in this type of area will come in contact with other users but to a lesser extent than in previous classification areas. Prevalent recreational opportunities include horseback riding near Warner and opportunities such as walking/hiking and bicycling in all other roaded natural areas.

The fifth classification contained in the spectrum is defined as a primitive area. Although the terminology may resemble the USFS classification of primitive areas, the definition is not the same. Here primitive will represent areas that are located away from towns and paved highways. In this situation, distance is not as important as sight and sound. If the trail can not be seen from any road and common sounds of civilization can not be heard from the trail, the

trail segment will be classified as being primitive. Recreational activities receiving priority in primitive areas include walking/hiking and bicycling.

Presently, there is one specific area along the trail that will be classified as primitive. This isolated area is adjacent to the Canadian River near the crossing of the trail and river via a 1600 ft. bridge. The bridge and the area that surrounds the bridge is the location of the Interior Least Tern's nesting grounds (protected by the Endangered Species Act). In addition, the area surrounding the bridge is also a natural wetland which is also protected by law.

Secondary Findings

The use of both surveys provided a good deal of descriptive information that should be able to help answer questions facing trail developers. For example, in order to develop the trail to its fullest potential, the Tribal Lands Recreational Trail Board needs financial support. Survey results indicate that both park users and bicycle enthusiasts are willing to donate to trail development and maintenance. This information suggests that the recreational population supports the idea of a rail-trail and that they are amenable to providing financial support. In fact, the results suggest that bicycle enthusiasts may be willing to donate a larger proportion of money than park users.

One of the most frequent remarks received during the

survey pertained to the problem of trash in parks and recreational facilities within Muskogee. In order to keep good relations with adjacent land owners and communities that are connected by the corridor, the trail must remain clean and uncluttered. This may be a good opportunity for a youth work program or a volunteer based program.

Recommendations for Future Academic Studies

Recommendations for future trail studies include surveying a larger percentage of the Muskogee area population. The numbers in this study were not as large as would have been liked. The lack of money is partly responsible for the size of the study while time and distance also played a major part in the size of the population surveyed. Therefore future studies should incorporate a larger percentage of the population and should include input from surrounding communities.

Other recommendations for future studies would be to complete a follow-up survey after the trail has been made known to the public on June 2nd. If park users or bicycle had enough time to think about the construction of the trail and had time to hear opinions of others the results may be different.

BIBLIOGRAPHY

Brown, Perry, J., April 1979,"The Opportunity Spectrum: Techniques and Implication for Resource Planning and Coordination," Dispesed Recreation and Natural Resource Management, Joan Shaw, ed. Utah State University, College of Natural Resources, pps. 82-87.

Brown, Perry, J., B. L. Driver, and Joseph K. Berry, Dec. 1980, "Use of the Recreation Opportunity Planning System to Inventory Recreation Opportunities of Arid Land Resources Inventories: Developing Cost-Efficient Methods, La Paz, Mexico.

Buist, L.J., and T.A. Hoots, Feb. 1982, "Recreation Opportunity Spectrum Approach to Resource Planning," Journal of Forestry, pps. 84-86.

Bury, Richard L., and Edgar R. Fillmore, March 1975, Motorcycle Area Design and Location: Impacts on the Recreational Experience of Riders and Nonriders, (Texas Agricultural Experiment Station and Department of Recreation and Parks, Texas A&M University.

Cain, Rita, Winter 1991, "Rails-to-Trails: Is the National Trails System Back on Track After Preseault?" The Urban Lawyer, Vol. 23, No. 1, pps. 63-73.

Caneday, Lowell, Sept. 1989, "Survey of Public Opinion Rails-to-Trails Right of Way, Henryetta to Durant Oklahoma," Oklahoma State University, Unpublished.

Carhart, A. H., "Planning for America's Wildlands: A Handbook for Land-use Planners, Managers, and Executives, Committee and Commission Members, Conservation Leaders, and All Who Face Problems of Wildland Management," National Audobon Society et al., Harrisburg Pa., 97 pg.

Clark, R. N. and George H. Stankey, Dec. 1979, "The Recreation Opportunity Spectrum: A Framework for Planning, Management, and Research," U.S. Dept. of Agriculture Forest Service, Pacific Northwest Forest and Range Experiment Station, General Technical Report, PNW-98, 32 p.

