



# GREAT ESCAPEWAY

Connecting North Dakota State University to Downtown Fargo

# GREAT ESCAPEWAY

CONNECTING NORTH DAKOTA STATE UNIVERSITY TO DOWNTOWN FARGO

A Design Thesis Submitted to the  
Department of Architecture and Landscape Architecture  
of North Dakota State University

By


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In Partial Fulfillment of the Requirements  
for the Degree of  
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## Thesis Booklet Disclaimer

Great Escapeway: Connecting North Dakota State University to Downtown Fargo

This thesis booklet was prepared by Robert M. Latham as an undergrad assignment at North Dakota State University for academic purposes. The content expressed in the thesis booklet was developed over two semesters, LA 563 and LA572. Throughout these two semesters the project scope has changed slightly due to further project development and design. As of present, the final solution is a reflection of the project development and design. Therefore, this thesis booklet outlines the process used to derive at the final solution.

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# Chapter 1: Introduction

## Abstract

The primary focus of this thesis is to demonstrate how the Great Northern Rail Corridor, located in Fargo, North Dakota, can be repurposed into a greenway that connects North Dakota State University and its students with Downtown Fargo.

This site proposal accommodates bicyclists and pedestrians by providing users with a pragmatic and scenic greenway. The proposal's result, according to its author, is a design that provides not only a safe passage between the main and downtown campuses, but a community recreational facility, offering cycling, walking, cross-country skiing, running, ice skating and picnicking.

Keywords: Fargo, downtown, connection, college, community railway, repurpose, greenway, bicycle, pedestrian, healthy, lifestyle

## Statement of Intent

Based on the knowledge that the City of Fargo may reroute the Great Northern Railway, I propose to repurpose the former railway as a multifunctional greenway. By creating a greenway masterplan and then illustrating details of the plan, I will demonstrate the potential benefits of a greenway to Fargo and North Dakota State University. Among these benefits is a safe passageway for students and citizens of Fargo and a year-round recreational facility offering, in addition to cycling and walking, cross-country skiing, running, ice skating, and picnicking.

## Chapter 2: Literature Review

## Project Typology

Greenway: A linear corridor planned, designed and managed to provide multiple benefits to water quality, habitat, recreation and transportation.

## Research Questions

Who will use the site? Who will gain the most from it?

What design techniques can be used to minimize conflict between different trail users? (cyclists, runners, pedestrians, etc.)

Which groups will be responsible for maintaining the greenway once it is built?

How will this project be beneficial to both students of North Dakota State University as well as residents of the Fargo-Moorhead community?

What percentage of NDSU students are living downtown?

How does placemaking affect the design of a greenway?

How can wayfinding be utilized as a tool to enhance the identity of a greenway?

How a greenway is made effective during the winter months?

How will North Dakota State University's proposed bicycle-share program be integrated into a greenway in North Fargo?

Who will maintain the greenway after its completion?

Who will propose and advocate for improvements to the greenway in the foreseeable future?

## Research Hypothesis

Based on the knowledge that the City of Fargo may reroute the Great Northern Railway, I have proposed to repurpose the railway as a multi-functional greenway, connecting North Dakota State University via Johnson Park with the 7th Street intersection in Fargo, North Dakota. A greenway in this location will strengthen the community by promoting year round recreational activity. This will allow for students to safely travel between North Dakota State University's main and downtown campuses. A multi-functional greenway will unify a diverse group of students and residents by accommodating for runners, cyclists, and pedestrians in a way that invites a variety of activities while minimizing conflict between users.

I do not anticipate the greenway only being used by students and faculty of NDSU, rather I envision it being utilized by the entire community. One benefit I foresee is strengthening the bond between students and non-students. In addition, there is an opportunity to expand NDSU's bicycle share program into the heart of downtown via the greenway.

I anticipate the formation of a greenway coalition, similar to the Midtown Greenway Coalition, which focuses on maintenance and discussing the continued improvement of the greenway. The coalition will likely include a mix of collegiate, city, and neighborhood representatives. This will provide people with a reason to unite over a cause to improve the quality of life in Fargo, North Dakota.

## Critical Evaluation of Cited Papers

Rails to Trails: The Great Northern Railway is the northernmost transcontinental railroad route in the United States. Formed in 1986, the Rails to Trails Conservancy promotes an interconnected trail system throughout the United States using abandoned railroad lines. In 1993 this nonprofit charity organization published Trails for the Twenty First Century to offer technical assistance, and public education in making the conversion of rails to trails. To date, over 13,150 miles of rail throughout the United States have been converted to trails.

The Midtown Greenway is not the first “rails to trails” project to have been completed. Cities have been repurposing rail corridors for many years. It is to no surprise that these corridors eventually become ideal candidates for being repurposed into greenways. Since the industrial revolution rail has been a leading form of transportation for goods and services. In recent decades, it is becoming less crucial that railroads travel through the middle of cities. So as rail traffic slows, cities around the country continue to conduct studies to show the benefits of repurposing railroad corridors into multi-functional greenways.

Promoting Healthy Lifestyles: As people continue to strive for healthier lifestyles it is becoming more important that city officials work to see there is access to well-connected trail networks. Urban trail networks provide safe passageways for cyclists, runners, and walkers to travel from point “A” to point “B”. In addition, trails provide ideal spaces for people to exercise therefore encouraging people to get outside, live healthier lives, and interact with their neighbors.

