

ASSESSING THE IMPACTS OF CONVERTED RAIL-TRAILS IN NORTH TEXAS  
COMMUNITIES: LEARNING FROM THE STAKEHOLDERS' PERSPECTIVES

by

BHAVANA KIDAMBI

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## ABSTRACT

### ASSESSING THE IMPACTS OF CONVERTED RAIL-TRAILS IN NORTH TEXAS COMMUNITIES: LEARNING FROM THE STAKEHOLDERS' PERSPECTIVES

Bhavana Kidambi, MLA

The University of Texas at Arlington, 2011

Supervising Professor: Dr. Taner R. Ozdil, ASLA

Converting abandoned rail lines to trails is a strategy to enhance green infrastructure and provide recreational amenities for large metropolitan area dwellers. Literature on rail to trail conversions emphasizes several factors that influence this change. Some of the factors listed are environment, transportation, recreation, economy, historic preservation, community identity, health and wellness, conservation, livability and revitalization (Trails, 2005-2011; Conservancy, 2007; & Connecticut, 2011).

The purpose of this research is to evaluate the stakeholders' perspectives on the impacts of rail-trails in North Texas on five recurring themes in the literature: environmental, recreational, transportation, health and wellness and historic preservation identified as potential areas of benefits. The research question of this study is two-fold. First, the research focuses on these factors based on all six converted rail-trails listed by the Rail-to-Trail Conservancy program in North Texas from the point of view of the stakeholders. Second, the research focuses on the impact of design on the six rail-trails. This research also examines the

stakeholders' views on the Rail-to-Trail Conservancy program in North Texas based on the trails.

For the purpose of this research, systematic interviews and passive observations are conducted on six converted rail-trails, adopted by the Rails-to-Trails Conservancy program in the North Texas region. They are Chaparral Rail Trail, Denton Branch Rail Trail, Katy Trail, Katy Spur Trail, Lake Mineral Wells State Trailway and Waxahachie Hike and Bike Trail. Systematic interviews are conducted with stakeholders'. Three sets of stakeholders are identified: represented from the public sector who are with the cities and municipalities where the trails are located and knowledgeable about the trail; design or planning professionals who participated in the master planning of the rail to trail conversions or have a knowledge of the design criteria of the trails; and neighborhood association leaders to represent user's view on the trails. The data from the interviews are first transcribed and the interviews are then analyzed using data triangulation (Bogdan, 1982). Passive observations are done in the form of site visits by the researcher to in order to gain better knowledge of the sites under investigation.

The findings of the research reveal that although each of the five factors assessed weigh differently, the stakeholders all affirm the positive impacts of rail-trail conversions in North Texas. Study also reveals, that while rail-trails may have specific tribulations, stakeholders value the adaptation and point out that the benefits to the environment outweigh the problems. Historic preservation and design being the primary point of consideration while environment and recreation are considered as default. Considering that more than 150,000 miles of tracks were abandoned and the number are increasing in US (Montage, 1989) it is critical for landscape architects to assess these conversions to improve green infrastructure and create spaces that serve people.

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CHAPTER 1  
INTRODUCTION  
1.1 Background

The development of railroads was one of the most important outcomes of the Industrial Revolution. For the first 50 years of railroad expansion, America saw great infrastructural developments (History, 2008). America's first railroad, the 13-mile Baltimore and Ohio Railroad, was completed in 1830. By 1850, more than 9,000 miles of railroad were in operation (Railroads, 2010). By 1916, operational railroads had increased to approximately 270,000 miles nationwide.

The 20th century brought about a change in this trend. Increasing transportation choices and the effects of the Great Depression drastically reduced railroad usage. Throughout the 1950s and 1960s, billions of dollars in federal funding for construction of interstate highways led to abandonment of more railroads. By the mid-20th century, more than 150,000 miles of track were abandoned and these numbers only kept increasing (Montage, 1989).

The National Trails System Act came into existence in 1968. This act provides for cooperation between the Interstate Commerce Commission and other federal agencies and the Secretaries of the Interior and Agriculture, to ensure that, to the extent possible, rail abandonments that may be suitable for improving or expanding the National Trail System are made available for public use [82 Stat. 92(9) (b)] (CACEQ, 1975) (Montage, 1989). The bulk of railroads and other transportation rights-of-way being abandoned have several unique characteristics that make them suitable for alternative public uses. Railroad rights-of-way are ideally suited for use as trails, as reflected by the National Trails System Act (Montage, 1989).

The Rails-to-Trails Conservancy (RTC) works to preserve these rail corridors abandoned for future rail use and convert them into trails for public use. The rails-to-trails

movement has successfully created hundreds of public trails used for recreational purposes. The RTC was one of the first non-profits that set out to map the rail-to-trail conversions across the county. These conversions promote an active way of life, while simultaneously enhancing the ecological conditions of the area. They also help create a positive environmental statement. The ecological use and built environment of the trails have a direct and beneficial effect on human life. This positive response in turn affects the rail-to-trail movement, by confirming the need to turn old, abandoned and unused rail lines into spaces for community use.

For the state of Texas, the *Vision North Texas Report 2050* emphasizes connecting nodes through pedestrian zones and re-using spaces so that existing open spaces can be preserved. Vision North Texas (VNT) is a group of public, private, and academic organizations whose focus is to research and enhance the future of the region. Sixteen counties come under the realm of the VNT. The guiding principles, as stated by the VNT 2050 report, give high emphasis to active centers, healthy communities, and effective mobility options and pedestrian design (Texas, 2010).

Based on the information available about rail-to-trail conversions, several factors influence this change from abandoned rail lines to trails. Some of the factors listed are: environment, transportation, recreation, economy, historic preservation, community identity, health and wellness, conservation, livability and revitalization (Trails, 2005-2011; Conservancy, 2007; Connecticut, 2011). The thesis research examines the rail-trails listed by the Rails-to-Trails Conservancy within the North Texas region, to understand their impacts on the community and to analyze how they affect the larger area within the region.

## 1.2 Research Objectives

The purpose of this research is to evaluate the stakeholders' perspectives on the impacts of rail-trails in North Texas related to five recurring themes identified in the literature as potential

areas of benefit. The research focuses on six North Texas rail-trails listed by the Rails-to-Trails Conservancy. The five recurring themes are:

- 1) Environmental Concerns
- 2) Recreation
- 3) Transportation
- 4) Health and wellness
- 5) Historic preservation (Conservancy, 2007)

The objective of this study is to determine whether the five factors listed above are valued attributes in the stakeholders' perspectives, which will be determined with the help of interviews. The study also tries to capture awareness of the Rails-to-Trails Conservancy program from the view of the stakeholders.

### 1.3 Research Questions

In the five factors identified as concerns of stakeholders regarding rail trails, the specific concerns regarding their impacts were further studied. For this purpose, six North Texas rail-trails listed by the Rails-to-Trails Conservancy were observed.

The following are the research questions for this study:

- What specific impacts do the five factors have in North Texas in the views of the stakeholders?
- What impacts do the underlying design factors (if any) have on the North Texas communities?
- What are the views of the stakeholders' on the Rails-to-Trails Conservancy, which maintains the largest inventory of converted rail-trails in the United States?

#### 1.4 Research Methods

The study uses qualitative methods set forth by Taylor and Bogdan (1998). Open-ended questions with an unstructured approach were used as a guide to the conversations. For the purpose of this research, interviews were conducted about six converted rail-trails in the North Texas region that were identified and adopted by the Rails-to-Trails Conservancy program. These were the Chaparral Rail Trail, Denton Branch Rail Trail, Katy Trail, Katy Spur Trail, Mineral Wells Trailway and Waxahachie Hike and Bike Trail. Systematic interviews were conducted with stakeholders with the aim of using data triangulation methods to retrieve data relevant to the study. Three types of stakeholders were identified to represent the public sector:

- 1) Representatives with the cities and municipalities where the trails are located and are knowledgeable about the trail.
- 2) Design or planning professionals who participated in the master planning of the rail-to-trail conversions or have knowledge of the design criteria of the trails.
- 3) Neighborhood association leaders who represent end-user group views on the trails.

The data from the interviews were first transcribed and the interviews were then analyzed using data triangulation (Bogdan, 1982). On-site observations were done in site visits by the researcher to gain better knowledge of the sites under investigation.

#### 1.5 Significance and Limitations

The study aims to explore the value and concern for reused spaces and their redesign and redevelopment. The use of open spaces, especially those that deal with conservancy for the purpose of urban population reuse as in the case of rail-trails, are sensitive areas which can help in revitalizing neighborhoods and public spaces. Information from the study can help citizens and community leaders better understand the value of these conversions to reuse abandoned rail lines within their own communities in North Texas.

The major constraint to the study was that it was limited to a small, specific region in North Texas. Due to the limited geographic area, the research could not be generalized to other parts of the State of Texas or the United States. The stakeholders represented only six counties within the 16 counties of the North Texas region due to the location of the rail-trails. Also, users of the trails were not included in the research.

### 1.6 Definitions

**Abandonment:** Railroad lines on which operations have ceased and the lines themselves have been terminated sometimes including the dissemination of rails and ties to be re-used in other areas or have been sold as scrap (Conservancy, 2007).

**Ballast:** Stone, cinders, gravel, or crushed rock fill material used to elevate a railroad bed above the surrounding grade to drain water away from the ties. This practice is also done to spread the track load over softer subgrade to provide an even bearing for ties, holding ties in place and checking the growth of grass and weeds (Conservancy, 2007).

**Ecology:** The branch of biology that deals with the mutual relationships among organisms and between organisms and their environment (Conservancy, 2007).

**Environment:** All external conditions that may act upon an organism or soil to influence its development, including sunlight, temperature, moisture, and other organisms (Conservancy, 2007).

**Equestrian:** Purposes/activities that might include horses, horseback riding, riders, and horsemanship (Conservancy, 2007).

**Exotic Species:** A plant introduced from another country or geographic region outside its natural range (Conservancy, 2007).

**Feeder Trail:** A trail designed to connect local facilities, neighborhoods, campgrounds, etc. to a main trail (Conservancy, 2007).

**Greenbelt:** A series of connected open spaces that may follow natural features, such as ravines, creeks, or streams. Greenbelts may surround cities and serve to conserve and direct urban and suburban growth (Conservancy, 2007).

**Greenway:** Greenways are corridors of protected, open space managed for conservation and recreation purposes. They often follow natural land or water features, and link nature reserves, parks, cultural features and historic sites with each other and with populated areas (Conservancy, 2007).

**Green Infrastructure:** The interconnected network of open spaces and natural areas, such as greenways, wetlands, parks, forest preserves and native plant vegetation. Green infrastructure projects also foster community cohesiveness by engaging all residents in the planning, planting and maintenance of the sites (Values, 2011).

**Impacts (Effects):** Encompasses all physical, ecological, and aesthetic effects resulting from the construction and use of trails (both negative and positive) (Conservancy, 2007).

**Landscape Ecology:** Branch of modern ecology, which deals with the interrelationship between man and landscapes. A term that began being used in America after 1970, it is employed by many leading landscape architects who employ methodologies that reflect a holistic, comprehensive, integrated approach to land development (Zev Naveh, 1984).

**Linear Corridor:** Area from which multi-purpose trails are formed; a linear configuration, which having served a prior transportation purpose and need, now offers a recreational space (Allsup, 1996).

**Linear Park:** A term popular since the 1960s, used to describe long, narrow strips of park-like land. It dates from Frederick Law Olmstead's use to describe his "Emerald Necklace" park system in Boston which created a relaxing, tranquil, enjoyable access to the larger pleasure grounds from other sections of the city (Allsup, 1996).



**Open Space:** Areas of natural quality, either publicly or privately owned, designated for protection of natural resources, nature-oriented outdoor recreation, or trail-related activities (Conservancy, 2007).

**Outdoor Recreation:** Leisure activities involving the enjoyment and use of natural resources primarily outdoors (Conservancy, 2007).

**Path:** A temporary or permanent area that is normally dirt or gravel, asphalt or concrete. A path typically indicates the common route taken by pedestrians between two locations (Conservancy, 2007).

**Pedestrian:** Any person traveling by foot and any mobility-impaired person using a wheelchair, whether manually operated or motorized (Conservancy, 2007).

**Rail Corridor:** The path of a railroad right-of-way, including the tracks and a specified tract of land on either side of the tracks (generally 100 feet wide) (Conservancy, 2007).

**Rail-Trail (Rail-to-Trail):** A multi-purpose public path (paved or natural) created along an inactive rail corridor (Conservancy, 2007).

**Rail-with-Trail:** Any shared-use path that is located on or directly adjacent to an active railroad or fixed route transit corridor (Conservancy, 2007).

**Rail-to-trail Conservancy:** An organization that serves as the national voice for more than 150,000 members and supporters, 19,000 miles of rail-trail throughout the country. Rails-to-Trails Conservancy remains dedicated to the creation of a nationwide network of trails (Conservancy, 2007).

**Railbanking:** A provision of the National Trails System Act, it is a voluntary agreement between a railroad company and a trail agency, enabling the agency to use an out-of-service rail corridor as a trail until a railroad might need the corridor again for rail service. Because a railbanked corridor is not considered abandoned, it can be sold, leased or donated directly to a trail manager without reverting to adjacent landowners (Conservancy, 2007).

**Right-of-Way:** An easement over another's land, or a strip of land held in fee simple ownership or some lesser interest, which is used as a roadbed, utility location, or other public purpose (Montange, 1989).

**Recreation:** The refreshment of body and mind through forms of play, amusement, or relaxation; usually considered any type of conscious enjoyment that occurs during leisure time (Conservancy, 2007).

**Recreational Trails Program (RTP):** First established in 1991 and then reauthorized as part of TEA-21, RTP returns a portion of federal gasoline taxes, generated by non-highway recreation, to the states, which in turn provide grants for trail-related purposes to private organizations, state and federal agencies, and municipalities (Transportation, 2011).

**Section 8(d):** Common reference to U.S.C. 1247(d), the section of the National Trails System Act that provides for interim trail use when a surplus railroad line is placed in the federal railbank (Conservancy, 2007).

**Trailbed:** The finished surface on which base course or surfacing may be constructed. For trails without surfacing, the trailbed is the tread (Conservancy, 2007).

**Trailhead:** An access point to a trail or trail system often accompanied by various public facilities, such as a horse or OHV unloading dock or chute, parking areas, toilets, water, directional and informational signs, and a trail use register (Conservancy, 2007).