Dillman, Don A., 1978, "Mail and Telephone Surveys: The Total Design Method," John Wiley & Sons, New York, 325 p.

Driver, B.L. and Perry J. Brown, 1978,"The Opportunity Spectrum Concept and Behavior Information in Outdoor Recreation Resource Supply Inventories: A rationale," in Integrated Inventories or Renewable Natural Resources: Proceedings of the Workshop. Gyde H. Lund, Vernon J. Labau, Peter F. Ffolliott, and David W. Rovinson, tech, coord, USDA Forestry Service Gen. Tech. Rep. RM-55, Rocky Mt. Forestry and Range Exp. Stn., Fort Collins, Colorado, pps. 24-31.

Driver, B.L., et al., 1987, "The ROS Planning System: Evolution, Basic Concepts, and Research Needed," Leisure Sciences, Vol. 9, pps. 201-212.

Field, Donald R., 1976, "Interchangeability of Parks With Other Leisure Settings," in Research in the Parks Transaction of the National Park Centennial Symposium. Annu. Meet. Am. Assoc. Adv. Sci., December 28-29, National Park Service Symposium Ser. 1., pps. 159-168.

Glosenmeyer v. Missouri-Kansas-Texas R. Co., 685 F. Supp. sec. 1108 (E.D. Mo. 1988).

Hahn, T. and Eubanks, D., 1985, "Old Plank Road Trail-Community Impacts," Open Lands Project, Chicago, 47 p.

Hammitt W.E., and David N. Cole, 1987, "Wildland Recreation: Ecology and Management," John Wiley and Sons, New York, 341 p.

Helburn, Nick, 1977, "The Wilderness Continuum," Professional Geographer, Vol. 29, No. 4, pps. 333-337.

Lichtkoppler, R.J., 1988, "The Recreation Opportunity Spectrum and The Visitor Profile," Auburn University, Department of Agricultural Economics and Rural Sociology.

Lim, L.S., Oct. 1992, "Walking the Line: Rails-to-Trails Conversions and Preseault v. Interstate Commerce Commission," Ohio State Law Journal, Vol. 53, pps. 337-361.

Lloyd, R. Duane, and Virlis L. Fisher, 1972, "Dispersed Versus Concentrated Recreation as Forest Policy," Proc. 17th World Forestry Congress, Buenos Aieres, Argentina, 16 p.

Lucas, R.C., 1971, "Hikers and Other Trail Users," The Forest Recreation Symposium, Syracuse New York, Oct., pps. 113-122.

McCool, Stephen F., and J. Stanley Elmer, 1970, "Providing Recreational Opportunities Through State Park Systems," Utah Tourism and Recreation Rev., Vol. 4, No. 3, pps. 1-5.

Marshall, Robert, 1933, "The Forest for Recreation," in A National Plan for American Forestry. A report prepared by the Forest Service in response to S. Res. 175 (72nd Congress) Senate Document 12, Separate 6, U.S. Gov. Print. Off. pps. 463-487.

Mazour, L.P., 1988, "Converted Railroad Trails: The Impact on Adjacent Property," Unpublished Master's Thesis, Kansas State University, Manhattan.

Minnesota Department of Natural Resources, "Milwaukee Road Corridor Study, Technical App. C, Transcript of Telephone Survey with Law Enforcement Officials Along Select Recreational Trails on Former Railroad Grades," (undated).

Moore, R.E., Graefe, A.R., Gitelson, R.J., and Porter, E., 1992, "The Impacts of Rail-Trails: A Study of Users and Nearby Property Owners from Three Trails," National Park Service, Washington D.C., along with Pennsylvania State Unviersity.

Nash, Roderick, 1973, "Wilderness and the American mind," Yale University Press, New Haven, 300 p.

The National Trails System Act Amendments of 1983, 16 USC sec. 1241.

The National Trails System Act of 1968, P.L. 90-543; 82 STAT.919: sec. 1070.

National Wildlife Federation v. ICC, 850 F.2d sec. 694. (D.C. Cir. 1988).

Olson, E.C., Spring 1990, "How Preseault, Glosenmeyer, and National Wildlife Federation Stopped Rail-to-Trail Conversions Under Section 8(d) of The National Trails System Act Dead in its Tracks," Journal of Land Use and Environmental Law, Vol. 5, pps. 703-728.