Greenways are generally at their peak use during warmer months. However, it is anticipated that winter will also become an active greenway season. It is critical to consider design solutions that encourage public use throughout the winter since it accounts for 8 months out of the year. Year-round bicycle commuting is growing in popularity. Greenways also offer opportunities for cross-country skiing and other winter activities. Winter use brings different operational needs such as grooming, bicycle trail plowing and unique public safety issues. The operational needs of various winter uses needs to be incorporated along with planning for those issues.

Multiple nodes along the greenway are excellent locations for people to meet, thus becoming spaces for public art and cultural events such as skating in the winter. There will need to be spaces that are iconic so that when people are using the greenway they are able to discover something new each time they visit. When there is something that captures a visitor’s attention they are going to remember it and more importantly they will likely want to come back.

Design Considerations: There are many things to consider when designing a successful greenway. For instance, create an interconnected system of greenways with a natural design signature that improves water quality, enhances wildlife habitat, provides first-class linear recreation and increases mobility. A few objectives that an urban greenway plans to accomplish are:

- Connectivity in the Urban Realm
- An increase in the popularity of running / jogging
- Mitigating conflict between cyclists, runners, and pedestrian
- Developing pedestrian corridors and nodes in an urban realm
- Way-finding
- Effect use of public transportation systems
- Develop a sense of place
- Connect, enhance and interpret natural habitat
- Create wildlife corridors to expand wildlife range
- Filter and store storm water that enters greenways
- Create a safe, amenity-rich trail network that meets the needs of multiple users in all seasons
- Create an inviting, connected, memorable and nature-based recreation system

Trail Running: Surveys show that over the past decade there has been an increase in running among the United States population. An industry survey says general U.S. participation has seen an increase of 70 percent over the past decade; shoe sales have also hit new highs in units and dollars. Signifying there are economic benefits to this current running boom in addition to many health benefits.

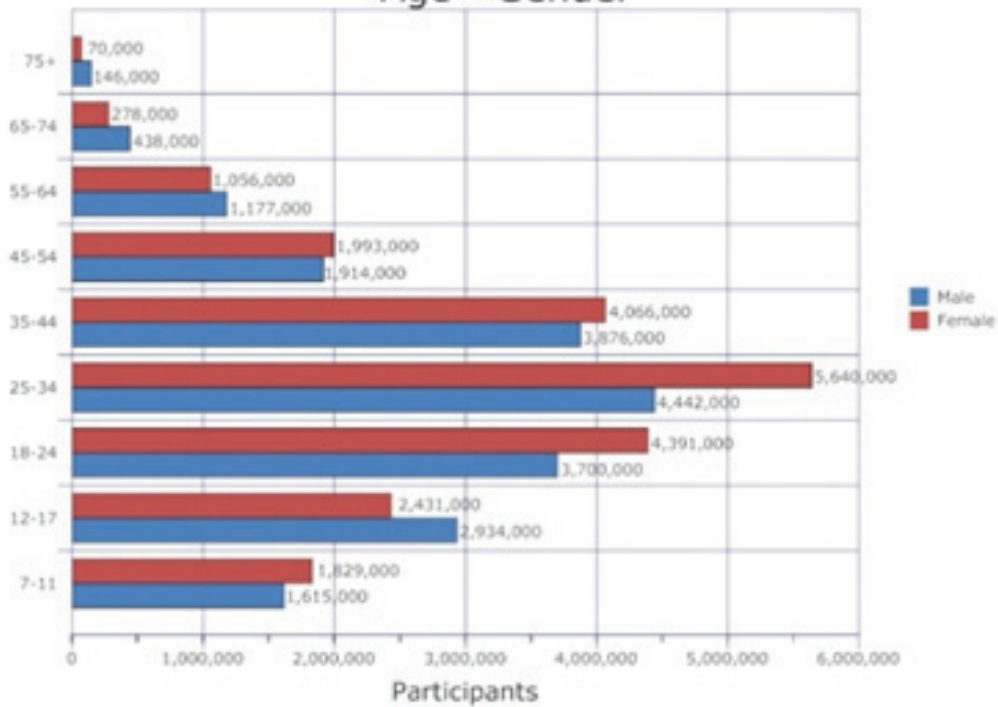
According to the National Sporting Goods Association (NSGA), running/jogging continues to show strong and consistent growth annually as total running participation (ran at least 6-plus days/year) was up 2.5% overall in the last year. The Sports & Fitness Industry Association (SFIA) survey also indicates similar growth for the general running population as well as explosive growth in the category of adventure racing as was reported in Running USA's 2014 State of the Sport Part I: Non-Traditional Events.

Since 2004, total running/jogging participation (run/jog 6+ days/year) has increased 70% to a record of nearly 42,000,000, according to the NSGA. Females in the 25-34 age group category lead participation totals with more than 5.6 million in 2013, and since 2012, according to NSGA, more women run than men in the USA (both genders are at record highs). See table and map shown below for a further breakdown of running/jogging participation in 2013.