**Trailway:** The portion of the trail within the limits of the excavation and embankment (Conservancy, 2007).

### 1.7 Summary

This chapter one gives an understanding of the focus of the research. It discusses the background of the research as well as the research objectives. The research questions focused on in the study are discussed, followed by a detailed methodology. This chapter gives an overview of the research and provides a preview to the chapters that follow.

Subsequent chapters present the researcher's literature study, methodology, results and discussion with stakeholders, conclusions and suggestions for future research. Chapter two discusses the literature review to gather existing information to better inform and justify the research. Chapter three introduces the methodology followed within the research, describes the site studies conducted, and explains the analysis methods used. Chapter four summarizes the analysis and findings of the research. The thesis concludes with Chapter five to summarize the research and its implications and importance to the field of Landscape Architecture.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

The literature review was conducted to establish an understanding of greenways as recreational spaces. The review goes on to discuss other literature available on corridors, and the uses and characteristics of shared-use paths. The primary focus of the review was to provide an overview of rail-trail conversions. Objectives highlighted by regional governing agencies, cities and municipalities, organizations, and non-profits such as Vision North Texas are discussed along with the five focus areas of benefits of rail-to-trail conversions. Data from the American Survey for Recreation are also provided, which confirm this need for recreation in the country.

#### 2.2 Background

##### *2.2.1 Greenways*

A greenway is a linear, open space established either along a natural corridor, such as a riverfront, stream valley, or ridgeline, or over land along a railroad right-of-way that has been converted to recreational use, such as a canal, scenic road, or other route. Any natural or landscaped course for pedestrian or bicycle passage is a greenway. As open-space connectors, greenways link parks, nature reserves, cultural features, or historic sites with each other and with populated areas.

Certain strip or linear parks are designated locally as parkway or greenbelt (Flink et al, 1993). Growing population and expansion of built environment into the countryside have

increased demand, making land a huge commodity in the United States. This comes at a time when recreation has become an important part of the lives of people all over the country. As vacant land becomes scarcer, property values are on a rise it directly affects the costs of any recreational spaces that need to be built. New opportunities have been found by "recycling" old land resources into a new use as public spaces. Abandoned rail lines are on the top of this list of resources. By nature, rail lines are in linear corridors, usually relatively long, based on abandoned railroads, public rights-of-way and natural corridors.

Greenways came about in communities across the nation due to several common concerns and serve communities in different ways. They serve as habitat corridors to promote plant and animal species. They act as filtering zones by absorbing contaminants from surface runoff. In a nation which is expanding rapidly in terms of population, greenways provide much-needed space for outdoor recreation and offer alternatives to those who do not live near traditional parks. A greenway is ideally suited to such popular outdoor activities as jogging, walking, biking, fishing, and canoeing, because it provides safe, alternative, non-motorized transportation routes for commuters going to work and children travelling to and from school. Greenways link us to our communities and, by lessening our dependence on the automobile, can improve air quality and reduce road congestion (Flink et al, 1993).

Although greenways exist in varied landscapes—from cities to farmland to commercial forests—historically, they have been created in suburban areas. Social scientists have explored how greenways affect such things as economics, community and civic life, and social interaction among users. Alarmed by the rapid loss of open space to development, citizens too have expressed strong desires for opportunities for outdoor recreation near where they live (Hellmund and Smith, 2006).

Abandoned railroad corridors have high potential for use as recreational trails and greenways. In 1916, the nation had around 270,000 miles of railroad track. Today, half of these

tracks are no longer used. As of January 1993, there were more than 500 converted rail-trails, totaling approximately 6,000 miles across the nation (Flink et al, 1993).

Of all the benefits greenways provide, recreation has received the most popular attention. A growing urban population with significant amounts of leisure time, combined with an overall surge in health consciousness, has led to increasing demand for outdoor pursuits (Smith and Hellmund, 1993).

### *2.2.2. Paths and their Characteristics*

Rail-trails act as paths that serve recreational and transportation purposes. The design of regular trails involves an understanding of paths and their characteristics. It is observed in the literature that rail-trails and traditional trails have some similar characteristics when it comes to how they are laid out and what factors are considered. The Vermont Agency of Transportation describes paths and their uses as follows.

“Off-road corridors shared by pedestrians, bicyclists and other non-motorized uses are referred to as shared use paths. Well planned shared use paths can provide excellent access and mobility, and can go where roads do not while providing a pleasant environment away from traffic.” Some of those are (Vermont Agency Of Transportation, 2002):

- Shortcuts between residential neighborhoods, parks, schools and business areas
- Access to areas served only by controlled-access highways where pedestrians and bicycles are prohibited
- Access routes to areas not well served by roads

Shared-use paths share the following characteristics:

- Continuous separation from motor vehicle traffic
- Frequent access points
- Increased levels of safety and security
- Scenic qualities

- Connectivity to a variety of land uses
- Potentially shorter trips
- High levels of activity
- Context-sensitive design and aesthetics
- Uniform design and good engineering (Vermont Agency of Transportation, 2002)

Rail-trails and rail-with-trails are unique types of shared-use paths. Rail-trails are inactive, abandoned or railbanked railroad corridors. Rail-with-trails share a corridor with an active railway. Like all shared-use paths, rail-trails are used by bicyclists, pedestrians including joggers, runners, people with strollers, and people walking their pets. These rail-trails also double as trails for cross-country skiing, snowmobiling and snowshoeing in places where these activities are permitted in winter months. The characteristics of rail-trails are similar to those of shared-use paths. In addition, they have special characteristics, which set them apart from shared-use paths (Vermont Agency of Transportation, 2002). These characteristics are:

- Ownership, operation and maintenance
- Existing infrastructure
- Alignment
- Grade
- Geometrics
- Drainage
- Scenery
- History
- Distance markers
- Community support
- Remoteness
- Contamination and deterioration

- Potential to make an economic contribution to the community (Vermont Agency of Transportation, 2002).

Understanding paths and their characteristics gives a better insight into the aspects of rail-to-trail conversions and makes clear the decisions to convert these abandoned areas into trails with multiple layers for services. These areas not only prove beneficial for recreation, health and fitness and the environment, but also act as linear connectors between different urban settings.

### 2.3 Overview of Rail to Trail Conversions

Additional reasons exist to preserve rail corridors and the most important of those is to preserve them for the future. Railroad rights-of-way are frequently used for purposes such as pipelines, energy transmission, and telecommunications. In general, these various uses are fully compatible with public recreation and conservation uses, as well as railbanking. Combining all these purposes and pursuits in the corridor can offset the costs of attaining each corridor (Montange, 1989).

The gentle slopes that attract bicyclists and joggers also make the trails highly accessible to the physically challenged. Because they are relatively undisturbed, these rail corridors function as excellent wildlife habitat and as repositories of many plant species (Braband, 1979). As the nation's population continues to grow, and pressures on the land and need for additional recreational opportunities intensify, it is sensible to preserve the already-assembled corridors for recreational and wildlife conservation purposes (Montange, 1989).

According to Leonard Mazour, there was great interest in outdoor activities in the 1960s, which increased the recreational opportunities. Due to the limited availability of land, alternate spaces not associated with park use, began to be used and corridors offered great potential. Dams, levees, causeways, street rights-of-way, power and pipeline rights-of-way, and abandoned railroads are all examples of human corridors that have been reused for trail development (Mazour, 1988).



Because of the alarming rise in abandonment of rails in the mid-20th century, in 1983 the U.S. Congress adopted Section 8(d) of the National Trails Systems Act, 16 U.S.C 1247 (d). (See Appendix A for details.) According to this sub-section, “the commission may not authorize abandonment but instead shall authorize preservation of a corridor for future rail reactivation and interim trail use...” (Montange, 1989, p. 47).

The Rails-to-Trails Conservancy provides up-to-date information along with a series of facts and statistics about the rail-to-trail conversions that have taken place in the United States so far. Their mission is to “create a nationwide network of trails from former rail lines and connecting corridors to build healthier places for healthier people” (Rails-to-Trails Conservancy, 2007).

Mazour (1988) says that parkways were looked at more as links of transportation than as just open spaces. He refers to five factors that contribute to the interest in recycled land:

1. The popularity of linear recreational activities.
2. Increased demand for natural areas for recreation.
3. Increased number of abandoned rails available.
4. Accessible and desired rights-of-way for park use.
5. Low cost of reconstructing railroad trails (Mazour, 1988)

The first comprehensive Recreation Resources Review Commission was completed in 1962.

The three major observations of the commission, as reported by Cordell included:

1. Outdoor recreation opportunities are most urgently needed near metropolitan areas.
2. Considerable land is available for outdoor recreation but does not meet the need effectively.
3. Outdoor recreation is a major leisure-time activity of growing importance (Mazour, 1988, p. 8).

Even with the high success of rail-trail conversions, there is still opposition from the landowners who associate these conversions with an increase in the crime rate and vandalism,

noise, litter in proximity to publicly used land. However, the benefits of trail conversions outweigh the landowner concerns. In 1992 the U.S. National Park Service conducted a study on the impacts of rail-trail on nearby property owners, and found that “a majority of landowners reported no increase in problems since the trails opened, living near trails was better than they had expected it to be, and living near the trails was better than living near unused railroad lines before the trails were opened” (National Park Service, 1992).

Mazour refers to studies about the attitudes of residents to proposed or existing trails. The study cited was conducted by the East Bay Regional Park District in San Francisco in 1978, where 410 residences of an urban area adjacent to two recreational trails—Lafayette-Moraga and Alameda Creek Trail—were surveyed. The following observations were made from the study (Mazour, 1988, p. 21):

1. A large majority of the residents are satisfied with their trail and think it was a worthwhile expenditure of money.
2. More than 80 percent believed the trail increased or had no effect on property values. Less than 10 percent felt their property value had been lowered.
3. When comparing the new and continuing residents' initial reactions to the trail with their current opinions, more than 50 percent and 25 percent respectively of the Lafayette-Moraga and Alameda Creek Trail residents felt the trail was “better than they expected”.
4. A majority of the respondents experience few or no problems with the trail (Mazour, 1988, p. 21).

The opportunity to convert rails to trails offers several recreational opportunities to users, as an old, abandoned rail track is converted into an aesthetically pleasing and healthy environment. This holds true as well for landowners who live close by or adjacent to the trails. The public sector benefits from the conversion because developing good trails increases

outdoor activities that attract tourists. This automatically increases the number of businesses in the surrounding areas, which in turn help the economy to grow.

Railroads and other transportation rights-of-way have several unique characteristics that make them especially worthy of recycling for recreation use. According to William H. Whyte in his book *The Last Landscape*, “long narrow strips of land are one of the most effective forms of open space” (2002).

Broad expanses of open space tend to be underutilized, although it is the perimeter that is most readily available to the greatest number. One of the best examples of narrow strip open spaces is abandoned transportation corridors. They are strips of land that are usually 50 to 100 feet wide and their cross-sections cut through urban areas, industrial, residential, commercial and open spaces. This provides access for a great number of people from different areas to engage in a range of activities (From Rails to Trails, 1975).

For convenient movement of heavy locomotives, most rail lines were constructed with long, gentle grades of less than three percent (From Rails to Trails, 1975). Although construction techniques varied, the center of a railroad right-of-way was usually raised by a ballast of crushed rock, slag, volcanic ash, or other porous material that served to elevate the track, keep it well drained, and thwart the growth of weeds. Where heavy rains and spring thaws were a problem, drainage ditches were dug along either side of the roadbed. These same improvements make the right-of-way suitable for trail use. The surface is raised above the surrounding countryside, allowing a better view of the scenery, while drainage and weed problems are kept to a minimum. Generally, the only work needed after the rails and ties are removed is the laying of the trail surface itself (From Rails to Trails, 1975).

According to Whyte, open-space planning used to be simple. He says, “In the archives of every city are series of plans, many dating back to the City Beautiful movement at the turn of the century and some a half century before. The plans vary according to the fashions of the period, but the open-space proposals are all very much alike. If you put the successive plans on

acetate at the same scale and lay them on top of each other, the areas marked green usually coincide” (Whyte, 1968, p. 135). According to Whyte, there is no new need for a grand design; it already exists. The task of planning is not one of coming up with a new structure, but one to make use of the strengths of those structures that are left today (Whyte, 1968). Abandoned rail lines and rail-trails are a perfect example of that type of planning according to Whyte. They are pre-existing structures that remain today and can be reused.

#### 2.4 The Review of Rail-Trails

Various groups and organizations list several benefits that rail-trails and greenways provide. The following matrix illustrates the various benefits as documented in five benefit areas. Environment, transportation, recreation, health and wellness, and historic preservation are the five recurring factors noticed in the literature. When seen as a whole, the evidence about the far-reaching benefits of trails and greenways is compelling, especially given the minimal public investment involved compared to other undertakings with similar community goals (Conservancy, 2007). This matrix was created based on the prominent benefits listed by literature sources to narrow the research to a more concentrated focus.

Table 2.1: Benefits Listed by Different Agencies

<b>Organization</b>	<b>Health</b>	<b>Transportation /Livability</b>	<b>Conservation/ Environment</b>	<b>Economy/ Revitalization</b>	<b>Historic preservation/ Community identity</b>
<b>Rails-to-Trails Conservancy (Conservancy, 2007)</b>	Safe for people of all ages	Transit corridors for alternate modes of commute	Preserving green space. Help preserve important natural habitat and their link. Air and water quality	Economic revitalization	Community pride. Highlight and provide access to historic and cultural resources.
<b>City of Connecticut (Connecticut, 2011)</b>	Safe, inexpensive	Safe modes of transportation, reduces air pollution, natural floodplains.	Heritage and understanding of past events. Preserving canal towpaths, taverns and locks.	Close-to-home recreational areas, community meeting places, make communities more attractive and friendly places	----
<b>American Trails (Trails, 2005-2011)</b>	Exercise, economic development, money spent on bird watching (\$5.2 billion annually)	Protect habitat and provide corridors for people and wildlife. Air and water quality. Prevent soil erosion. Natural floodplains	Sense of place and understanding of past events. Preserve transportation corridors	----	----

#### 2.4.1 Environmental Benefits of Rail-Trails

Protecting environmental corridors by establishing and managing greenways represents one method (to be used in conjunction with other approaches) to safeguard vital ecological processes (Labaree, 1992).

Trails and greenways provide a natural buffer zone to protect rivers, streams and lakes from runoff and are important tools for improving water quality. They improve air quality by protecting the plants that naturally create oxygen and filter out air-pollutants, such as ozone, sulfur dioxide, carbon monoxide and airborne particles of heavy metals (Conservancy, 2007).