Oklahoma Department of Tourism and Recreation, 1990 "Crosstimbers Management Alternatives," Oklahoma City, Oklahoma.

Outdoor recreation Resources Review Commission, 1962, "Outdoor Recreation for America," Washington D.C., 246 p.

Perry J. Brown, B. L. Driver, Donald H. Burns, and Charles Mc Connell, 1979,"The Outdoor Recreation Opportunity Spectrum in Wildland Recreation Planning: Development and Application," Recreation Planning and Development (American Society of Civil Engineers), pps. 527-538.

Potter, D. R., John C. Hendee, and Roger N. Clark, 1973, "Hunting satisfaction: Game, guns, or nature?" Proceeding 39th North American Wildlife Conference Proc., Washington D.C., pps. 220-229.

Preseault v. ICC, (110 S. Ct. sec. 914 1990).

Rails-to-Trails Conservancy, 1993, "500 Great Rail-Trails: A Directory of Multi-Use Paths Created From Abandoned Railroads," Living Planet Press, Los Angeles, Washington D.C., 161 p.

Rails-to-Trails Fact Sheet No. TL1. Rails-to-Trails Conservancy, Washington D.C..

Rails-to-Trails Conservancy, August 1986a, "Converting Rails to Trails," The Rails-to-Trails Conservancy, Washington D.C., 1st ed.

Rails-to-Trails Conservancy, July 1986b, "The Rails-To-Trails Legal Manual: How to Invoke Remedies to Achieve Rail-to-Trail Conversions in Railroad Abandonment Proceedings Before the Interstate Commerce Commission," Rails-To-Trails Conservancy, Washington D.C., 2nd ed., 95 p.

Rails-to-Trails Conservancy, April-June 1990, "Supreme Court: We Can Bank Them!" Trailblazer, Rails-to-Trails Conservancy.

Rails-to-Trails Conservancy, April-June 1994, "No Rail-Trail and Island," Trailblazer, Rails-to-Trails Conservancy.

Seattle Engineering Department, 1987, "The Effect of the Burke-Gilman Trail on Property Values and Crime," Seattle Engineering Department, Seattle Oregon.

Wagar, J. A., 1966, "Quality in Outdoor Recreation," Trends in Parks and Recreation," Vol. 3, No. 3, pps. 9-12.

Wagar, J. V. K., 1951, "Some Major Principles in Recreation Land Use Planning," Journal of Forestry, Vol. 49, pps. 431-535.

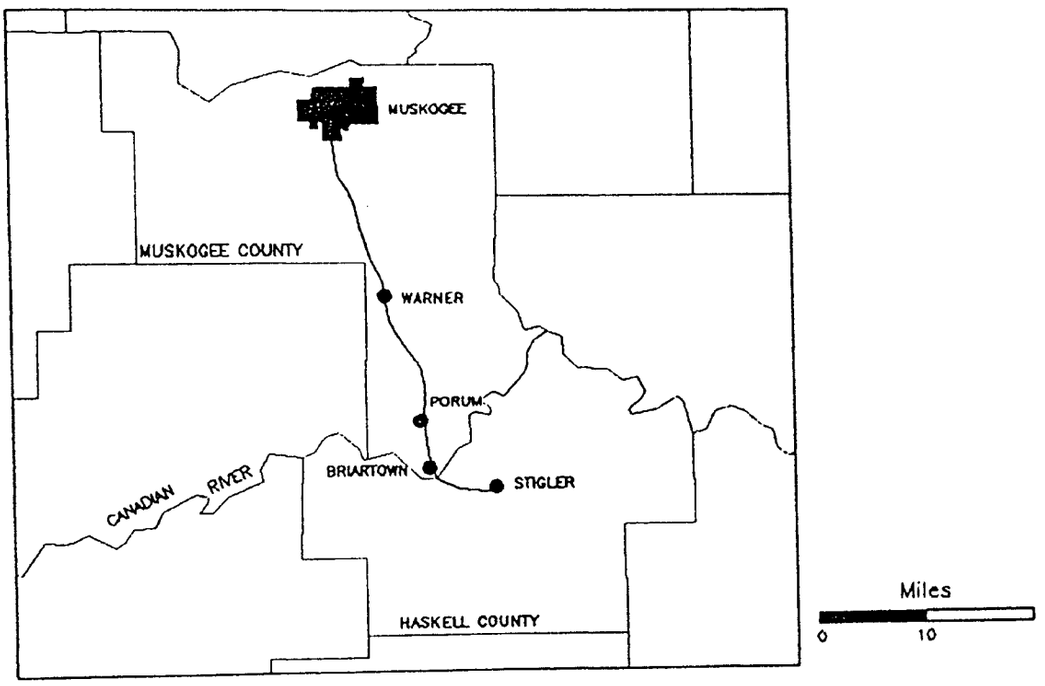
Wengert, John, April 1989, "The Economic Benefits of Rails-to-Trails Conversions To Local Economies," Rails-to-Trails Conservancy, Washington D.C.