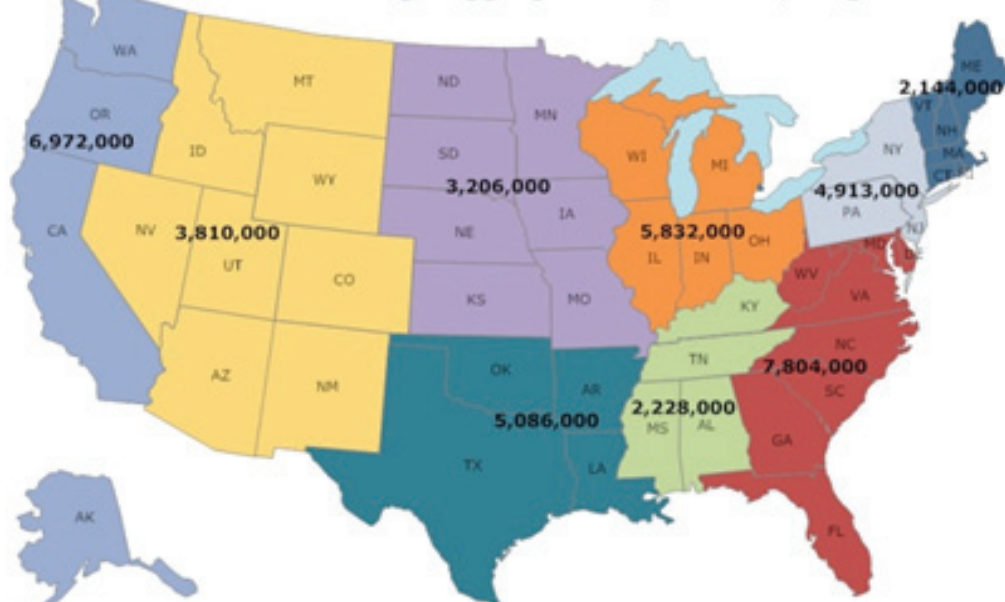


As previously mentioned, the growth in running has a direct relationship with a boost in the sales of running shoes and apparel. The National Sporting Goods Association's (NSGA - 2) "Sporting Goods Market Edition 2014" reports that running/jogging shoe sales totaled \$3.09 billion in 2013, up 2% in total dollars from the previous year (\$3.04 billion in 2012), while units rose to a record 46.25 million from 44.62 the previous year. For 2014, sales are projected to grow an additional 7% to approximately \$3.3 billion. This is all very promising because it shows that when running increases in popularity there is also an economic benefit. Likewise, it also means that there will inevitably be a need to improve running infrastructure in our cities and neighborhoods to meet the growing demand. For instance, as more people run on a regular basis, cities will be faced with the task of providing adequate trails and safe passage ways to accommodate for an increasing amount of runners.

### 2013 Running/Jogging Participation Age - Gender



### 2013 Running/Jogging Participation by Region



No one can argue the popularity of running or jogging. The next step is to identify the best locations, within city limits, that are suitable for trail development. The goal of this is to ensure that trails are accessible and convenient for its users. There are many cities throughout the United States that have a network of connected trails and of those cities; Minneapolis boasts one of the most extensive trail networks. The Grand Rounds Scenic Byway, shown on the map below, is a continuous course of paved pathways. It encompasses more than 50 miles of parks, parkways, bike paths, and pedestrian paths that encircle the byway's host city, Minneapolis. Among the many urban landmarks and destinations along this trail network, connections are made to both the Midtown Greenway and the Chain of Lakes.



Pictured above is a map of the Grand Rounds Scenic Byway in Minneapolis, Minnesota.



## Case Study

**Project:** Midtown Greenway

**Location:** Beginning at the Intersection of West 31st Street South and ending at the Mississippi River in Minneapolis, Minnesota.

**Year Built:** 1912

**Architects:** Loweth, Charles Frederick / Lothholz, H.C.

**Consultant/Designer:** Jim Graebner

The Midtown Greenway is a 5.5-mile long former railroad corridor in South Minneapolis with bicycling and walking trails. The Greenway consists of two one-way bike lanes and one two-way walking path, though they are combined in some places with space constrictions. Because of the historic nature of the corridor, it cannot easily be widened or modified. The greenway lies in the former Milwaukee railroad corridor along 29th Street. This corridor had been abandoned west of Hiawatha Avenue but is still active east of Hiawatha as part of the Minnesota Commercial Railway. The railway was originally built between 1879 and 1881; however, as traffic increased, the city of Minneapolis mandated a trench be built between Hiawatha and Irving avenues in 1910. The trench, bridges, and retaining walls were evaluated in 1989 as part of the Reinforced-Concrete Highway Bridges in Minnesota and then listed on the National Register of Historic Places as the Chicago, Milwaukee and St. Paul Railroad Grade Separation. In 1993, the railroad property was purchased by the Hennepin County Regional Railroad Authority. This purchase would ultimately lead to the creation of the award winning Midtown Greenway.

To the West the greenway connects directly to the Southwest LRT Trail, named after the future Southwest Corridor with which it will share right-of-way. It also connects to the Kenilworth Trail (which in turn connects to the Cedar Lake Trail) providing access to downtown Minneapolis and the western suburbs. To the East, the greenway connects to West River Parkway, a part of the Grand Rounds Scenic Byway.