Trails and greenways preserve important lateral landscapes, provide needed links between fragmented habitats and offer tremendous opportunities for protecting plant and animal species.

Almost 10 million homes are located in floodplains that place millions of people in danger every time a river overflows (American Rivers, 2007). By absorbing excess water when adjacent rivers overflow, they mitigate damage caused by floods. Trails and greenways also support communities through eco-tourism, which not only helps the trail but also helps the area economy.

#### *2.4.2 Transportation Benefits of Rail-Trails*

On November 2, 1998, voters across the United States approved 72 percent of 240 ballot referenda to spend more than seven billion dollars on state and local conservation measures. These initiatives protect farmland, parks, open space, greenways, historic resources, biological habitats, watersheds and other related environmental enhancements (Myers, 1998).

Trails are corridors that connect residential areas with retail, neighborhoods with schools, and homes with work places. They provide safe and pleasant environments for people to commute to work or to public transport systems (Conservancy, Trails and Greenways for Livable Communities, 2007). Well-planned trails provide alternate transport routes for commuting, while reducing air pollution and traffic congestion. Providence, Rhode Island and Chattanooga, Tennessee have turned industrial blight into beautiful and useful greenways and trails along riverfronts (Conservancy, Trails and Greenways for Livable Communities, 2007). Trails and greenways provide the tools for the nation to shape its communities and retain the level of quality.

#### *2.4.3 Recreational Benefits of Rail-Trails*

Trails and greenways create healthy recreation opportunities by providing people of all ages with attractive, safe, accessible places to bike, walk, hike, jog, and skate and perform any

other outdoor recreational activity. Trails are multi-purpose and multi-use. They enable walking and biking for short distances and this enables users to build in a daily routine of not using cars for short distances. Trails also provide natural and scenic places that can cause people to want to be outdoors. Trails connect neighborhoods to allow children to walk to schools and back without having to worry about the traffic issues, and trails are social places where people can meet and interact.

#### *2.4.4 Health and Wellness of Rail-Trails*

According to the U.S. Department of Health and Human Services, a 2001 “call to action” by the Surgeon General highlighted an alarming trend: The problems of obesity may soon cause as much preventable disease and death as cigarette smoking. Approximately 300,000 U.S. deaths a year are associated with obesity and overweight, and the total in direct and indirect costs attributed to these conditions amounted to 117 billion dollars in the year 2000 (Conservancy, Health and Wellness Benefits, 2007)

Trails and greenways create healthy recreation and transportation opportunities by providing people of all ages with attractive, safe, accessible places to bike, walk, hike, jog, and skate and perform any other outdoor recreational activity. Trails are multi-purpose and multi-use. They enable walking and biking for short distances and this enables users to build in a daily routine of not using cars for short distances. Trails also provide natural and scenic places that can cause people to want to be outdoors. Trails connect neighborhoods to allow children to walk to schools and back without having to worry about the traffic issues, and trails are social places where people can meet and interact.

In Healthy People 2010, U.S. Department of Health and Human Services set specific goals and objectives for increasing physical activity. They call for substantial increase in the percentages of adults and adolescents who get at least 30 minutes of moderate physical exercise daily. They also call for walking to be the mode of choice for more than 25 percent of

the adult trips under a mile and 50 percent of trips to school of less than one mile. The report recommends providing more facilities like trails to provide space for activities to achieve these goals (Conservancy, Health and Wellness Benefits, 2007).

#### *2.4.5 Historic Preservation of Rail-Trails*

Trails and greenways can provide a window into U.S. history and culture by connecting people to the past. They often provide access to historic features, such as battlefields, bridges, buildings and canals. Preserving and understanding the history of these places helps us learn and understand the history of the nation and its communities.

Trails provide walkable access to historical areas, which can help people get healthy while gaining knowledge of history. Trails can enhance a sense of community by incorporating recreation, education and interaction into a single user experience. Many trails are planned with the history and surrounding communities in mind (Conservancy, 2007).

According to Whyte, “we should try to save all the big spaces we can get our hands on, but there are only so many left. From here on out, we have to work much more inventively with the smaller spaces, the overlooked odds and ends; we are going to have to rediscover the obsolescent rights-of-way that thread the metropolitan area” (Whyte, 2002).

### 2.5 Regional Perspectives

The *Vision North Texas 2050* report proposes a vision statement that contains 12 guiding principles for the growth and development of the 16-county North Texas region. According to this report, the region of North Texas will have more than 75 percent more people in 2030 than it did in 2000, and this number will double by 2050. Because of such rapid development, the region is expected to lose 900,000 acres of agricultural land, as well as substantial areas of natural habitat. With respect to transportation, the 71 billion dollars being



invested from 2007 to 2030 will only result in 66 percent fewer hours in travel delays (VNT, 2010).

In light of all these issues, the VNT report lists a set of 12 guiding principles for the growth and development of the 16 county regions: Development Diversity, Efficient Growth, Pedestrian Design, Housing Choice, Activity Centers, Environmental Stewardship, Quality Places, Efficient Mobility Options, Resource Efficiency, Educational Opportunity, Healthy Communities and Implementation. Nine out of the 12 principles talk about the need for efficient community spaces and resources that are sustainable, pedestrian routes for non-motorized transportation, preservation of significant historic areas and protecting the natural features of the region (VNT, 2010).

The VNT report also indicates a varied set of mobility options instead of only increasing the size of roads. The regional ecosystem plan suggests that North Texas regions must incorporate open space or trail system plans and the use of natural “green infrastructure” and other similar ecosystem-related initiatives. The report puts heavy emphasis on alternate mobility requirements, health and re-use of space to be more sustainable to preserve the existing natural areas.

According to the Fifth National Survey on Recreation and the Environment (NSRE) report, more than 57,868 participants across the U.S. were asked about participation in 12 types of outdoor recreation. More than 88 percent of these participants were involved in some form of individual trail/street/road activities (American's Participation in Outdoor Recreation: Results from NSRE, 2003). The activities in the NSRE report were divided into land-based, water-based and snow-and-ice-based activities. Land-based activities were further sub-divided into 12 categories. The NSRE report states that “outdoor recreation is still a basic part of the American lifestyle. As a matter of lifestyle, traditional land, water, snow, and ice settings are still very much in demand as places for casual activities such as walking, picnicking, family gatherings, sightseeing and visiting nature centers or nature trails.” (Environment, 2003).

The Rails-to-Trails Conservancy lists six-trails in the North Texas region which were once a part of abandoned rail lines. The table below provides the basic information about the location and features of the trails. Please see Table 2.2.

Table 2.2: Rail-Trails in North Texas

<b>County</b>	<b>Trail Name</b>	<b>Trail Length (mi.)</b>	<b>Construction Date</b>	<b>Surface Material</b>
Gregg	Cargill Long Park	2.5	1970s	Asphalt
Collin	Chaparral Rail Trail	56.5	1995	Crushed stone
Hunt	Chaparral Rail Trail	56.5	1995	Crushed stone
Denton	Denton Branch Rail-Trail (Trinity Trails System)	8		Crushed stone
Dallas	Katy Spur Trail	0.2		Concrete
Dallas	Katy Trail	3.74	2000	Crushed stone, Ballast, Concrete
Palo Pinto	Lake Mineral Wells State Trailway	20	1998	Asphalt, Crushed stone
Parker	Lake Mineral Wells State Trailway	20	1998	Asphalt, Crushed stone
Ellis	Waxahachie Creek Hike & Bike Trail	6		Concrete

## 2.6 Summary

Chapter two discussed the literature review and research regarding the significance of greenways, provided an overview of rail-trail conversions and their benefits, and discussed the

importance of rail-trail conversions in North Texas and the rail-trails studied for this research. The chapter explained the importance of corridors and more specifically, the reuse of abandoned corridors for the benefit of both the people and the environment. A brief introduction was given to the six rail-trails that were studied for this research. Chapter three provides the methodology followed for the study to gather data about the six rail-trails mentioned in this chapter.

CHAPTER 3  
METHODOLOGY

3.1 Introduction

The research method for this study was evolved out of the need to evaluate the stakeholders' perspective on the impacts of rail-trails in North Texas. Five major factors were identified from the literature as recurring concerns. The study process itself was two-fold in its method.

First, the research focused on the five factors identified in the literature and based on six converted rail-trails in North Texas from the point of view of the stakeholders. Second, the research focused on the impact of design on the six rail-trails. In this aspect, the study also examined the stakeholders' views on the Rail-to-Trail Conservancy program in North Texas based on the six trails.

Qualitative research methods, data gathering through data triangulation (Bogdan, Taylor, 1998) from interviews, and analysis techniques (study of sites from the end-user point of view) were the core strategies adopted for the research. A study sample of six rail-trails identified by the RTC was used as study sites for research before the stakeholder interviews. A set of questions was formulated and put forth to the stakeholders during the course of the interviews. Specific markers for areas of concern (the five factors) and any views on impacts of the design of such rail-trails were given focus in the interview analysis.

### 3.2 The Stakeholders

It was vital to this study that stakeholders for the research be identified from pools that represented varied perspectives on these rail-trails, based on their particular roles in the development, use and maintenance of the rail-trails. As a result, stakeholders were selected from three different groups:

1. Professionals from the cities to which the trails belong to who were aware of the planning aspects of the rail-trails
2. Experienced design professionals who were aware of the design criteria involved
3. Neighborhood groups who participated in the master planning of the rail-to-trail conversions.

Neighborhood groups also provided a perspective from the point of view of the trail users.

Three professionals from each of the three groups were selected to interview for each trail, for up to 18 total possible respondents for the interviews. Of the stakeholders contacted, 12 responded and agreed to be interviewed. The stakeholder interviews were transcribed and data obtained from the interviews was analyzed.

### 3.3 Data Collection

The data collected for this research were primarily qualitative in nature. Interviews were conducted with the three groups of stakeholders to triangulate the respondents' perceptions (Taylor and Bogdan, 1998). Taylor and Bogdan (1998) define in-depth interviewing as "flexible and dynamic ... nondirective, unstructured, non-standardized, and open-ended ... modeled after a conversation between equals rather than a formal question-and-answer exchange".

Each interviewee was contacted by phone or email to obtain their agreement to participate in the interview (see appendix B for the copy of the what? letter). After the stakeholder agreed to be interviewed (see appendix D for approval of interview procedure),

appointments were scheduled for the interview and data collection. The interviews were open-ended with an unstructured approach. The research questions served as a guide to the conversation. The respondents were encouraged to talk about the points they considered crucial to the research. Face-to-face interviews were conducted when possible and all interviews were digitally recorded. The recordings were then transcribed and checked for accuracy (see Appendix H for sample transcripts). The interviews lasted between 30–40 minutes. A code was formulated for each respondent to protect their identity.

To better understand the geographic locations and the surroundings of each rail-trail, the researcher conducted site visits. The evaluation of impacts of the rail-trails was done by checking specific factors like the presence of drinking water or water as a design element (such as fountains), surrounding neighborhoods or demographics relative to the surrounding residents and their integration, importance to the users, and the visual impact in terms of after-hours lighting. These factors were compared against those listed by the RTC program (Conservancy, 2007) and were further investigated in the interviews to evaluate them as impacts of rail-trail conversions from the stakeholders' perspectives.

### 3.4 Interview Questions

After the stakeholders were identified for the record, profile questions were asked to understand the professional background of the stakeholders. Introductory questions were asked to gauge the conceptual knowledge that the respondent possessed.

First, the research questions focused on the environmental, recreational, transportation, health and wellness, and historic preservation impacts of the rail-to-trail conversions in North Texas from the stakeholder's point of view. The interviewees were asked the following specific questions:

- What environmental impacts has the rail-trail (name of the trail) had on the community?
- What transportation impacts has the rail-trail (name of the trail) had on the community?

- What recreational impacts has the rail-trail (name of the trail) had on the community?
- What health and wellness impacts has the rail-trail (name of the trail) had on the community?
- What impacts on historic preservation has the rail-trail (name of the trail) had on the community?

Second, the following research questions focused on the underlying design considerations of the rail-trails:

- What were the determining factors in selecting the trail corridor with respect to its previous use?
- How did these factors impact the design of the trail?

The final set of questions in the research examined the stakeholders' views on the Rail-to-Trail Conservancy program in North Texas based on the trails.

- Are you familiar with the Rails-to-Trails Conservancy program?
- What other features do you think are notable concerning the impacts of rails-to-trails in North Texas?

Each interview was conducted with the objective of gaining subjective knowledge on the interview questions.

### 3.5 Analysis Procedure

The interview transcripts were read thoroughly to analyze and identify data patterns in the responses of the stakeholders. Interview questions that evoked replies that mentioned factors that had a direct bearing on the study's objectives or factors identified from the literature review, were noted for further analysis with the factors studied in the researcher's site studies.

This method of coordinated data triangulation (Bogdan; Taylor, 1998) between the two research methods (interviews and site observations) was pursued for all the factors and concerns expressed by the stakeholders. The analysis through data triangulation was done

primarily by comparing stakeholder concerns with existing site conditions and evaluating whether the expectations (both positive and negative) of the stakeholders could be confirmed or rejected. For instance, security concerns of the neighborhood residents surrounding the rail trails were evaluated by studying conditions, such as after-hours lighting, peak hours of use of the rail trails, etc.

To study the stakeholders' perspectives, six rail-trails in North Texas were chosen. These were the Chaparral Rail Trail, Denton Branch Rail-Trail, Katy Trail, Katy Spur Trail, Mineral Wells Trailway and the Creek Hike and Bike Trail. These rail-trails were considered as they have undergone rail-to-trail conversions in the North Texas region as identified and listed by the RTC. The sites were studied for some specific factors, such as the presence of drinking water or water as a design element, surrounding neighborhoods or demographics relative to the surrounding residents and their integration, importance to the users, the visual impact in terms of after-hours lighting.

### 3.6 Assumptions

The study assumes that the stakeholders contacted were fairly informed with regard to the trails under review. It also assumes that they had a vested interest in sharing information regarding the conversion of rails to trails and that the three groups of stakeholders could offer sufficient data for the research. Finally, it is assumed that the site designers were actively involved in the process of conversions.

### 3.7 Scope, Limitations and Delimitations

The study is limited to the North Texas Region and all six rail-trails studied are adopted by the Rails-to-Trails Conservancy. Although the study is likely to yield critical information, the research results are limited to the region and could not be generalized to other parts of the State of Texas or the United States.