APPENDIX I

MUSKOGEE TRIBAL

LANDS RECREATIONAL TRAIL

TRIBAL LANDS RECREATIONAL TRAIL



APPENDIX II

PERSONAL SURVEY

PERSONAL SURVEY

__MALE __FEMALE

OKLAHOMA STATE UNIVERSITY AND THE CITY OF MUSKOGEE ARE INTERESTED IN OBTAINING YOUR OPINIONS CONCERNING PARK FACILITIES WITHIN THE MUSKOGEE AREA. WOULD YOU HAVE A FEW MOMENTS TO ANSWER SOME QUESTIONS? THE SURVEY WILL TAKE ABOUT 10 MINUTES AND ANSWERS WILL REMAIN CONFIDENTIAL.

1. Do you own land in Oklahoma?
   __YES If "YES," Is the land adjacent to a railroad right-of-way? __YES __NO

   __NO

2. How often do you visit a city park?
   __AT LEAST ONCE A WEEK __TWO OR THREE TIMES A MONTH
   __ONCE A MONTH __TWO OR THREE TIMES A YEAR
   __ONCE A YEAR __LESS THAN ONCE A YEAR

3. Including yourself, how many people in the following age categories are in your group today?
   __12 AND UNDER __13-16 __16-20 __21-30
   __31-40 __41-50 __51-60
   __61 AND OVER

4. What activities have you or are you participating in today? (check all that apply).
   __PICNICING __SUN BATHING __INLINE SKATING
   __NATURE STUDY/ BIRD WATCHING __JOGGING __WALKING FOR ENJOYMENT
   __BASKETBALL
   __ORGANIZED SPORTS (FOOTBALL, BASEBALL, SOFTBALL)
   __OTHER: (SPECIFY:_____)

5. Approximately how much have you spent over the last year on parks and recreational facilities within the Muskogee area? (Including food, transportation, and miscellaneous expenses).
   NONE ($0) $1 $5 $10 $15
   $20 $25 $30 $40 $50
   IF MORE THAN $50: please indicate amount $_____

6. What additional types of recreational facilities could be added to enhance your time at the park?
   _____

7. Have you ever heard of the process of converting railroad lines into recreational trails or the Rails-to-Trails movement?
__YES please go to question #8.

__NO please read the following:

The definition of a Rail-Trail is a multi-purpose public path created from an abandoned railroad corridor. Flat or following a gentle grade, Rail Trails traverse urban, suburban and rural America. Ideal for many uses, such as bicycling, walking, horseback riding, cross-country skiing, commuting, and wheelchair recreation, Rail-Trails serve as historic and wildlife conservation corridors, linking isolated parks and creating greenways through developed areas. A Rail-Trail may also stimulate local economies by increasing tourism and promoting local business. (please move to question #9)

8. (If your answer to question #7 was "YES")
How or where did you first hear of Rail-Trails?
__FROM A FRIEND
__TELEVISION
__MAGAZINE
__NEWSPAPER
__OTHER:_____

9. How do you feel about the concept of creating now rail-trails?
__STRONGLY APPROVE
__APPROVE
__UNDECIDED
__DISAPPROVE
__STRONGLY DISAPPROVE (please move on the end comments)

10. What would be your primary activity along the proposed Rail-Trail?
__WALKING/HIKING
__JOGGING
__HORSEBACK RIDING
__BICYCLING/MOUNTAIN BIKING
__INLINE SKATING (ROLLER BLADES)
__MOTORIZED RECREATIONAL VEHICLES
__OTHER_____