In between, there is access to the Chain of Lakes, as well as the Light Rail Trail, connecting the Greenway to the Downtown East community. In addition to improving the connectivity of Minneapolis there are many facilities to be found along the trail. This includes the Freewheel Bike Center, consisting of a bike store and repair shop, as well as shower and locker facilities, has been open since May 2008 at the Midtown Exchange near where the Greenway intersects Chicago Avenue. According to the Minneapolis Bicycle and Pedestrian Count Report of 2011, bicycle traffic on the Greenway has increased 261% between 2003 and 2011. This statistic is a good indicator of the success of the greenway. In that it shows the increasing popularity of this regional amenity.





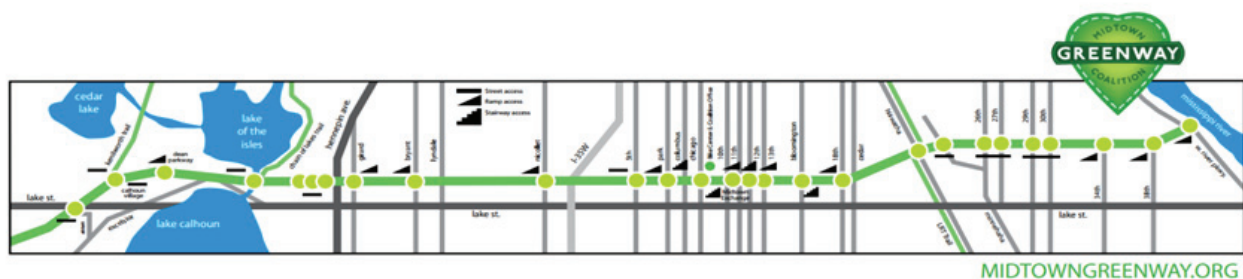
Phase One of the Greenway opened in August 2000, starting at the intersection of 31st Street South and Chowen Avenue South, just inside Minneapolis city limits. Running between Lake of the Isles and Lake Calhoun, the Greenway enters the 29th Street trench near Hennepin Avenue. Phase Two opened in November 2004, running from 5th Avenue to Hiawatha Avenue. The rest of the Greenway to the Mississippi River opened as Phase Three in September 2006. In fall of 2007, the new Martin Olav Sabo Bridge was opened by Hennepin County and the city as Phase Four, eliminating a dangerous seven-lane at-grade crossing at Hiawatha Avenue.

Since its creation the Midtown Greenway has been very successful. It was recently featured in Rails to Trails magazine and is said to be the best urban bicycle trail in the United States. Karen Asp, Rails to Trails writer, focuses on the large number of cyclists that utilize the greenway for both commuting and recreation no matter what the weather is. It is great to know that when winter temperatures average 13 degrees in January people are not discouraged from riding their bicycles to work. As a result, the city responds by keeping the trail plowed throughout the winter.

Among other things, the greenway is set well below street level making it a suitable study for accessibility. For instance, the Great Northern Railway in Fargo, North Dakota is set above street level in a couple of locations meaning there is something to learn about how people access the Midtown Greenway and how this may be applied to a greenway in Fargo, North Dakota.

The continuation of community involvement is important to ensuring the greenway's success. The Midtown Greenway Coalition is the grassroots organization that advocated for the creation of the greenway and today it is a non-profit organization that works to protect and enhance the greenway for its users. The importance of providing information about proper trail etiquette cannot be stressed enough. When users are properly informed of how to conduct themselves on the trail, conflicts are mitigated. For instance, when people are traveling at different speeds it is important for each individual to be aware of their surroundings, as well as, making their intentions clear. The coalition is continuing to work towards improving all aspects of the greenway such as safety, accessibility, and diversity of uses. They are continuing to explore the possibility of introducing a streetcar to the greenway as part of the Southwest corridor connecting Minneapolis to the Western suburbs.

The Midtown Greenway is an important piece of the trails and parks system in Minneapolis. The City of Fargo does not currently have a network of trails that is anywhere near as extensive as what is found in the Twin Cities. By advocating for the addition of a greenway in Fargo, North Dakota I am demonstrating that if this project proves successful it will spur the future development of a well-connected system of parks and trails.



## Chapter 3: Methodology

## Approach to Research

The selected site is located in Fargo, North Dakota currently on land owned by Burlington Northern Santa Fe (BNSF). I have limited the scale of the site to a  $\frac{1}{2}$  mile long section, beginning near 15th street North and ending at 10th street North. The linear portion of the site is roughly 90 feet wide and the total area is  $10\frac{1}{2}$  acres. This thesis is based on the assumption that the railway is rerouted around the city so the City of Fargo would be my paying client, meaning my client would indirectly be the tax payers. The users of the greenway will include students and faculty at North Dakota State University, as well as, residents of Fargo. Data has been collected by conducting a survey measuring runners' preferences in materials. Runners only account for only a small portion of the greenway users, so additional research is needed to collect information pertaining to the rest of the users.