Due to the location of the rail-trails, the stakeholders represented six counties within the 16 counties of the North Texas region. Also, because some rail-trails were built a few decades ago, the professionals who were originally involved with the rail-to-trail conversion were no longer available for contact.

The users of the trails were not included in the research though this could provide an expanded view of the topic. Due to the extensive area of the rail-trails, site visits were limited to short periods and only certain parts of the rail-trails.

### 3.8 Summary

The research for this study was conducted using qualitative methods. The respondents were contacted through email or phone. After they agreed to be a part of the study, they were interviewed. To obtain maximum information, the questions asked in the interviews were open-ended and non-specific. Fourteen such interviews were conducted and it was concluded that no additional interviews were required as the data began to be consistently redundant. The data gathered were analyzed repeatedly to identify different themes and categories.

CHAPTER 4  
ANALYSIS AND FINDINGS

4.1 Introduction

This chapter presents the analysis and findings of this research. The chapter begins with the analysis techniques used for the interviews. Then, highlights from all responses of the interviews are explained, based on the larger themes that seemed to emerge. The secondary data obtained from the literature review and site studies is also used in some cases to better explain the findings.

Six trails were used for this research. They are the Chaparral Rail Trail, the Katy Trail, Katy Spur Trail, Waxahachie Hike and Bike Trail, Lake Mineral Wells State Trailway and Denton Branch Rail Trail. Of these, the Katy and Katy Spur trails were classified as urban trails; Denton Branch Rail Trail was classified as a suburban trail, and the rest were classified as rural trails based on the responses from the stakeholders. The researcher also went to the sites to get a better understanding of the areas surrounding the rail-trails.

The respondents themselves were classified into three different groups: the officials from cities of the rail-trails, designers involved and people from neighborhood groups. To protect the identities of the informants, they were coded as follows:

- C - Officials from cities of the rail-trails
- D - Designers involved
- N - Representatives from neighborhood groups

Initially, 18 candidates were approached to ask their availability for interviews, out of which a total of 14 candidates agreed to be interviewed while the rest declined. Of the 14

interviews conducted, five respondents were from cities, four were designers, and five people were from neighborhood groups.

Table 4.1: Stakeholder Participation per Subgroup

Trail	Stakeholder Subgroups		
	C	D	N
Chaparral Rail Trail	•		
Denton Branch Rail Trail	•	•	•
Katy Trail	•	•	•
Katy Spur Trail	•	•	•
Lake Mineral Wells State Trailway	•	•	•
Waxahachie Hike and Bike Trail			•

#### 4.2 Analysis of the Interviews

After the interviews were conducted, the recordings were transcribed and then analyzed according to qualitative data analysis techniques described by Taylor and Bogdan (1998). Of the 12 participants, all were familiar with the conversion of rails to trails.

The transcribed interviews were analyzed as follows. The transcriptions were sorted into data sets from three groups: professionals from the city, designers involved and neighborhood groups. This was done to triangulate the data for results. Then, the data was examined based on the answers to each question across all the three groups. Next, the data was categorized into groups based on the zoning of the trails. The weight of evidence from the data suggests that if each stakeholder, looking at the issue from a different point of view, sees a common outcome, then it is more than likely to be a probable outcome.

The following discussion provides an overview of the stakeholders' perceptions on the conversion of abandoned rail lines into trails and the impacts on the factors under review.

#### *4.2.1 Environmental Impacts of the Rail-Trails on Communities*

Because the research focuses on understanding the five recurring factors in the literature, one of which is the impacts on the environment, the question about environmental impacts of the rail-trail was posed to the respondents.

Ten of the fourteen respondents said that the environmental impacts of the rail-trail on their community were positive. Six respondents said they could not think of any negative impacts. Two others thought these conversions had no environmental impacts. Four main themes emerged from this particular question: pollution, greenbelts, landscape attributes and connectivity.

**Pollution:** Five of the 14 respondents spoke about pollution when asked about the environmental impacts. Respondents N2 and D1, both speaking about the Lake Mineral Wells State Trailway, said that the conversion helped prevent wildfires. Respondent C2 spoke about the reduction in the levels of pollution, if people used the trail to get to areas close-by instead of driving. One of the respondents (C5) said, "The railroad was there with its potential noise and everything that a railroad could possibly bring. Once we converted it into a trail, we eliminated a lot of those things". Another respondent (N2) said, "You actually remove environmental issues, like uncontrolled wildfires along the railway because of the train."

**Greenbelts:** Five of the 14 respondents spoke about development of greenbelts being one of the environmental impacts of rail-trail conversions. They said the trails, once converted from rail lines, opened up the possibilities of conversation and interaction between communities that were previously separated. One respondent (N3), when referring to the Katy Trail said, "In terms of the neighborhood environment, the trail was really a wall between two areas and we

took it out. Once this happened, the trail turned into a spine. That has had a tremendous impact”.

This was confirmed about the Denton Branch Rail Trail by another respondent (N1), who said, “It was a beneficial asset. They (the community) really viewed it as a greenbelt and a lot of residential properties developed along that greenbelt”. Another respondent (C2), referring to the Katy Trail said, “People who used to own townhomes in essence flipped their houses [around] to where Katy Trail is now their front yard. They have built their own access and are trying to make a somewhat seamless connection, because that is what the amenity is.”

**Landscape attributes:** The importance of landscape and the value in preserving the plants along the corridor were discussed during all of the interviews. Respondent C1 said, “a railroad track will bring in invasive and foreign species just because the trains travel from place to place. During the time that the train was running, there were different invasive species brought in and deposited along the side of the tracks.

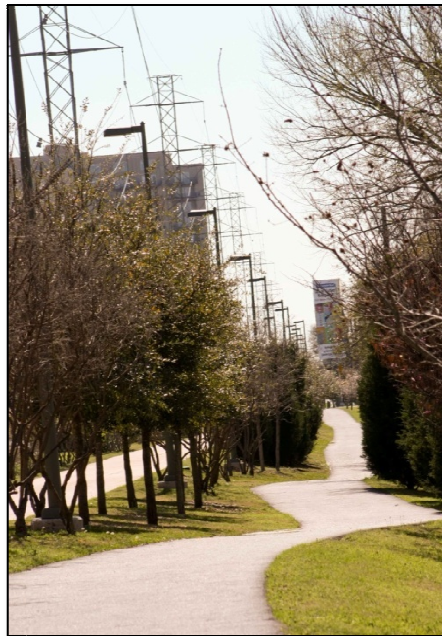


Figure 4.1: Planting along the Katy Trail

Since we have taken over and the train does not run anymore, we have eliminated the invasive species and are bringing the landscape back from the disturbance the train made.” Respondent N2 said that a regular check for exotic and invasive species was done. Respondent N3, speaking about the Katy Trail, said that plants which managed to survive in the new climates could be termed native and not as invasive. Respondent C5 spoke about the Denton Branch Rail Trail, which is in the process of being converted from a rail-trail to a rail-with trail, as adversely affecting the tree canopy. He explained that the existing canopy of trees had to be cut down to create a passage for the commuter rail.

**Connectivity:** Three of the 14 respondents spoke about connectivity to activities when asked about the environmental impacts. Respondent D1 said the rail-trail was a natural, pedestrian link where people could use non-motorized modes of transportation. Respondent C3 spoke about the rail-trail sending a positive message about the beauty and fragility of the environment. He also said it taught users social responsibility.

**Observations and analysis:** The responses about the urban rail-trails were substantially different from those about the suburban or rural rail-trails. The respondents from the suburban rail-trails concentrated on the environmental impacts in terms of reducing pollution caused by wildfires and invasive plant species. They also spoke about using the corridors as interim trails.

The responses from the rural trails were somewhat similar. While acknowledging that the rail-trails helped reduce pollution and the use of corridors as ecological preservation zones, they also spoke about the enhancement of the surrounding landscape and the possibilities for educating the users.

The respondents from the urban rail-trails concentrated on the physical impacts that the conversion caused. They said that by converting the previously abandoned corridors into spaces that could be used by anyone, they succeeded in removing the physical barriers that separated communities.

#### 4.2.2 Transportation Impacts of the Rail-Trails on Communities

The next question dealt with the impacts of rail-trails on the communities and neighborhoods in which they were located. All 14 of the respondents confirmed that the impacts on transportation were positive. Three main themes emerged from this question: Alternate transportation, environmental attributes and community connections.

**Alternate transportation:** Nine of the 14 respondents spoke about the rail-trails serving as an alternative mode of transportation. Speaking of the Katy Trail, respondent D4 said that one of the primary objectives of building the trail was alternate transportation. The absence of vehicular traffic has helped develop the trails as an alternative and in most cases, a shorter route for pedestrians as well as cyclists. Referring to the Katy Trail, respondent C2 spoke about people using the trail for more than recreational purposes. He said, “Personally, I’ve seen people on the trail dressed in a manner which suggested that they were going somewhere on business. They are not necessarily dressed in athletic clothes. I have also seen people carrying bags, so they have obviously gone to a store and bought something and are walking back. So the trail is not only being used by the community for recreational purposes but also as an alternate route for their daily activities.”

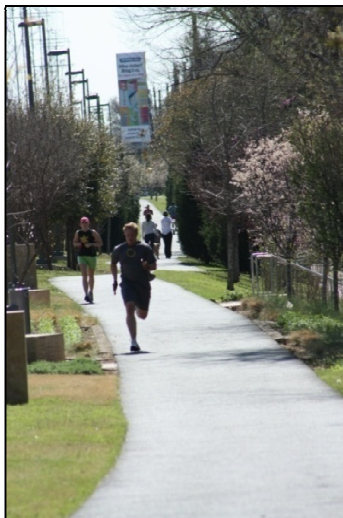


Figure 4.2: Katy Trail

About the Mineral Wells Trailway, respondent N2 said, "We have opened it up as a travel corridor for pedestrian traffic, bicycle traffic or even horseback. So... it's really improved and probably has more of an impact within city limits." Respondent N2 continued, "There is not a whole lot of space for pedestrians and bicyclists to be in downtown, but the trailway itself provides a corridor where there is not any vehicular traffic." Stating that it was hard to fully measure the impact of the Denton Branch Rail-Trail, respondent C5 said, "A lot of people really enjoy getting up and being able to walk that distance in a straight line without traffic." With reference to the same trail, respondent N1 said, "A lot of people use it to access the square and shopping areas. They also get to the North Central Texas College on the trail."

**Environmental attributes:** Three of the 14 respondents mentioned environmental benefits due to this alternate corridor. Talking about the Denton Branch Rail Trail being converted from a rail-trail to a rail-with trail, respondent D2 said, "I think it (transportation impact) is very positive given that they are putting in the commuter train. What this does is increase the catchment area for each of the stations."

**Community connections:** Two of the 14 respondents mentioned the rail-trails improving the community as a whole. Respondent N2 spoke about the rail-trail having a large impact within the city limits and helping people come together more, while respondent D1 spoke about businesses being oriented close to the rail-trail.

**Observations and analysis:** The transportation impacts of the rail-trails were similar for all three types of rail-trails. The urban trail responses concentrated on the options for alternate transportation, while stressing that the rail-trails are congested due to the large number of users. The suburban group said the lack of motorized traffic made the space convenient to use. The respondents from the rail-trails of the rural areas spoke of alternate transportation, community connections and easy access. It was observed that while the urban rail-trails had a large number of people, in fact, too large, the suburban and rural rail-trail responses spoke of ways to bring more people to use the corridors.



#### 4.2.3 Recreational Impacts of Rail-Trails on Communities

Literature suggested that the recreational aspect of the rail-trails was the primary benefit and hence this question was asked during the interviews. All the respondents unanimously agreed on the positive impact the rail-trail conversions had on recreation. In addition, seven of the 14 respondents said this was the most important impact due to rail-to-trail conversions. Respondent C5 said, “We keep doing a lot of studies in terms of what people want for leisure and recreational activities and the number one thing that keeps coming up is that people want walking trails and recreational trails.” The responses to this question were categorized into three themes: materials used, increase in choice and connectivity.

**Materials used:** Five of the 14 respondents spoke about the importance of materials used as the surface of the rail-trails. Of the Denton Branch Rail-Trail, respondent N1 said, “Because the trail was kept in a natural condition, it offered good recreational opportunities. Now that it is being paved, it increases the opportunities for mothers with prams to walk and for roller skaters.” Respondent C5, talking about the same trail said, “Everywhere we have seen the statistics, it shows that when you put in a paved trail, your usage increases as much as 25-fold. What we had before was a limestone screening surface that worked very well. A lot of people liked it especially because people like to run on that, but it restricted other users from riding tricycles and bicycles.”



Figure 4.3: Surface material at the nodes of Katy Trail

Respondent C2, when asked about two distinct surface treatments, one being concrete and the other a rubberized soft surface on the Katy Trail, said, “It (the soft surface) was done because it is softer to run on. The city built the concrete trail and the Friends of Katy Trail came back and added this amenity. It also helps separate the trail traffic a bit.” Citing the same distinction in materials, respondent D4 said, “The soft material is more comfortable, but the more important thing is, when you walk as opposed to jog, there just isn’t the competition and part of trail management is... if you can provide options and don’t have to manage the options, it is a benefit.”

**Increase in choices:** Four of the 14 respondents mentioned that the rail-trails provided the users with an increased choice of recreational activities. Respondent D1 said, “People can now ride to places instead of driving. The rail-trail created new cyclist and pedestrian opportunities and expanded the equestrian trails that we already had in the park. This helped link the neighbors to each other.” Respondent N1 said, “It gave the community an alternative that they did not have before in terms of a separated corridor and a separated opportunity to travel.”



Figure 4.4: Waxahachie Hike and Bike Trail

Talking about the Waxahachie Hike and Bike Trail, respondent C3 said, “It encouraged people to exercise who otherwise may not have because of limited space in their neighborhoods. It has also brought more activities, such as competitive races and benefit walks to our community.”

An increase in choices was affirmed by respondents talking about different sections of the community having access to the trails. About the Katy Trail, respondent N3 said there were more than 15,000 users on the trail per week. Speaking about the same trail, respondent D4 said, “We get all kinds of people. There is an early morning set of recreation people, an evening set of recreation people, we have a smattering of old people during the weekdays, groups of mothers with the strollers, and on the weekends, you have a really heavy use.”

**Connectivity:** Two of the 14 respondents mentioned connectivity as another important aspect of the recreational impact of rail-trails. Of the Mineral Wells Trailway, respondent D1 said, “The rail-trail really links the community. You can walk or bike to shopping centers or schools and just to the park.” About connectivity, respondent C3 spoke about the addition of several businesses along the trail and hence the additional users on it.