11. Looking at the three surface types of Rail-Trails shown on the photographs, which type of surface would you like to see in the Muskogee area?
__DIRT/NATURAL TRAIL
__FINE GRAVEL TRAIL
__ASPHALT/CEMENT TRAIL

12. Looking at the photographs, rate the following trails on a scale of 1 to 5 according to how appropriate each trails for the following activities: (1 = Least appropriate, 5 = Most appropriate)

	Trail #1	Trail #2	Trail #3
a) WALKING/HIKING	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
b) JOGGING	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
c) INLINE SKATING	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
d) BIKING	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
e) HORSEBACK RIDING	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
f) MOTORIZED VEHICLE RECREATIONAL USE	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

13. Looking at the photographs, how likely would you be to use the particular type of trail?

Trail #1	Trail #2	Trail #3
__VERY LIKELY	__VERY LIKELY	__VERY LIKELY
__SOMEWHAT LIKELY	__SOMEWHAT LIKELY	__SOMEWHAT LIKELY
__UNDECIDED	__UNDECIDED	__UNDECIDED
__SOMEWHAT UNLIKELY	__SOMEWHAT UNLIKELY	__SOMEWHAT UNLIKELY

14. Rail-Trails vary in width depending on the surface type and the primary use of a trail. Rails-Trails can range from 3 to 12 feet, with multi-purpose trails being the widest. What trail width would you like to see in the Muskogee area?

__3-5 FEET __5-7 FEET __7-9 FEET
__9-11 FEET __11 FEET OR WIDER

The cost of Rail-Trail development ranges from $5,000 to $12,000 per mile depending on the trail surface and width. Covered in the cost is development of trail heads, parking lots, and restrooms.

15. Would you be willing to contribute to Rail-Trail development within the Muskogee area? How much are you willing to contribute?

__I WOULD NOT CONTRIBUTE ($0)
__$1-$5 CONTRIBUTION
__$6-$10 CONTRIBUTION
__$11-$20 CONTRIBUTION
__$21-$30 CONTRIBUTION
__$31-$40 CONTRIBUTION
__$41-$50 CONTRIBUTION
__MORE THAN $50 CONTRIBUTION: please indicate amount
$_____

The cost of Rail-Trail maintenance ranges from $800 per mile to $1,500 per mile each year. This is based on information gathered from other states that operate fully developed trails.

16. Which of the following methods foe obtaining funding would you prefer for trail maintenance? (Check all that apply)

__TRAIL USE FEES (Per Day and Per Year)
__SPECIAL EVENT CHARGES (Bicycle Races, Fun Runs)
__RESALE TRAIL MERCHANDISE (Post Cards, T-Shirts, Booklets)
__CITY SALES TAX INCREASE ($0.005 per $1)
__PROPERTY TAX INCREASE
__OTHER:_____

17. Please circle the maximum dollar amount you would be willing to contribute for Rail-Trail maintenance in the Muskogee area?

__$0/YEAR
__$1-$5/YEAR
__$6-$10/YEAR
__$11-$20/YEAR
__$21-$30/YEAR
__$31-$40/YEAR
__$41-$50/YEAR
__MORE THAN $50 CONTRIBUTION: please indicate amount
$_____/YEAR

18. The proposed length of the Muskogee area trail is approximately 43 miles. How many miles of trail would you like to see developed?

__ALL 43 MILES __20-43 MILES __10-20 MILES
__1-5 MILES __NONE

19. Would you like to see the trail developed all at one time with minimum improvements or individual segments developed over time fully developed?

__ENTIRE TRAIL AT ONE TIME
__COMPLETE DEVELOPED SEGMENTS

20. Which of the following groups do you think would be in conflict on a Rail-Trail?

Conflict, yes or no?