## Site Introduction



\*Outlined in green is the perimeter of the site. Length:  $\frac{1}{2}$  mile, Average width: 90 feet, Area:  $10\frac{1}{2}$  acres

In the past, the City of Fargo Park Board has taken advantage of this type of opportunity with the abandonment of the Old Milwaukee Trail. In 2001, FM COG completed the FM Railroad Trackage Consolidation Feasibility Study. The objective of this study was to determine the feasibility of consolidating BNSF trackage and rerouting North and Westward traffic. Repurposing abandoned railways into trail systems has long been relevant and it will continue to be in the future. It is no longer critical for freight trains to travel through the middle of cities meaning that there is a possibility of rerouting the railway to an area outside of city limits. This leaves the former railroad available for redevelopment.

The site is set up to be developed with three nodes as focal points. The first node, located on the West end, will be developed into an entry condition because of its proximity to Johnson Park and connection to the University's main campus. The second node, located adjacent to University Drive, contains a vacant lot suitable for the development of a small plaza and (or) park. The final node, located adjacent to 10th street North, will provide direct access to North Dakota State University's downtown campus.

### Site Strengths

- The site is located between North Dakota State University and Downtown Fargo making it an ideal space to develop a connection.
- The former railway corridor runs across two major intersections (University Drive and 10th Street North). These are ideal candidates for the creation of urban nodes.
- The site width varies between 80 and 100 feet, meaning there is enough room to accommodate a variety of trails and recreational activity.
- This corridor offers the opportunity to work well with the Fargo Framework Plan and the North Dakota State University bicycle plan.

### Site Limitations

- Burlington Northern Santa Fe (BNSF) currently owns the railway, meaning there would be many hurdles to overcome. The largest of these hurdles is rerouting the current railway.
- The buildings that currently line the corridor are primarily warehouses that have no direct access. It will be a challenge to get "eyes on the street" (Jacobs).
- Both University Avenue and 10th Street North run underneath the corridor creating a significant change in grade that will prove challenging for accessibility at each of these nodes.

### **Client User Description**

The client for this design project is the City of Fargo. With that said, I do not intend to design for exclusively the city. It is just as important to receive feedback from the users since they are the ones that will ultimately determine the measurable success of the project. The users of the site include:

- Runners, Cyclists, Pedestrians
- Commuters
- Students, Faculty, and Fargo Residents
- Native Flora and Fauna

User feedback is important, meaning that the survey conducted will prove to be a valuable source as I move into the design process.



## Data Measure

I intend on analyzing the results of the survey by cross-tabulating responses that go together such as comparing the age of the runner with how many days per week they run. This analysis will give more meaning to the data collected in comparison to if the responses are not compared to each other.

For the proposed study I collected data by creating relevant questions, using an online survey tool known as qualtrics, which will allow me to better understand runner preferences in the City of Fargo. I polled as much of the student and community population as possible so that I may have the best understanding of what people in Fargo would like to see improved. In addition to the survey questions, I will also utilize journal articles that focus on winter greenway use and maintenance. The survey has collected data from the following groups:

- Lake Agassiz Pacers
- NDSU Students living on-campus
- NDSU Students living off-campus
- NDSU Faculty
- Students involved in fraternities/sororities
- General population

In order for a greenway design project to be successful, numerous data measures will be needed to guide the development of the site. Data measures include:

- Design techniques that can be used to minimize conflict between different trail users? (Cyclists, runners, pedestrians, etc.)
- How many times per week do people run?
- What is the preferred material to run on?
- What is the preferred trail width to run on?
- What time of day are people most likely to run?
- How does placemaking affect the design of a greenway?
- How many people prefer to run during the winter months?
- Trail widths / dimensions

The survey contains 14 questions that have been written to gain an understanding of user preference in relation to how often the individual runs in a given week. The data being collected will be a mix of both qualitative and quantitative data.

I expect to gain an understanding of the preferences of potential trail users in Fargo, North Dakota. Understanding these preferences will help me understand both the people and their preferred activities. This information will influence the final design. The primary intent of conducting this survey is to provide justification for the addition of a greenway that connects North Dakota State University's main campus with the downtown campus near 10th Street North.

## **Chapter 4: Results**

#	Answer	Response	%
1	<a href="#">18-24</a>	45	47%
2	<a href="#">25-30</a>	10	10%
3	<a href="#">31-35</a>	14	15%
4	<a href="#">36-39</a>	7	7%
5	<a href="#">40 or older</a>	20	21%
Total		96	100%

#	Answer	Response	%
1	<a href="#">Yes</a>	50	52%
2	<a href="#">No</a>	47	48%
Total		97	100%

These survey results are based off of the answers of 101 total respondents which include students, faculty, and Fargo residents. Of the total amount of respondents 47 percent are between the ages 18-24. This was expected because the survey was designed to target primarily college age students. To my surprise, I received a larger percentage of respondents that said they were not students (48 percent) and who were aged 40 or older (21 percent).

In this survey, evening hours are defined as the period of time just before sunset. Where as “night” is defined by the period of time when there is zero sunlight. The data tables to the right are being used to gain a better understanding of how certain preferences differ based on age and gender. As shown in the table right, most respondents preferred to run in the mornings and the evenings.

It is worth noting that 27 women preferred to run in the morning and only 4 said they preferred running at night. In addition, the ratio of men to women that prefer working out at night is 3 – 1 in favor of men. Both men and women prefer morning and evening runs almost equally, while the evening remains the most popular time to run by a margin of 14 respondents. This means that lighting design will likely be a major factor in the final greenway design.