**Observations and analysis:** The recreational impacts of the rail-trails were similar for all three types of rail-trails. All respondents emphasized that recreation was the primary use of the rail-trails within their communities and that the rail-trails increased user choices for recreation and transportation. The respondents from the urban and suburban trails also spoke about the importance of the surface materials of trails. The rural group said that converting the abandoned corridor to a rail-trail started bringing more people to the trail.

#### *4.2.4 Health and Wellness Impacts of Rail-Trails on Communities*

Health seemed to be the next important factor in the considerations of the respondents. Talking about the rail-trail improving the health of the users, respondent N2 of the Mineral Wells State Trailway said, “It is a proven fact in the medical community that these types of areas have

a very positive impact on the health of our citizens. Early studies and continuing investigations are actually beginning to prove that park areas, natural areas and natural outdoor recreation have a very positive impact on health.” Respondent N4 said that rail-trails give people an opportunity to enjoy fitness in a beautiful atmosphere. While all the respondents emphasized the importance of health, one main theme that emerged was that of safety.

**Safety:** Five out of 14 respondents spoke of the aspects of safety in relation to the health and wellness impacts of rail-trails. Of the Mineral Wells Trailway, respondent C1 spoke about the safety of the users as a result of an area cut away from streets and traffic. About the increase in people’s comfort levels due to the safety on the trails, respondent C5 said, “People take their lunch time break to walk on the trail or to go to a restaurant for lunch.” Respondent C2 spoke about the safety on the rail-trails due to several thousand users being on the trail each day. Respondent D4 talking about an accident on the Katy Trail, mentioned the precautions that users need to take. Making an analogy with driving the interstate, he said, “People don’t wear iPods when they are driving and it is the same thing here. It means that if you abruptly change your route, you are going to have an accident. Like a good driver changing lanes, you have to be careful about everybody else.”



Figure 4.5: Safety signs at the Katy Trail

**Observations and analysis:** The responses to the question on health and wellness were similar for all three sub-groups of rail-trails. All respondents agreed that rail-trails definitely improved the health of the users and that this was the next most beneficial use after recreation. While the respondents from the rural and suburban groups spoke about the safety of trails with respect to traffic, respondents from the urban trails also spoke about the safety procedures to be followed on the trails themselves.

#### *4.2.5 Historic Preservation Impacts of Rail-Trails on Communities*

The next question was about the historic preservation impacts on the rail-trails. Literature study revealed that historic preservation was a valid issue to be considered during rail-trail conversions, although it was surmised that this might not be a crucial factor from the stakeholders' perspective. In response to the question of whether historic preservation was a guiding concern or incentive in consideration of rail-trail conversions, seven of the 14 respondents said that the rail-trails had no impact on historic preservation. The responses to the question were split into two themes: signage and education.

**Signage:** Seven of the 14 respondents spoke about having historic signs on the rail-trail. Respondent D1 of the Mineral Wells Trailway spoke about a historic bridge that was preserved, which is eligible for the National Register of Historic Places. He also spoke about interpreting historic information into audio signs. About the same rail-trail, respondent C1 said that historic preservation was a key factor of consideration. "We built a replica of the water tower that used to put water into the trains... We have a history of the town that somebody can see any time of the day, 365 days a year." Respondent C3 of the Waxahachie trail said, "Our trail intersects with our historic downtown and has a trailhead at our newly renovated historic depot." Respondent C2 of the Katy Trail spoke about a historic bridge being preserved, but more for the purpose of cost savings in construction than for history. Three other respondents said preserving the environment was more important than the history.



Figure 4.6: Signage at the Waxahachie Hike and Bike Trail

**Education:** Four respondents said the importance of historic preservation reflected in the educational aspect. Respondent C3 said, “The trail has generated new interest and allows for educational opportunities.” Speaking of physical education, respondent D1 said, “One of the schools uses it for physical education classes to teach safe bicycling to the students.”

**Observations and analysis:** While the respondents from both the urban and the suburban rail-trails said that though historic preservation was a factor of consideration, there was little or no impact on historic preservation. The set of respondents from the rural rail-trails said that this was a very important factor of consideration. The respondents from the urban trails were more concerned about the environment itself and not about the history.

#### *4.2.6 Underlying Design Considerations and Their Impacts on Rail-trails*

The secondary question in the research focused on the underlying design considerations during the planning and initiation of conversion, and how these factors impacted the design of the trail while looking at the conditions that might be created after the conversion. This question was considered a good way to understand the order of importance of the impacts

learned from the primary question. With respect to the design considerations, the main reason to use the old rail line and convert it to a trail was that “it existed.” The open ended interview pattern allowed follow-up questions, which revealed a set of reasons. Two important factors emerged from this question: pre-existing conditions and cost.

**Pre-existing conditions:** Pre-existing conditions and space were the reasons cited by 12 of the 14 respondents. They all spoke of the benefit of using a space that already had the necessary attributes in the design existing on the site. The City of Mineral Wells owned a rail line which they decided to convert into a trail when the rail line started running into losses, according to respondents from group N interviewed on the Mineral Wells Trailway. Respondent N2 said, “it was considered a dead-end rail. It did not go beyond Mineral Wells. So that created a very nice corridor which if used, would not interrupt continuous rail systems. You could set this aside and it could be used for the outdoor recreation and really not have an impact on the other rails because this rail line was not being used.” Respondent C5 said, “Because it was a railroad, converting it to a trail was very easy. It already had a fairly level roadbed and we didn’t have to do much re-grading.”



Figure 4.7: Old Rail at the Waxahachie Hike and Bike Trail

Respondent C2 from the Katy Trail said, “within the city, we were looking at any open corridor that was available to get a trail, because the City of Dallas is built out and there is not really a lot of open space left. And this space was in the densest part of town. Since it was vacant, it was perfect.” Respondent C3, talking about the Waxahachie trail, which has only part of the trail within an abandoned rail corridor said, “The natural aspect of following the creek was an easy decision. The land was mostly unused floodplain belonging to the city. It made for a very non-linear, winding path that is extremely beautiful.”

**Cost:** Another reason that came up during the course of interviews was the cost effectiveness of designing trails on rail lines. Respondents said that cities had to deal with budgets and match the federal funding they received for the conversions. To achieve this, the simplest solution for designing the trails was to use the part of the rail line where the tracks used to exist. The tracks were fairly simple to remove and it was just as easy to use the rail ballast as a subgrade.

Private property rights were mentioned as another factor in terms of designing the trail. Respondent D1 said, “Using pre-existing conditions made it cheaper to build the trail and you would not be able to put something that long in Texas without the private property rights.” Aesthetics was specified as another underlying design consideration. Respondent N1 from the Denton Branch Rail Trail said, “The city wanted to keep it in its natural state as much as possible both for aesthetics and cost savings.” The underlying considerations for converting an old rail line into a trail seemed to be summed up by respondent C5 from the Denton Branch Rail Trail, who said, “this line was constructed in 1880 and it has been a corridor for a long time. To lose that corridor and have to rebuild that corridor would have been very time consuming and expensive.”

**Observations and analysis:** For this section of the interview, the urban group and the suburban group spoke about factors such as ease of access and ease of converting a rail bed to a trail. The suburban group also stressed aesthetics and the costs involved. The rural group



spoke mainly about the aesthetics and the ease of conversions. While the suburban and rural groups spoke about money being a point of concern, the urban trails were funded through the city.

Trailheads were discussed differently. While the suburban and rural rail-trails had parks and areas within downtown as their trailheads, the urban rail-trails did not have trailheads starting in parks. Every street intersection was treated as a node on the trail.

#### *4.2.7 About the Rails-to-Trails Conservancy*

Another set of questions dealt with the knowledge of the respondents on the Rails-to-Trails Conservancy (RTC) Program. This question was asked primarily because the rail-trails used for the research were all listed in the RTC. The question was posed for the researcher to evaluate the knowledge and awareness of the respondents of the RTC program and to note their views about the RTC. All the respondents were aware of the RTC. However, one respondent did not know what the RTC did.

Thirteen of the 14 respondents thought that the RTC program had positive impacts. Talking about the RTC program from a “general point of view”, respondent N3 said, “It is a spark plug to enable groups to identify a section of the railroad that you could turn into a trail. We have converted this whole area of land into a positive community use rather than chopping it up and selling it to people.” Two respondents said the RTC was a technical assistance group. Stating the same, respondent D2 said, “They are a technical assistance group and a national champion for those kinds of projects that involve conversion of old corridors. They were created at a time when many of the nation’s rail lines were being dismantled. It is great to have them as a resource and they continue to be a catalogue and a library of facilities around the country.”

The respondents discussed the fact that transit authorities were starting to realize the value of these corridors. Respondents also said that the program benefitted the country by preserving corridors of railroad track that might not be useful right now but could be useful in the

future. They also said that due to the abandonments, the RTC is not only able to preserve these old rail corridors, but also to convert them into usable spaces.

### 4.3 Summary of Findings from Stakeholder Interviews and Site Studies

#### *4.3.1 Response Triangulation*

A series of questions were put to the respondents who agreed to be interviewed, and their responses were transcribed for further comparison with inputs from site studies. All respondents were asked the same set of questions laid out in the framework for the interview. The data gathered from the interviews were analyzed as a whole, and then further analyzed by dividing the respondents into three different sub-groups based on the stakeholders of the trails.

These groups were the professionals from the Cities to which the trails belonged, the design professionals of different trails, and the people who were involved with the community or neighborhood groups. The responses were analyzed for individual stakeholders' concerns and any resonance with RTC's listed rail-trail consideration factors. This data was divided into the factors of objective focus in this study and were further examined for any resonance or affirmative/negative agreements with site study observations.

With respect to the environmental impacts, the respondents from all three sub-groups spoke about rail-trails offering alternate transportation and helping in the reduction of different types of pollution. The city officials and respondents from neighborhood groups also discussed connectivity and the rail-trails functioning as greenbelts. The stakeholders from neighborhood groups spoke about the rail-trail impacting the preservation of nature, conserving the landscape by increasing the tree canopy, and improving communication between neighbors, users and homeowners (if any) along the length of the trail. They also discussed political factors that impact decisions with respect to rail-trail conversions. The designers, on the other hand, were primarily concerned about the non-motorized transportation options that are made possible due to the design of the corridors.

The next aspect analyzed was the transportation impacts due to rail-trails. In this analysis, the respondents from the cities and neighborhood groups stressed again the alternative transportation opportunities that rail-trails provide. Both groups also spoke about the funding available or allotted for transportation by different cities. The stakeholders from the cities additionally raised concerns about parking issues near some urban trails due to heavy use. The designers discussed the importance of using rail-trails to connect communities and of accommodating users of all ages on the rail-trails. The stakeholders who represented the neighborhood groups discussed many aspects, from alternative transportation, funding, lack of traffic and community connections.

With respect to recreation and health and wellness, the views of all three stakeholder subgroups were similar. Almost all respondents indicated that recreational benefits were the most important impact of the rail-trails. They all discussed the importance of increased recreational choices available to users because of the rail-trails, different materials that were being used on the surface of the rail-trails, and the various connections the rail-trails created by being transportation nodes. With respect to the health and wellness impacts, all three stakeholder sub-groups agreed that this was directly related to the recreational impacts. User safety due on the rail-trails was discussed, and the precautions to be followed while using rail-trails were also discussed by respondents in each sub-group. The designers spoke primarily about budget constraints and the educational opportunities on the trail.

The next set of impacts analyzed was of the historic preservation of rail-trails. The respondents from the cities said that historic preservation was always a primary focus. One respondent said it provided an opportunity to educate the users about the history of the trail. Two respondents discussed the signage along the trails which explained the history of the trail. The sub-group of designers was focused on the re-use of the pre-existing rail bed as a subgrade for the new trail material, informative audio signs along trails, and the reuse of old

bridges that were once used by rails. The respondents from the neighborhood groups were not interested in historic preservation. They were more concerned with making a nice looking trail.

Response triangulation was done on the secondary question, which was focused on the underlying design considerations impacting the rail-to-trail conversions. The respondents from the cities said the rail-trails were built on the rail beds and this was done due to the ease and reduced costs. Two respondents from the Katy Trail revealed that the underlying design consideration was that the city was almost built out, and at the same time, they had an opportunity to target a larger group of people by designing a rail-trail in the densest part of the city. The main focus of the designers was the cost involved and the amount of funding available for the conversions. One respondent also discussed the ease of commuting over a long stretch without having to face motor traffic. The respondents from neighborhood groups discussed aspects such as the costs involved, aesthetics of the rail-trails, ease of converting old rail lines to a trail, and the ease of commute. The location, length, funding, cost of construction, re-usable pre-existing conditions, uninterrupted open space, views and community connections were the other factors that were said to influence the design considerations.

The last set of questions was about the Rails-to-Trails Conservancy program. In response to that, respondents from the cities said that the RTC program helped promote conservation and preservation of rail corridors, and in the process, helped different transit authorities realize the value of rail-trails. The designers interviewed said the RTC was a "technical assistance" group. Respondents from neighborhood groups felt that the RTC was an extremely effective program and acted as a "spark plug" for conversion projects in addition to helping transit authorities realize the value of rail-trails.

By analyzing the trails based on the way they were zoned, the following observations were also made. The respondents from urban trails did not seem to stress the importance of funding or the funds available. The respondents interviewed on the suburban rail-trails focused slightly more on the historic preservation. The stakeholders from the Denton Branch Rail Trail,

which is going from being a rail-trail to a rail-with trail, said that they were re-analyzing the historic aspects of the rail line and were going to incorporate them into the new trail. The rural trails focused most on the aesthetics, the recreation choices they could provide and the historic preservation. Money seemed to be a major factor to consider for the rural rail-trails. The main focus of the urban trails was to cater to the different groups of people using the trail during different times of the day. They also stressed the safety requirements on the trails to accommodate various recreational activities in the same linear space. The materials used for the surface of the trails were also an important consideration given the number of users and the recreational choices on the rail-trails.

#### *4.3.2 Summary of Rail-Trail Observations in North Texas*

The researcher visited the sites of the rail-trails to better understand the site and users. The urban sites were heavily used even on the weekdays. At Katy Trail, there were more than 70 people just along a half-mile stretch of the rail-trail. Several people were dressed in business attire, but were still seen walking the trail. Some of them appeared to be walking to and from the offices that lined the edge of the trail. The majority of the trail users were women and children, mothers pushing strollers, athletes, and older generation couples. The people did not talk to one another and seemed focused on where they had to go.