YES	NO	
__	__	Inline Skaters & Bicyclists
__	__	Joggers/Hikers & Bicyclists
__	__	Joggers/Hikers & Motorized Recreational Vehicles
__	__	Horseback riding & Inline Skaters
__	__	Motorized Recreational Vehicles & Inline Skaters
__	__	Horseback Riding & Jogger/Hiker
__	__	Motorized Recreational Vehicles & Bicyclists
__	__	Joggers/Hikers & Inline Skaters
__	__	Bicyclists & Horseback Riding
__	__	Motorized Recreational Veh. & Horseback Riding

21. What other amenities would you like to see on the Rail-Trail?

__DRINKING FOUNTAINS
__RESTROOMS
__BICYCLES LOCKING AREAS
__POLICE PATROLS ON BIKES
__LIGHTED TRAILS
__TELEPHONES
__CAMPING FACILITIES
__OTHER (specify)_____

_____

PLEASE LIST ANY ADDITIONAL COMMENTS CONCERNING THE IDEA OF RAILS-TO-TRAILS IN MUSKOGEE AND SURROUNDING AREAS._____

_____

_____

APPENDIX III

MAIL SURVEY

MAIL SURVEY

PLEASE ANSWER THE FOLLOWING QUESTIONS CONCERNING RECREATIONAL FACILITIES WITHIN THE MUSKOGEE AREA.

1. Your sex (circle the number of your answer)
   1 MALE
   2 FEMALE

2. Please indicate the age group in which you belong?
   1 12 AND UNDER
   2 13-16
   3 17-20
   4 21-30
   5 31-40
   6 41-50
   7 51-60
   8 61 AND OVER

3. Do you own land in Oklahoma?
   1 YES If "YES", is the land adjacent to a railroad right-of-way? 1 YES 2 NO
   2 NO

4. How often do you visit a city park?
   1 AT LEAST ONCE A WEEK
   2 TWO OR THREE TIMES A MONTH
   3 ONCE A MONTH
   4 TWO OR THREE TIMES A YEAR
   5 ONCE A YEAR
   6 LESS THAN ONCE A YEAR

5. What activities do you usually participate in at city parks?
   (check all that apply).
   __PICNICING
   __SUN BATHING
   __INLINE SKATING/ROLLER BLADING
   __NATURE STUDY/BIRD WATCHING
   __WALKING FOR ENJOYMENT/JOGGING
   __BASKETBALL
   __ORGANIZED SPORTS (FOOTBALL, SOFTBALL)
   __Other: (Specify:_____

6. Approximately how much have you spent over the last year on parks and recreational facilities within the Muskogee area? (Including food, transportation, and miscellaneous expenses)
   1 NONE ($0)
   2 $1-$5
   3 $6-$10
   4 $11-$20
   5 $21-$30
   6 $31-$40
   7 $41-$50
   8 IF MORE THAN $50: please indicate amount $_____

7. Have you ever heard of the process of converting railroad lines into recreational trails or the Rails-to-Trails movement?
   1 YES please go on to question #8.

   2 NO please read the following paragraph

The definition of a Rail-Trail is a multi-purpose public path created from an abandoned railroad corridor. Flat or following a gentle grade, Rail Trails traverse urban, suburban and rural America. \ideal for many uses, such as bicycling, walking, horseback riding, cross-country skiing, commuting, and wheelchair recreation, Rail-Trails serve as historic and wildlife conservation corridors, linking isolated parks and creating greenways through developed areas. A Rail-Trail may also stimulate local economies by increasing tourism and promoting local business.
(Please go on to question #9)

8. How or where did you first hear of Rail-Trails?
   1 FROM A FRIEND
   2 TELEVISION
   3 MAGAZINE
   4 NEWSPAPER
   5 OTHER:_____

9. How do you feel about the concept of creating new rail-trails?
   1 STRONGLY APPROVE
   2 APPROVE
   3 UNDECIDED
   4 DISAPPROVE
   5 STRONGLY DISAPPROVE (please go on to end comments)

10. When a Rail-Trail is developed, it is usually built with one of three surface types; dirt, fine gravel, or asphalt/cement. Which type of surface would you like to see in the Muskogee area? (circle one number only)
    1 DIRT/NATURAL TRAIL
    2 FINE GRAVEL TRAIL
    3 ASPHALT/CEMENT TRAIL

11. What would be your primary activity on a Rail-Trail? (circle one number only)
    1 WALKING/HIKING
    2 BICYCLING/MOUNTAIN BIKING
    3 JOGGING
    4 INLINE SKATING
    5 HORSEBACK RIDING
    6 MOTORIZED RECREATIONAL VEHICLES
    7 OTHER_____

12. Rail-Trails vary in width depending on the surface type and the primary use of a trail. Rails-Trails can range from 3 to 12 feet, with multi-purpose trails being the widest. What trail width would you like to see in the Muskogee area? (circle one number only)
    1 3-5 FEET
    2 5-7 FEET
    3 7-9 FEET
    4 9-11 FEET
    5 11 FEET OR WIDER

The cost of Rail-Trail development ranges from $5,000 to $12,000 per mile depending on the trail surface and width. Covered in the cost is the development of trail heads, parking lots, and restrooms.