		What time of day do you typically run? (check all that apply)				Total
		Morning	Afternoon	Evenings	Night	
Are you a male or female?	Male	28	13	39	12	53
	Female	27	17	30	4	42
	Total	55	30	69	16	95

		What time of day do you typically run? (check all that apply)
		Chi Square
Degrees of Freedom	3	
p-value	0.18	

The cross-tabulation, shown below, compares the age of each respondent with how often they run in a week. Across all age groups the most common frequency of workouts were 3-5 times per week (49 percent). 30 percent of the total respondents reported that they ran 0-2 times per week. Of those respondents, 72 percent of them fell between the ages of 18-24.

		How many times per week do you go for a run?				Total
		Never	0-2 times per week	3-5 times per week	6 or more times per week	
How old are you?	18-24	13	21	10	1	45
	25-30	1	6	3	0	10
	31-35	0	2	10	2	14
	36-39	0	0	6	1	7
	40 or older	1	0	18	1	20
Total		15	29	47	5	96

		How many times per week do you go for a run?
		How old are you?
Chi Square	48.48*	
Degrees of Freedom	12	
p-value	0.00	

*\*Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.*

The take away from this data is that runners will more than likely not be using the trail seven days per week. Meaning if the greenway is to be widely successful there will need to be a variety of trail activities and attractions that provide people with multiple reasons to utilize the space on a regular basis.

The table below compares the type of routes people preferred to run with the age of each respondent. For this question each person was asked to rank the responses in order from most preferred to least preferred. Of the total respondents, 92 percent preferred any sort of closed loop route instead of running a linear (out and back) route. Male and Female runners both prefer a closed loop circuit to a linear route. In addition, most respondents favored a rural setting over running in an urban setting.

The first thing that stands out about these results is that people prefer to run in a closed circuit rather than a linear route. In order for this greenway to be included in a person's daily running route it is critical that the trail connects to streets that are frequently traveled by runners. The same can be said about trail design for cyclists. For instance, the greenway will become one section of one's greater route. For this to happen the connections that are to be made at each of the three nodes will need to be designed and scaled appropriately to meet the spatial and material requirements for runners and cyclists.

At this point a majority of the results are from the survey which I personally conducted. Before the 2015 spring semester begins I intend on conducting more research pertaining to the use of greenways during winter months. The cold, windy climate that exists in North Dakota presents a unique challenge in figuring out how to design a greenway that people will still be willing to use in the winter months. The data collected in the survey paired with this additional research will help create a multifunctional greenway that serves as space for year-round recreation, as well as, a safe passage way between North Dakota State University and Downtown Fargo.

		What type of routes do you prefer to run?				Total
		A closed loop trail in a rural setting	A closed loop trail in a suburban setting	A closed loop trail in an urban setting	A linear trail, out and back	
How old are you?	18-24	24	15	3	2	44
	25-30	2	4	2	1	9
	31-35	4	3	6	0	13
	36-39	2	1	3	1	7
	40 or older	3	6	7	3	19
	Total	35	29	21	7	92
Are you a male or female?	Male	19	18	14	1	52
	Female	17	11	7	6	41
	Total	36	29	21	7	93

		What type of routes do you prefer to run?
How old are you?	Chi Square	22.75*
	Degrees of Freedom	12
	p-value	0.03

\*Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.

		What type of routes do you prefer to run?
Are you a male or female?	Chi Square	6.50*
	Degrees of Freedom	3
	p-value	0.09

\*Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.

## Applicable Site Values

Based on the survey results and research I have conducted, the following values apply to development of a greenway along the Great Northern Rail Corridor.

- **Public Health and Safety** – Focus on creating public space that provides a safe passageway for commuters, as well as, interesting trails and spaces for recreational activities. Promote social interaction between students, faculty, and Fargo residents.
- **Connectivity** – Create a streamlined pedestrian connection between NDSU and Downtown. Create a consistent design that visually connects these two locations. Sense of place.
- **Minimizing conflicts** – The primary greenway trail conflict points are with crossing vehicular traffic and with adjoining neighbors. The potential for conflict in both categories should be minimized through the use of landscape buffers, grade-separated crossings, and considerate design.
- **Universal accessibility** – Trails and walkways should provide universal access in sidewalk and cross-section design, and in nature based recreation and interpretation. Meaning everyone should physically be able to access the greenway.
- **Providing local access** – By including 3 nodes along the extent of the corridor, nearby neighborhoods will have convenient access to the greenway. With that said, direct access from private property will not be allowed.
- **Wayfinding** – Will unify the greenway corridor from a usability and character standpoint. Signage should be consistent across the full extent of the corridor and should guide people to and from school, home, and downtown destinations.
- **Year-round facility** – To encourage year-round use of a greenway in Fargo, North Dakota it is necessary to consider improving on-site microclimates throughout the winter months by the means of a design intervention. In addition, it will be beneficial to design for a variety of activities in both warm and cold months. Understanding how to provide windbreaks will be helpful in determining the “year-round” success of the greenway.
- **Design consistency** – Similar to wayfinding, the consistency in design style will create a sense of place, as well as, a feeling of unity along the entire length of the trail.
- **Sustainability and environmentalism** – Sustainable strategies for assembling the greenway include using recycled materials, pervious material, and energy-efficient lighting.