This was different from what was observed at the other trails. The users seemed to interact more with each other at the suburban and rural trails. They were also more willing to communicate with strangers. Waxahachie Hike and Bike Trail and Mineral Wells Trailway had seating areas spread out along the trail, while Katy Trail had seating at more regular intervals than the rest. All the trails had water fountains, both for the users and their pets. Historic areas were marked with plaques—primarily at the rural trails. Bridges, railroad tracks in the ground, trestles were all marked and signage about the history was put up along the trail. Katy Trail was more of a connector to the surroundings, while the others were a haven away from the

surroundings. The trailheads for all the trails, except the urban trails, were parks. As observed, this seems to be a technique to draw more users to the rail-trails. The Denton Branch Rail Trail could not be accessed, as it was being demolished for an extension of the DART North line. According to the designer, the trail will be reconstructed and will acquire the status of a Rail-with-Trail.

#### *4.3.3 Public-Private Partnerships*

The one crucial piece information gathered from the interviews with the urban group of stakeholders was the public-private partnerships. Respondent N3 from the Katy Trail revealed that public-private partnerships were the primary reason that numerous design aspects were able to be incorporated into the rail-trail. Stating that public-private partnerships were nothing new to Dallas, he said, “a non-profit group will form and become the advocacy group for a project, if they raise a substantial amount of money. One of the things the city agrees to is that the non-profit group can hire the design professionals, dictate the design, and the level of design subsequent to city approval.” According to the respondent, having the design control of the rail-trail was the most significant part of the corridor development, and probably the most important aspect separating them from the other trails. The advantage of public-private partnerships is that, even if the involvement in design by the advocacy groups is minimal, it enhances the quality of the trail and its amenities. Based on the findings from the interviews, this relationship between the cities and the neighborhood groups seems to be the chief aspect that separates the urban rail-trails from the rest.

#### 4.4 Summary

This chapter discussed the findings of the research. After interviews were conducted and transcribed, they were analyzed and then combined with relevant data to understand different patterns that emerged. Analysis of the questions and responses was discussed, and

then the chapter summarized different findings based on the methodology used. The summaries include information about the different sets of questions and the opinions of different subgroups of stakeholders.

## CHAPTER 5

### CONCLUSIONS

#### 5.1 Introduction

The purpose of this research is to evaluate the stakeholders' perspectives on the impacts of rail-trails in North Texas related to five recurring themes from literature. The literature review identified the following potential areas of benefit: environmental, recreational, transportation, health and wellness, and historic preservation. As discussed in the literature review, regional groups such as Vision North Texas talk about using corridors or greenbelts to connect different communities as alternative non-motorized transportation and recreational corridors (VNT, 2010). This presents an opportunity to protect and restore corridors that have been historically significant, but which have not been in use due to various reasons.

This final chapter summarizes the entire study and also discusses the implications of this study for the field of Landscape Architecture.

#### 5.2 Research Summary

Converting abandoned rail lines to trails is a strategy adopted to enhance green infrastructure and provide recreational amenities in large metropolitan areas. Literature on rail-to-trail conversions emphasizes several potential benefit areas, such as environmental, transportation, recreational, economic, historic preservation, community identity, health and wellness, and livability (Trails, 2011; Conservancy, 2007; Connecticut, 2011). Strategically planned and managed green infrastructure creates a more sustainable integration between



urban development, nature conservation and public health (Abrahams, 2010). Yet, there is limited understanding of the impacts on a regional scale.

The purpose of this research is to evaluate the stakeholders' perspectives on the impacts of six rail-trails in North Texas on the basis of five factors: environmental, recreational, transportation, health and wellness and historic preservation, which are identified as potential areas of benefit. For the purpose of this research, systematic interviews and site observations were conducted on six converted rail-trails in the North Texas region that have been adopted by the Rails-to-Trails Conservancy program. The rail-trails analyzed were the Chaparral Rail Trail, the Denton Branch Rail Trail, Katy Trail, Katy Spur Trail, Mineral Wells Trailway, and Waxahachie Hike and Bike Trail.

Three sets of stakeholders were identified for the research. The first group is public sector representatives who are with the cities and municipalities where the trails are located and are knowledgeable about the trail. Another group is design or planning professionals who participated in the master planning of the rail-to-trail conversions or have knowledge of the design criteria of the trails. The third group consisted of neighborhood association leaders, to represent the views of trail users. The interviews were first analyzed based on overall questions and later by dividing the stakeholders into their sub-groups and by categorizing the rail-trails based on their location as urban, suburban or rural. The data from the interviews was transcribed and subsequently analyzed using data triangulation (Bogdan, 1982). Passive observations were made in the form of site visits by the researcher, to gain better knowledge of the sites under investigation.

The research objective of this study is two-fold. The primary focus of the research is the stakeholders' view of the specific impacts that the environment, transportation, recreation, health and wellness, and historic preservation have had as a result of the rail-trails in North Texas.

**Impacts on Environment:** All three stakeholder groups discussed the natural environment and the benefits with respect to reduction of pollution caused by wildfires, invasive species, and pollution from rail operations. The summary of designer responses illustrated that that the corridor becoming a spine of activity was the environmental impact, while the neighborhood groups suggested that preserving the nature and improving tree canopies was the environmental benefit. In terms of the rail-trails themselves, the suburban and rural rail-trail respondents concentrated on the natural environment, while the urban rail-trails gave more importance to the social environment.

**Impacts on Transportation:** The stakeholders from the cities spoke about the rail-trails acting as an alternate mode of non-motorized transportation. They attributed sufficient funding as a driving force for the implementation of the rail-trails in urban settings. The stakeholders from neighborhood groups concentrated on alternate transportation. While addressing the above issues, stakeholders from the design sub-group stressed the importance of forming community and social connections through the rail-trails that serve as nodes. Trail users in the urban settings seemed to use the trails more for health and wellness. This was also confirmed during field observations by the researcher. Rural areas still concentrate on enhancing the recreation features of the rail-trails to attract more users. Suburban trails had limited users and attempts were being made to increase the numbers.

**Impacts on Recreation:** According to the responses to the interviews all stakeholder sub-groups seemed to agree that recreation was the most important factor and health and wellness was next. Each sub-group discussed the increased choices of recreation made available to the users. The responses were all related to exercise and the surface materials used on the trails. The use of naturally existing materials versus concrete was discussed. Links to community was another factor discussed by the stakeholders from the design and city sub-groups.

**Impacts on Health and Wellness:** After recreation, health was stated as the next most important reason for use of the trails. Stakeholders from all three sub-groups spoke about the importance of exercise and safety on the trails.

**Impacts on Historic Preservation:** Though to varying degrees, the concept behind every trail seemed to focus on the historic preservation impacts of rail-trails. While the urban trails were subtle in this aspect, the rural trails considered the value of education from showcasing historic preservation as essential. The suburban trail which was once a rail-trail and is now being converted to a rail-with trail due to a rail line going back onto the site, was putting in efforts to also highlight the history of the old rail as well as the rail-trail that used to exist on the site.

The second objective of the research dealt with impacts (if any) that the underlying design factors have on the North Texas communities. With respect to design, the major finding was the re-use of the existing rail bed and utilizing the natural? existing? aesthetics of the sites. The urban rail-trails were focused on the efficiency of the space, while the suburban and rural areas focused more on the aesthetics of the rail-trails. The researcher attributed these factors to space constraints and user density in the surrounding communities of the rail-trails.

Cost was another important factor that the respondents from rural and sub-urban rail-trails raised. Neither the urban nor suburban rail-trails had any difficulty with raising funds. The federal grants allocated for the development of the trail were the primary source of funds. Various public transportation authorities, in both urban and suburban areas, have realized the value of having trails along abandoned rails. The rural rail-trails on the other hand, seemed to have modest amounts of money for enhancing the trails. Unlike the urban and suburban trails, the lack of public-private partnerships was perceived to be the main cause for less funding.

The aesthetics, ease of converting old rail lines into a trail, ease of commute, location, funding, cost of construction, re-usable pre-existing conditions, uninterrupted open space, views and community connections were the factors that were said to influence the design

considerations. Placements of trailheads were another design factor identified by the researcher. Trailheads in the suburban and rural rail-trails seemed to be located in parks and other landmark locations. The urban trails did not find the need to do this, as each intersection of the trail with a street was treated as a prominent node. This was attributed to the large number of users who were already using the urban trail while the suburban and rural trails had to try to draw more people to begin using the rail-trails.

This research also examined the stakeholders' views on the Rail-to-Trail Conservancy program based on the trails in North Texas. The conclusion on the Rails-to-Trails Conservancy program was that it was a very well developed and highly efficient program, which not only provided free ground data, but also provided technical assistance to any groups of public or private stakeholders interested in revitalizing the abandoned corridors into trails to benefit the surrounding communities.

Based on stakeholders' perceptions of the rail-trails, this research suggests that accessibility to green infrastructure and corridors that connect the users as well as benefit their health are the two primary aspects that are considered crucial for any rail-trail. This was unanimous despite the location, user density, population of the cities, and the lengths of the rail-trails. It was confirmed that people wanted spaces "in their backyards" that they could access and feel safe in. This also confirms the regional reports from groups such as Vision North Texas, who stress the importance of connecting cities and neighborhoods with the help of green nodes and corridors.

The findings of this research reveal that although there are various responses to each factor from the stakeholders, they all seem to affirm the positive impacts of rail-trail conversions in North Texas. This research reveals that although rail-to-trail conversion may have certain obstacles, stakeholders value their adaptation and point out that the benefits to the environment outweigh the hurdles. Findings also suggest a need for an increase in such converted spaces to serve the community and to create a positive statement. No major variations were found in

North Texas rail-trails between the literature, observations by the researcher and interview results from the stakeholders. Also affirmed is the need for designers' perspectives to successfully create spaces that serve the community effectively, which suggests the need for landscape architects to be a part of the design process.

### 5.3 Implications for Landscape Architecture

Reuse and revitalization of old, abandoned rail lines into trails between communities provides numerous opportunities for landscape architects in the region. Landscape architects have the opportunity to work with urban planners, designers and the local governments to design and plan strategies for the future. Health, safety and welfare of the communities have always been the responsibility of landscape architects. They could assume the role of leaders in explaining the benefits of these conversions, not only for the environment but for the surrounding communities.

These conversions provide the landscape architects an opportunity to identify and map the available resources based on the value they offer. This movement of converting unused corridors into greenbelts is just beginning in the North Texas region. Vision North Texas (VNT) is a group of public, private and academic organizations whose focus is to find opportunities and enhance the future of the region. Sixteen counties come under the realm of the VNT. The guiding principles of the VNT 2050 report give high emphasis to active centers, healthy communities and effective mobility options and pedestrian design. In its 2050 report, Vision North Texas stresses the need to reuse space instead of using up agricultural land for development.

With the rate at which cities are growing and the rate of population increase, landscape architects will play a pivotal role in carrying this movement forward. According to this report, because of rapid development in North Texas, the region is expected to lose 900,000 acres of agricultural land, as well as substantial areas of natural habitat (VNT, 2010). Citing these

issues, the VNT report lists a set of 12 guiding principles for the growth and development of the 16 county regions. The 12 principles are Development Diversity, Efficient Growth, Pedestrian Design, Housing Choice, Activity Centers, Environmental Stewardship, Quality Places, Efficient Mobility Options, Resource Efficiency, Educational Opportunity, Healthy Communities and Implementation. Nine of the 12 principles focus on efficient community spaces and resources that are sustainable, pedestrian routes for non-motorized transportation, preservation of significant historic areas and protecting the natural features of the region.

#### 5.4 Suggestions for Future Research

The respondents in this research viewed the rail-trails as areas that provide opportunities for health and recreation. Alternative transportation on the trails was also viewed as beneficial and the stakeholders from urban and suburban trails agreed that users were starting to realize the value of walking to places instead of driving. The reuse of existing rail beds and the rights-of-way were confirmed as the underlying design factors along with site aesthetics. All the respondents said the Rails-to-Trails Conservancy program was a good place to begin research on conversions of rails to trails. What was less clear was the respondents' perception regarding the environmental and historic preservation impacts. Though the respondents said education was a key factor related to historic preservation, not many seemed to be aware of how this was implemented. The two key areas of future research that can be identified from this are the measurable impacts on the environment of different rail-trail communities in the state and the value of the history or culture to the rail-trail communities.

The officials from the cities and the designers who were interviewed were focused on the revitalization of the corridors to improve the economy of the surrounding communities. The next step is to make the users aware that their contributions to the maintenance and improvement of the rails is valuable and will move the revitalization process ahead. The *Vision North Texas Report 2050* also states, the market of the future is more likely to want a different

type of community – one that is more compact, walkable and with natural assets and urban amenities nearby. The amount of impervious surface in the region (buildings and pavement) will double, increasing runoff and affecting water quality in streams, severity of floods and the temperatures experienced by people in the region’s urban areas. More than half of the new households will live in the watersheds of the region’s water supply lakes, affecting the water quality of these lakes and the drinking water they provide” (Vision North Texas, 2010). This information indicates that rail-trails have a direct connection in contributing to the green infrastructure of the region. Incorporating user preferences in the design of rail-trails is another area for future research. The Katy Trail is one good example of the importance of user input and the value of the rail-trail conversions within the North Texas region.

Stakeholders from the neighborhood sub-groups mentioned that political aspects of cities influence changes to the amenities, and this would also be an area for future research. The research focused on rail-trails mentioned in the RTC Program, which spanned eight of the 16 counties of the North Texas region. Studying the possible conversions in the other eight counties might help gather enough information to derive patterns of reuse of existing corridors within North Texas. Similar studies can be conducted in other parts of the region and state, to better understand the development potential within the state of Texas. User perceptions if studied in detail, can lead to understanding of the cultural landscapes of the region.

APPENDIX A

NATIONAL TRAILS SYSTEM ACT 1968

AS THE SUMMARY APPEARED IN (PARTNERSHIP, 2009)



## **Summary**

The National Trails System Act, P.L. 90-543, became law October 2, 1968. The Act and its subsequent amendments authorized a national system of trails and defined four categories of national trails. Since the designation of the Appalachian and Pacific Crest National Scenic Trails as the first two components, the System has grown to include 20 national trails. Now, 30 years after its inception, issues remain regarding funding, quality and quantity of trails, new trail categories, and nationwide promotion to make Americans more aware of the System. This report will be updated as legislative actions occur.