13. Would you be willing to contribute to Rail-Trail development in the Muskogee area?
    1 I WOULD NOT CONTRIBUTE ($0)
    2 $1-$5 CONTRIBUTION
    3 $6-$10 CONTRIBUTION
    4 $11-$20 CONTRIBUTION
    5 $21-$30 CONTRIBUTION
    6 $31-$40 CONTRIBUTION
    7 $41-$50 CONTRIBUTION
    8 MORE THAN $50 CONTRIBUTION: please indicate amount
    $_____

The cost of Rail-Trail maintenance ranges from $800 per mile to $1,500 per mile each year depending on trail surface and width. These numbers are based on information gathered from other states that operate fully developed trails.

14. What is the maximum yearly amount you would be willing to contribute for Rail-Trail maintenance in the Muskogee area?
    1 $0/YEAR
    2 $1-$5/YEAR
    3 $6-$10/YEAR
    4 $11-$20/YEAR
    5 $21-$30/YEAR
    6 $31-$40/YEAR
    7 $41-$50/YEAR
    8 MORE THAN $50/YEAR: please indicate amount $_____/YEAR

15. There are several ways maintenance money can be obtained for a Rail-Trail. Which of the following methods for funding a Rail-Trail would you like to see? (check all that apply)
__TRAIL USE FEES (Per Day and Per Year)
__SPECIAL EVENT CHARGES (Bicycle Races, Fun Runs)
__RESALE TRAIL MERCHANDISE (Post Cards, T-Shirts, and Booklets)
__CITY SALES TAX INCREASE ($0.005 per $1)
__PROPERTY TAX INCREASE

16. The proposed length of the Muskogee area trail is approximately 43 miles. How many miles of trail would you like to see developed?
1 ALL 43 MILES
2 20-43 MILES
3 10-20 MILES
4 5-10 MILES
5 1-5 MILES
6 NONE

17. Would you like to see the trail developed all at one time with minimum improvements or with segments developed over time that are fully developed?
1 ENTIRE TRAIL AT ONE TIME
2 COMPLETE DEVELOPED SEGMENTS

18. Which of the following groups do you think would be in conflict with each other on a Rail-Trail?
Conflict yes, no, or undecided?

(check answers)	CONFLICT	NO CONFLICT	UNDECIDED
INLINE SKATERS AND BICYCLISTS	__	__	__
JOGGERS/HIKERS AND BICYCLISTS	__	__	__
JOGGERS/HIKERS AND MOTOR REC. VEH.	__	__	__
HORSEBACK RIDING AND INLINE SKATERS	__	__	__
MOTOR REC. VEH. AND INLINE SKATERS	__	__	__
HORSEBACK RIDING AND JOGGER/HIKER	__	__	__
MOTOR REC. VEH. AND BICYCLISTS	__	__	__
JOGGERS/HIKERS AND INLINE SKATERS	__	__	__
BICYCLISTS AND HORSEBACK RIDING	__	__	__
MOTOR REC. VEH. AND HORSEBACK RIDING	__	__	__

19. What other amenities would you like to see a long a Rail-Trail?
(check all that apply)
__DRINKING FOUNTAINS
__LIGHTED TRAILS
__RESTROOMS
__TELEPHONES
__BICYCLE LOCKING AREAS
__CAMPING FACILITIES
__POLICE PATROLS ON BIKES
__OTHER (specify)_____

DO YOU HAVE ANY COMMENTS CONCERNING RAILS-TO-TRAIL DEVELOPMENT IN MUSKOGEE AND SURROUNDING AREAS_____

_____

_____

PLEASE RETURN YOUR COMPLETED SURVEY IN THE SELF-ADDRESSED FIRST CLASS ENVELOPE PROVIDED.

THANK YOU FOR YOUR TIME AND CONSIDERATION

VITA

David Wallace Goughnour

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