## Design Goals

- Create a safe, multifunctional greenway that provides first-class linear recreation and increases mobility.
- Create an inviting, connected, memorable nature-based corridor for recreation and commuting.
- Connect, enhance and interpret surrounding neighborhoods to bring people together.
- Provide a safe and interesting passageway for runners, pedestrians, and cyclists to utilize.
- Form a visual connection between North Dakota State University's main and downtown campuses. Create a sense of place by designing custom details that are consistent throughout the entire site.
- Create spaces that promote public art and cultural events (i.e. skating, 5k starting line, etc.).

## **Plan for Proceeding**

Week of December 21st – 27th: Work on finishing site inventory/additional research.

Week of January 4th- January 10th: Site Inventory, create a base map in CAD

*January 12th: Classes Begin at 4pm*

Week of January 11th- January 17th: Site Inventory and Analysis

### **Week of January 18th- January 24th: Thesis Process I: Base Material - Due January 21st**

Week of January 25th- January 31st: Thesis Process II: Site Analysis and Concepts – Due January 30th

Week of February 1st – February 7th: Design development, Hand sketching (stay loose)

Week of February 8th – February 14th: Design Development, Hand drawing (cleaner)

Week of February 15th – February 21st: Thesis Process III: Design Development I – Due February 20th

*Presidents Day, No classes - February 16th*

Week of February 22nd – February 28th: Begin creating 3D model in sketchup

Week of March 1st – March 7th: Be thinking of site details to develop

### **Week of March 8th – March 14th: Thesis Process IV: Design Development II – Due March 13th**

*Week of March 15th – March 21st: Spring Break*

Week of March 22nd – March 28th: Detail development / Construction drawings and project specifications

### **Week of March 29th – April 4th: Thesis Presentation I: Proposal – Due April 1st**

Week of April 5th – April 11th: Production of Final Deliverables/Rendering

Week of April 12th – April 18th: Production of Final Deliverables/Rendering

Week of April 19th – April 25th: Production of Final Deliverables/Rendering

### **Week of April 26th – May 2nd: All deliverables must be finished by April 27th, 2015**

Week of May 3rd – May 9th (DEAD WEEK): Final Verbal Presentation III

Week of May 11rd – May 15th (FINALS WEEK): Final Verbal Presentation IV

*May 16th – Graduation!*

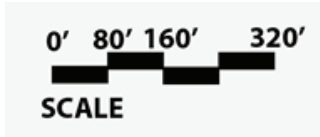
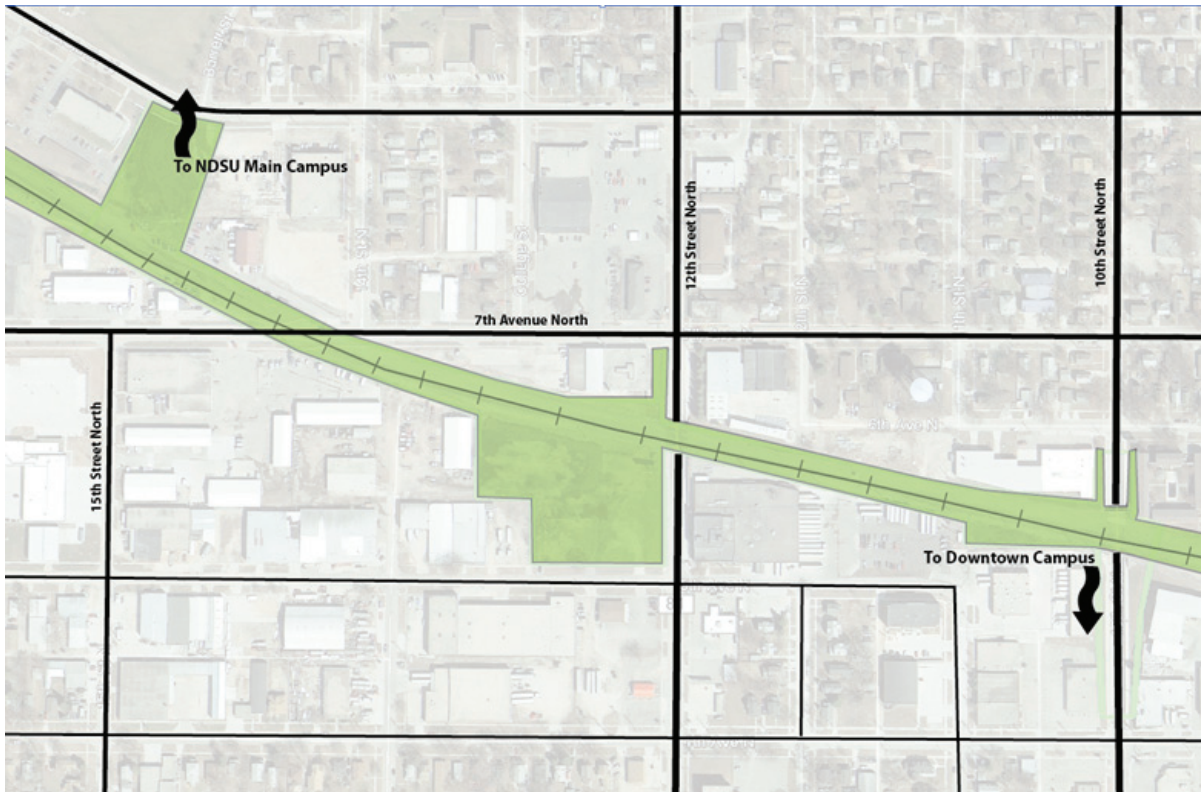