The National Trails System (NTS) was created in 1968 by the National Trails System Act (NTSA).<sup>1</sup> The Act established the Appalachian and Pacific Crest National Scenic Trails and authorized a national system of trails to provide additional outdoor recreation opportunities and to promote the preservation of access to the outdoor areas and historic resources of the nation.

The National Trails System includes four classes of trails:

National Scenic Trails (NST) provide outdoor recreation and the conservation and enjoyment of significant scenic, historic, natural, or cultural qualities;

National Historic Trails (NHT) follow travel routes of national historic significance;

National Recreation Trails (NRT) are in, or reasonably accessible to, urban areas on federal, state, or private lands; and

Connecting or Side Trails provide access to or among the other classes of trails.

## **Background**

During the early history of the United States, trails served as routes for commerce and migration. Since the early 20th Century, trails have been constructed to provide access to scenic terrain. In 1921, the concept of the first interstate recreational trail, now known as the Appalachian National Scenic Trail, was introduced. In 1945, legislation to establish a "national system of foot trails," an amendment to a highway funding bill, was considered by not reported by committee. 2

As population expanded in the 1950s, an eager nation sought better opportunities to enjoy the outdoors. 3 In 1958, Congress established and directed the Outdoor Recreation Resources Review Commission (ORRRC) to make a nationwide study of outdoor national recreation needs. A 1960 survey conducted for the ORRRC indicated that 90% of all Americans participated in some form of outdoor recreation and that walking for pleasure ranked second among all recreation activities. 4 On February 8, 1965, President Lyndon B. Johnson, in his message to Congress on "Natural Beauty," called for the Nation "to copy the great Appalachian Trail in all parts of our country, and make full use of rights-of-way and other public paths." 5 Just 3 years later, Congress heeded the message by enacting the National Trails System Act.

The National Trails System began in 1968 with only two scenic trails. One was the Appalachian National Scenic Trail, stretching 2,160 miles from Mount Katahdin, Maine, to Springer Mountain, Georgia. The second was the Pacific Crest National Scenic Trail, covering 2,665 miles from Canada to Mexico along the mountains of Washington, Oregon, and California. The System was expanded a decade later when the National Parks and Recreation Act of 1978 designated four historic trails with more than 9,000 miles, and another scenic trail, along the Continental Divide, with 3,100 miles. Today, the federal portion of the System consists of 20 national trails (8 scenic trails, 12 historic trails) covering almost 40,000 miles and listed in table 1. In addition,

the Act has authorized 1,000 rails-to-trails conversions, more than 800 national recreation trails, and 2 connecting or side trails.

### **Designation**

As defined in the National Trails System Act, NSTs and NHTs are long distance trails and are designated as national trails by Acts of Congress. NRTs and connecting and side trails may be designated by the Secretaries of the Interior and Agriculture with the consent of the federal agency, state, or political subdivision over the lands involved. Of the 39 feasibility studies requested since 1968, 5 NSTs and 12 NUTs have been designated.

**Table 1. FEDERAL COMPONENTS OF THE NATIONAL TRAIL SYSTEM**

<b>Year</b>	<b>Trail</b>	<b>Public Law</b>
1968	Appalachian NST	P.L. 90-543
1968	Pacific Crest NST	P.L. 90-543
1978	Continental Divide NST	P.L. 95-25
1978	Oregon NHT	P.L. 95-25
1978	Mormon Pioneer NHT	P.L. 95-25
1978	Iditarod NHT	P.L. 95-25
1978	Lewis and Clark NHT	P.L. 95-25
1980	North Country NST	P.L. 96-199
1980	Overmountain Victory NHT	P.L. 96-344
1980	Ice Age NST	P.L. 96-370
1983	Florida NST	P.L. 98-11

1983	Potomac Heritage NST	P.L. 98-11
1983	Natchez Trace NST	P.L. 98-11
1986	Nez Perce (Nee-Me-Poo) NHT	P.L. 99-445
1987	Santa Fe NHT	P.L. 100-35
1987	Trail of Tears NHT	P.L. 100-192
1990	Juan Bautistade Anza NHT	P.L. 101-365
1992	California NHT	P.L. 102-328
1992	Pony Express NHT	P.L. 102-328
1996	Selma to Montgomery NHT	P.L. 104-333

The Secretaries are permitted to acquire lands or interest in lands for the National Trails System by written cooperative agreements, through donations, by purchase with donated or appropriated funds, by exchange, and, within limited authority, by condemnation. The Secretaries are directed to cooperate with and encourage states to administer non-federal trail lands through cooperative agreements with landowners and private organizations for the rights-of-way or through states or local governments acquiring such lands or interests.

### **Organization and Management**

Each national trail is administered by either the Secretary of the Interior or the Secretary of Agriculture under the authority of the National Trails System Act. The National Park Service administers 15 of the 20 trails in the NTS; the Forest Service administers 4 trails; and Bureau of Land Management administers one. The Secretaries are to administer the federal lands,

working cooperatively with agencies managing lands not under their jurisdiction. Management responsibilities vary for the type of trail.

### **National Scenic Trails**

NSTs provide recreation, conservation and enjoyment of significant scenic, historic, natural, or cultural qualities. The use of motorized vehicles on these long-distance trails is generally prohibited, except for the Continental Divide National Scenic Trail which allows: (1) access for emergencies; (2) reasonable access for adjacent landowners (including timber rights); and (3) landowner use on private lands in the right of way, in accordance with regulations established by the administering Secretary.

### **National Historic Trails**

These trails follow travel routes of national historical significance. To qualify for designation as a NHT, the proposed trail must meet all of the following criteria: (1) the route must have documented historical significance as a result of its use and location; (2) there must be evidence of a trail's national significance with respect to American history; and (3) the trail must have significant potential for public recreational use or historical interest. These trails do not have to be continuous, and can include land and water segments, marked highways paralleling the route, and sites that together form a chain or network along the historic route. 6

### **National Recreation Trails**

The Forest Service administers national recreation trails within national forests, while the National Park Service is responsible for the overall administration of the national recreation trails program on all other lands, including coordination of non-federal trails. NRTs are existing trails in or reasonably accessible to urban areas, recognized by the federal government as contributing to the Trails System and are managed by public and private agencies at the local,

state and national levels. 7 There are NRTs which provide recreation opportunities for the handicapped, hikers, bicyclists, cross country skiers, and horseback riders.

### **Connecting and Side Trails**

These trails provide public access to nationally designated trails or connections between such trails. They are administered by the Secretary of the Interior, except that the Secretary of Agriculture administers those trails located on national forest lands.

### **Issues**

Funding. The level of funding continues to be the biggest trail issue. With the exception of the Appalachian and the Pacific Crest NSTs, the National Trails System Act does not provide for sustained funding of designated trails operations, maintenance and development, nor does the Act authorize dedicated funds for land acquisition.

On June 9, 1998, President Clinton signed into law P.L. 105-178, the Transportation Equity Act for the 21st Century (TEA-21). TEA-21 is the 6-year reauthorization of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). 8 ISTEA included the National Recreational Trails Fund Act (16 U.S.C. §§1261-1262, which is separate from the National Trails System Act) and established the National Recreational Trails Funding Program (Recreational Trails Program). The Recreational Trails Program provides funds to the states to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. Trail uses include bicycling, hiking, in-line skating, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or using other off-road motorized vehicles.

## **Extent and Nature of System**

Another issue is the appropriate number of trails. Some ask, "How many national trails are enough?" If the six new long-distance trails considered in the 105th Congress had been added to the National Trails System, the System would extend to every state, except Rhode Island. According to some observers, one of the weaknesses in the NTS, is that "a poor definition exists of which kinds of trails should be part of the System (except for NHT criteria)." 9 While it is relatively easy to add new trails to the System, it has proven more difficult to provide them with adequate staffing and partnership resources.

The 105th Congress considered, but did not enact, legislation to (1) amend the National Trails System by adding "National Discovery Trails" as a new category of long-distance trails (S. 1069, passed Senate), and (2) designate the "American Discovery Trail" (ADT) as the nation's first coast-to-coast National Discovery Trail (H.R. 588). Some have questioned the need for a new category of trails. The ADT, as proposed, would connect several national scenic, historic, and recreation trails, as well as many other local and regional trails.

Finally, some trails supporters have advocated a nationwide promotion to inform the public about the National Trails System. They assert that most Americans are unaware of the Trails System and the breathtaking scenes and journeys into the past which can be experienced along the national scenic and historic trails. However, a significant increase in the number of trails users could overwhelm present staffing and resources.

## **References:**

1. Act of Oct 2, 1968; PL. 90-543, 82 Stat. 919, 16 U.S.C. §§ 124I-51.
2. Donald D. Jackson, "The Long Way 'Round," *Wilderness* vol. 51, no. 181 (summer, 1988): 19-20.

3. Outdoor Recreation Resources Review Commission. Outdoor Recreation for America. Washington, D.C. January 1962. p.34.
4. Ibid., p 1.
5. Congressional Record, vol. 3, Feb. 8, 1965), p. 2087.
6. <http://www.nps.gov/planning/trails/newsletter/news1.htm>.
7. [http://www.nps.gov/pub\\_aff/naltrail.htm](http://www.nps.gov/pub_aff/naltrail.htm).
8. P.L. 102-240.
9. Steven Elkinton, "How the National Trails System Has Changed Since 1968," Pathways Across America, (spring 1998): 10.

*This document was produced by the Congressional Research Service. THE NATIONAL COUNCIL FOR SCIENCE AND THE Environment (CNIE) has made these reports available to the public at large, but the CRS is not affiliated with the CNIE or the National Library for the Environment. Committee for the National Institute for the Environment 1725 K Street, NW, Suite 212, Washington, D.C. 20006-1401 Phone (202) 530- 5810 [cnie@cnie.org](mailto:cnie@cnie.org) Fax (202) 628-4311 (December 11, 1998)*



APPENDIX B

EMAIL SAMPLE REQUESTING INTERVIEW

Dear Mr. / Mrs. XXX:

My name is Bhavana Kidambi. I am a graduate student in the Program in Landscape Architecture at The University of Texas at Arlington. I am conducting research for my Master of Landscape Architecture thesis titled "Assessing the Impacts of Converted Rail-Trails in North Texas Communities: Learning from the Stakeholders' Perspectives."

I would like to request your participation in my thesis research via a telephone interview or a face-to-face interview. The purpose of this research is to evaluate the stakeholders' perspectives on the impacts of rail-trails in North Texas. The interview will take approximately 30 minutes of your time.

I will be available to conduct the interview at your convenience. The abstract of the thesis is attached along with the email in order to understand the subject of the research. If you would like to participate, please reply to either of the email addresses or call the phone number listed below to schedule the interview. Before agreeing to participate you will be given an Informed Consent form. In case of a phone interview, I will read the Informed Consent information over the phone. This form will explain the study in further detail. Participation in the study is voluntary.

Thank you for your consideration. Your support and participation are greatly appreciated.

Sincerely,

Bhavana Kidambi

Graduate Student

Program in Landscape Architecture

The University of Texas at Arlington

Phone: (404) 384- 4312 (cell)

Faculty Advisor,

Dr. Taner R Ozdil

Assistant Professor, Program in Landscape  
Architecture

University of Texas at Arlington

Phone: (817) 272- 5089 (Office)

Email: [bhavanakidambi@gmail.com](mailto:bhavanakidambi@gmail.com) or [bhavana.kidambi@mavs.uta.edu](mailto:bhavana.kidambi@mavs.uta.edu)

APPENDIX C

TELEPHONE SCRIPT REQUESTING INTERVIEW

Dear Mr. / Mrs. XXX,

My name is Bhavana Kidambi. I am a graduate student in the Program in Landscape Architecture at The University of Texas at Arlington. I am conducting research for my Master of Landscape Architecture thesis entitled "Assessing the Impacts of Converted Rail-Trails in North Texas Communities: Learning from the Stakeholders' Perspectives."

I would like to request your participation in my thesis research via a telephone or a face-to-face interview. The purpose of this research is to evaluate the stakeholders' perspectives on the impacts of rail-trails in North Texas. The interview will take approximately 30 minutes of your time.

Is this a good time to talk?

(If yes) Perfect. I will go over the study in further detail so that you may make an informed decision to participate.

The purpose of this research is to study conversion of North Texas rail trails adopted by the Rails-to-Trails Conservancy in order to understand their impacts and also to evaluate the Rails-to-Trails Conservancy.

The interview will take approximately 30 minutes. You will be asked questions and your answers will be recorded with an electronic device (digital recorder.) Your name and any items of identification will be removed and replaced with an alphabetic coding system.

There is no direct benefit as a result of your participation, but you will be contributing to generate knowledge on rail to trail conversions in North Texas.

There is no compensation for participating in this study. There are no foreseeable risks or discomforts for participating in this study. There are no potential health risks in this study. There are no alternative procedures and/or treatments offered when participating in this study; however, you are free to quit or decline involvement at any moment. Withdrawal from the study can happen at any time without any consequences.

**Confidentiality**

If, in the unlikely event, it becomes necessary for the Institutional Review Board to review your research record, then The University of Texas at Arlington will protect the confidentiality of those records to the extent permitted by law. Your research records will not be released without your consent unless required by law or a court order. The data resulting from your participation may be made available to other researchers in the future for research purposes not detailed within this consent form. In these cases, the data will contain no identifying information that could associate you with it or with your participation in any study. Questions about this research or your rights as a research subject may be directed to Dr. Taner R Ozdil at (817) 272-5089. You may contact the Chairperson of UT Arlington Institution Review Board at (817) 272- 3723 in the event of a research related injury to the subject. Do you agree to participate in this research study?

Would you like to participate in the study?

Time:

Date:

Signature: \_\_\_\_\_

Bhavana Kidambi

(If yes) I will then be leading into the informed consent speech and interview. You will also be presented with information relevant to the Rails to Trails Conversions before the interview starts.

(If no) OK, when would a good time to be to schedule the interview? I will go over the study in further detail at that time so that you can make an informed decision to participate and you will be presented with information relevant to the Rail to Trail Conversions ahead of time as part of the informed consenting process.

(If the participant does not know when a good time will be) "Please feel free to contact me at 404-384-4312 or [bhavanakidambi@gmail.com](mailto:bhavanakidambi@gmail.com) to schedule your interview; and after agreeing to

participate, you will be presented with information relevant to the Rails to Trails Conversions ahead of time as part of the informed consenting process. I look forward to hearing from you!

Thank you for your time.

APPENDIX D

SAMPLE PHONE SCRIPT

Hello Mr. / Mrs. XXX,

Hi, this is Bhavana Kidambi; I am a graduate student at The University of Texas at Arlington. You are being asked to participate in a research study. I am going to go over the study in detail so that you can make an informed decision to participate. Your participation is voluntary. Please ask questions if there is anything you don't understand.

The purpose of this research is to evaluate the stakeholders' perspectives on the impacts of rail-trails in North Texas. The interview will take approximately 30 minutes. You will be asked questions and your answers will be recorded with an electronic device (digital recorder.) Your name and any items of identification will be removed and replaced with an alphabetic coding system.

There is no direct benefit as a result of your participation, but you will be contributing to generate knowledge on rail to trail conversions in North Texas.

There is no compensation for participating in this study. There are no foreseeable risks or discomforts for participating in this study. There are no potential health risks in this study. There are no alternative procedures and/or treatments offered when participating in this study; however, you are free to quit or decline involvement at any moment. Withdrawal from the study can happen at any time without any consequences.

**Confidentiality**

If, in the unlikely event, it becomes necessary for the Institutional Review Board to review your research record, then The University of Texas at Arlington will protect the confidentiality of those records to the extent permitted by law. Your research records will not be released without your consent unless required by law or a court order. The data resulting from your participation may be made available to other researchers in the future for research purposes not detailed within this consent form. In these cases, the data will contain no identifying information that could



associate you with it or with your participation in any study. Questions about this research or your rights as a research subject may be directed to Dr. Taner R Ozdil at (817) 272-5089. You may contact the Chairperson of UT Arlington Institution Review Board at (817) 272- 3723 in the event of a research related injury to the subject. Do you agree to participate in this research study?

Time:

Date:

Signature: \_\_\_\_\_

Bhavana Kidambi

APPENDIX E  
INFORMED CONSENT

---

**INFORMED CONSENT**

---

**PRINCIPAL INVESTIGATOR NAME:**

Bhavana Kidambi

**TITLE OF PROJECT:**

ASSESSING THE IMPACTS OF CONVERTED RAIL-TRAILS IN NORTH TEXAS  
COMMUNITIES: LEARNING FROM THE STAKEHOLDERS' PERSPECTIVES

**INTRODUCTION**

*You are being asked to participate in a research study. Your participation is voluntary. Please ask questions if there is anything you do not understand.*

---

**PURPOSE:**

The purpose of this research is to evaluate the stakeholders' perspectives on the impacts of rail-trails in North Texas.

**DURATION:**

Approximately 30 minutes.

**PROCEDURES:**

You will be asked questions and your answers will be recorded with an electronic device (digital recorder) and your name and any items of identification will be removed and replaced with an alphabetic coding system. You will be provided with a copy of the abstract of the research. The questions that will be asked are related to the Rails to Trails Conversions with respect to the trail in discussion, in order to understand the impacts these conversions have had after the trail.

**POSSIBLE BENEFITS:**

There is no direct benefit as a result of your participation, but you will be contributing to generate knowledge of the environmental impacts of rails to trails conversions from the point of view of stakeholders.

**COMPENSATION:**

There is no compensation for participating in this study.

**POSSIBLE RISKS/DISCOMFORTS:**

There are no foreseeable risks or discomforts for participating in this study. There are no potential health risks in this study.

**ALTERNATIVE PROCEDURES/TREATMENTS:**

There are no alternative procedures and/or treatments offered when participating in this study; however, you are free to quit or decline involvement at any moment.

**WITHDRAWAL FROM THE STUDY:**

Withdrawal from the study can happen at any time without any consequences.

**APPROVED**

APR 11 / 2011

Institutional Review Board

16 October 2007

1

**NUMBER OF PARTICIPANTS:**

We expect 25 (*twenty-five*) participants to enroll in this study.

**CONFIDENTIALITY:**

All interviews will be recorded with a digital audio recording device. Your name will be removed and it will receive a code with an alphabetic code system. A copy of the records from this research will be kept in room 417 in the School of Architecture at The University of Texas at Arlington, for at least three years after the completion of this study. Eventually, the results of this research may be presented at meetings and/or conferences or published without naming the participants.

**If in the unlikely event it becomes necessary for the Institutional Review Board to review your research records, then The University of Texas at Arlington will protect the confidentiality of those records to the extent permitted by law. Your research records will not be released without your consent unless required by law or a court order. The data resulting from your participation may be made available to other researchers in the future for research purposes not detailed within this consent form. In these cases, the data will contain no identifying information that could associate you with it, or with your participation in any study.**

**CONTACT FOR QUESTIONS:**

Questions about this research may be directed to Bhavana Kidambi at (404) 384-4312 or Dr. Taner R Ozdil at (817)272-5089. For your rights as a research subject you may contact the chairperson of the UT Arlington Institutional Review Board at (817)-272-3723.

**CONSENT:**

**Signatures:**

**As a representative of this study, I have explained the purpose, the procedures, the benefits, and the risks that are involved in this research study:**

\_\_\_\_\_  
Signature and printed name of principal investigator or person obtaining consent Date

By signing below, you confirm that you have read or had this document read to you.

You have been informed about this study's purpose, procedures, possible benefits and risks, and you have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time

You voluntarily agree to participate in this study. By signing this form, you are not waiving any of your legal rights. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled, and you may discontinue participation at any time without penalty or loss of benefits, to which you are otherwise entitled.

**APPROVED**  
APR 07 2011  
Institutional Review Board

SIGNATURE OF VOLUNTEER

DATE

**APPROVED**

APR 07 2011

Institutional Review Board

16 October 2007

3

APPENDIX F

INTERVIEW QUESTIONS

First, the research focuses on the environmental, recreational, transportation and historic preservation impacts of the rail to trail conversions in North Texas from the point of view of the stakeholders

- What environmental impacts has the rail-trail (name of the trail) had on the community?
- What transportation impacts has the rail-trail (name of the trail) had on the community?
- What recreational impacts has the rail-trail (name of the trail) had on the community?
- What health and wellness impacts has the rail-trail (name of the trail) had on the community?
- What impacts on historic preservation has the rail-trail (name of the trail) had on the community?

Second, the research focuses on the underlying design considerations of the rail-trails.

- What were the determining factors in selecting the trail corridor with respect to its previous use?
- How did these factors impact the design of the trail?

This research also examines the stakeholders' views on the Rail-to-Trail Conservancy program in North Texas based on the trails.

- Are you familiar with the Rails-to-Trails Conservancy program?
- What other features do you think are notable concerning the impacts of rails to trails in North Texas?

APPENDIX G

APPROVAL LETTER





Office of Research Administration  
Box 19188  
202 E. Border St., Suite 214  
Arlington, Texas  
76019-0188  
  
T 817.272.3723  
F 817.272.1111  
  
<http://www.uta.edu/research>  
[Expertise at UT Arlington](http://www.uta.edu/expertise)  
<http://www.uta.edu/expertise>

April 08, 2011

Bhavana Kidambi  
Dr. Taner Ozdil  
School of Architecture & Environmental Design  
Box 19108

**Protocol Title:** *ASSESSING THE IMPACTS OF CONVERTED RAIL-TRAILS IN NORTH TEXAS COMMUNITIES: LEARNING FROM THE STAKEHOLDERS PERSPECTIVES*

**RE:** Exempt Approval Letter

**IRB No.:** 2011-0366e

The UT Arlington Institutional Review Board (UTA IRB) Chair (or designee) has reviewed the above-referenced study and found that it qualified as exempt from coverage under the federal guidelines for the protection of human subjects as referenced at Title 45 Part 46.101(b)(2). You are therefore authorized to begin the research as of April 07, 2011.

Please be advised that as the principal investigator, you are required to report local adverse (unanticipated) events to this office within 24 hours. In addition, pursuant to Title 45 CFR 46.103(b)(4)(iii), investigators are required to, “promptly report to the IRB any proposed changes in the research activity, and to ensure that such changes in approved research, during the period for which IRB approval has already been given, are **not initiated without IRB review and approval** except when necessary to eliminate apparent immediate hazards to the subject.”

All investigators and key personnel identified in the protocol must have documented Human Subject Protection (HSP) Training or *CITI Training* on file with this office. The UT Arlington Office of Research Administration Regulatory Services appreciates your continuing commitment to the protection of human research subjects. Should you have questions or require further assistance, please contact Robin Dickey by calling (817) 272-9329.

Sincerely,

**Patricia Turpin**

Digitally signed by Patricia Turpin  
DN: o=The University of Texas System, ou=The University of Texas at Arlington CA, ou=www.verisign.com/repository/CPS Incomp. by Ref., LIAB.LTD(c)99, cn=Patricia Turpin, email=pturpin@uta.edu  
Date: 2011.04.13 16:47:38 -05'00'

Patricia G. Turpin, PhD, RN, NEA-BC  
Clinical Associate Professor  
Arlington IRB Chair

BeAMaverick™  
UT

APPENDIX H

SAMPLE TRANSCRIPTION

***What environmental impacts has the rail-trail had on the community?***

Well...umm...as a rail-trail, I'd say it has had a very positive impact. It's offered a non-motorized, an active transportation connection all the way through the southern part of XXX on what was just an abandoned rail line.

***Is there any particular environmental impact that comes to mind or is it just a large scale positive impact?***

Well...I can't think of any negative impacts, I will say that now that they are in the process of re-building the train line, there are probably some additional environmental impacts from relocating the trail over to the side and I know that's been challenging for them, but they did commit to that in the beginning.

***What transportation impacts has the rail-trail had on the community?***

I think very positive and I think even more positive given that they are putting in the commuter train. Because what this rail-trail does is increase the catchment area for each of the stations.

***So there is no particular statistic associated with transportation?***

I don't know of any for this particular community. But generally, it is considered fairly normal for some people to convert to using the trail to make their trail system alternative to driving especially if it is convenient for them and for their destination.

***What recreational impacts has the rail-trail had on the community?***

I think very positive. I do know that the trail space is less costly to maintain and operate than traditional park space. So, the park department benefits from having more active recreation although it's actually passive recreation. But we refer to it as active transportation meaning physically active.

***What recreational impacts has the rail-trail had on the community?***

I think very positive too. I am pretty involved with a state wide group that is focusing on the physical activity as a part of the daily routine, and its facilities like the XXX rail-trail that make it possible for people to incorporate physical activity into their daily routines.

***What historic preservation impacts has the rail-trail had on the community?***

Not that I am aware of.

***When you designed the trail, what purpose was it mainly designed for?***

It was a recreational and transportation alternatives trail. We knew at the time that there was some chance that it would be converted back to the rail line and the city had a fairly limited budget. So what we did was focus on the roadway approaches and most of the capital costs were creating the concrete approaches and the entry points as formal entries. The trail itself was just a reuse of the roadbed.

***Underlying design considerations of the rail-trail:***

***What were the determining factors in selecting the trail corridor with respect to its previous use?***

I think just the fact that it was a connected corridor or a contiguous corridor. It is fairly unique to have an extended corridor like that available and of course the city was...you know it chose to utilize it. But they arranged with the transportation agency or the rail authority.

***How did these factors impact the design of the trail?***

Well, we had to design what we could work with. We had limited budget and the important thing was making the distance. Now there was a short fall at the north end with a small drainage way that they could not have a sufficient budget for a bridge and there seemed to be some adjacent landlord resistance to putting in a bridge. I think at this point, they are installing the bridge now...I think to make that connection on into downtown without having to get off the trail.

***Were there any remnants from the rail lines which you tried to preserve?***

No. There were none that were evident other than downtown XXX was just at the very north end of the trail-which is not far from where they are creating the new station and the old building-the old rail stop I have to say was a freight stop than a passenger stop and it was pretty basic. And I think it was in pretty bad shape.

***Do people who go onto the trail know it was once a rail-line?***

I think the signage probably implies that. It's fairly evident that it was a rail line. Personally I would like to have seen a little more budget for undulating the land as opposed to having a straight line as a rail-trail. But that's just me personally. As a designer, I would rather follow land form and take away from that berm.

***Has the flora and fauna changed and gotten better from the time that the trail was in there?***

I think there were probably some tree canopies before. I'm a little concerned that with the new train line coming in now, there has been quite a bit of pruning and clearing since the rail line is going back in. So, while it was pretty nice and pastoral during the time that it was just a rail-trail, it's probably not going to be quite so pastoral once it becomes an active rail line.

***Are you familiar with the Rails-to-Trails Conservancy program?***

You bet.

***Can you give me a brief about what the program means?***

They are a technical assistance group and a national champion for those kinds of projects that involve conversion of the old corridors. They were created at a time when many of the nation's rail lines were being dismantled because the trucking industry was so effective that they were making more trips on the roads. But the pendulum seems to have swung back the other way and now, the freight lines are kind of becoming more active again plus there are transit lines that are interested in using many of those corridors-like DART does that and the

DCTA. So, it was great to have them as a resource and they continue to be a catalogue and a library of facilities around the country. They also provide some safety studies.

***Some of the rail-trails are not listed on the RTC website. Why do you think that is?***

That could be because they didn't involve technical assistance directly from the RTC. Cotton belt and the Collieville rail line at Hurst, we did not involve the RTC, so they are probably just not aware of it. They basically are a for-hire organization and can be costly when they get involved. It's like hiring an attorney to help handle the disposition of the right-of-way and many times the city agencies or the agencies that are doing the transaction have the ability to do it on their own.

***Do you know of any other programs that compare to the RTC?***

Not that I am aware of. The National Parks Service has a rivers, Trails and conservation assistance program which actually have a much broader mission and I would say they are actually better at facilitating the community involvement and developing the community visions than the RTC.

***What other features do you think are notable concerning the impacts of rails to trails in North Texas?***

I think the transportation alternatives that they provide, that will eventually become quite important as development patterns shift, as the rail transit begins to get expanded out and as the developments become more concentrated on the station areas that those rail-trail connections-not just rail-trail connections but all the corridors across the region will become quite important as transportation alternatives.

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## BIOGRAPHICAL INFORMATION

Bhavana Kidambi received her Bachelors' Degree in Architecture from Church of South India Institute of Technology, Secunderabad, India in May 2008. She completed her Master of Landscape Architecture degree at The University of Texas at Arlington in December 2011.

During her masters' program, Bhavana worked as a Research Assistant for Dr. Taner R. Ozdil in the School of Architecture where she worked on Transit Oriented Development as part of research for the North Central Texas Council of Governments. She also interned at the Office of Sustainability at UTA where she was responsible for the communications and outreach work.

Bhavana worked as a Summer Sustainability Intern at Yale University in the summer of 2011 where she was responsible for designing a pilot area with sustainable land management goals. She also served as the Vice President of SASLA for one year.