## Summary of Deliverables

Layers of Inventory  
Hand Sketches and Potential hypothesis solution(s)  
Scaled Base Map  
Site Plan (HD Aerial and CAD)  
Layers of Analysis (Biological, Physical, Geological)  
Function/Concept Diagram applying results  
Multiple Concepts (selection of most appropriate)  
Schematic Design (scaled-dimensions)  
Model, Enlarged Plans, Sections, Perspectives, and Animations  
Details, Dimensions, Materials Planting Plan

## **Chapter 5: Site Inventory**

### Preliminary Base Map

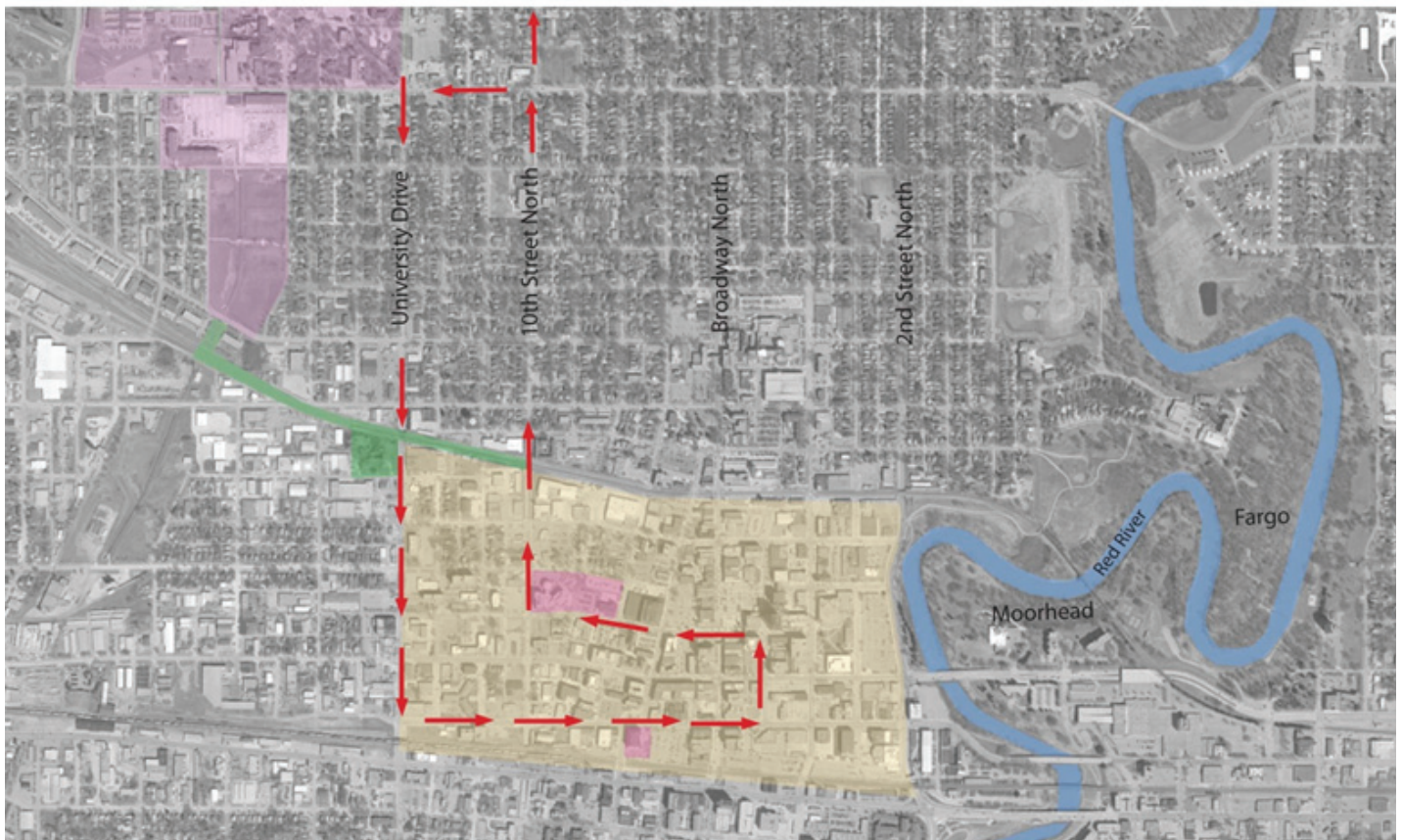


### Site Elements

- Transportation – MAT Bus
- Neighborhoods
- Land use – Zoning
- Recreation – Parks and Trails
- Circulation
- Points of Interest
- Topography – Elevation
- Climate
- Vegetation
- Wildlife
- Culture/arts
- History



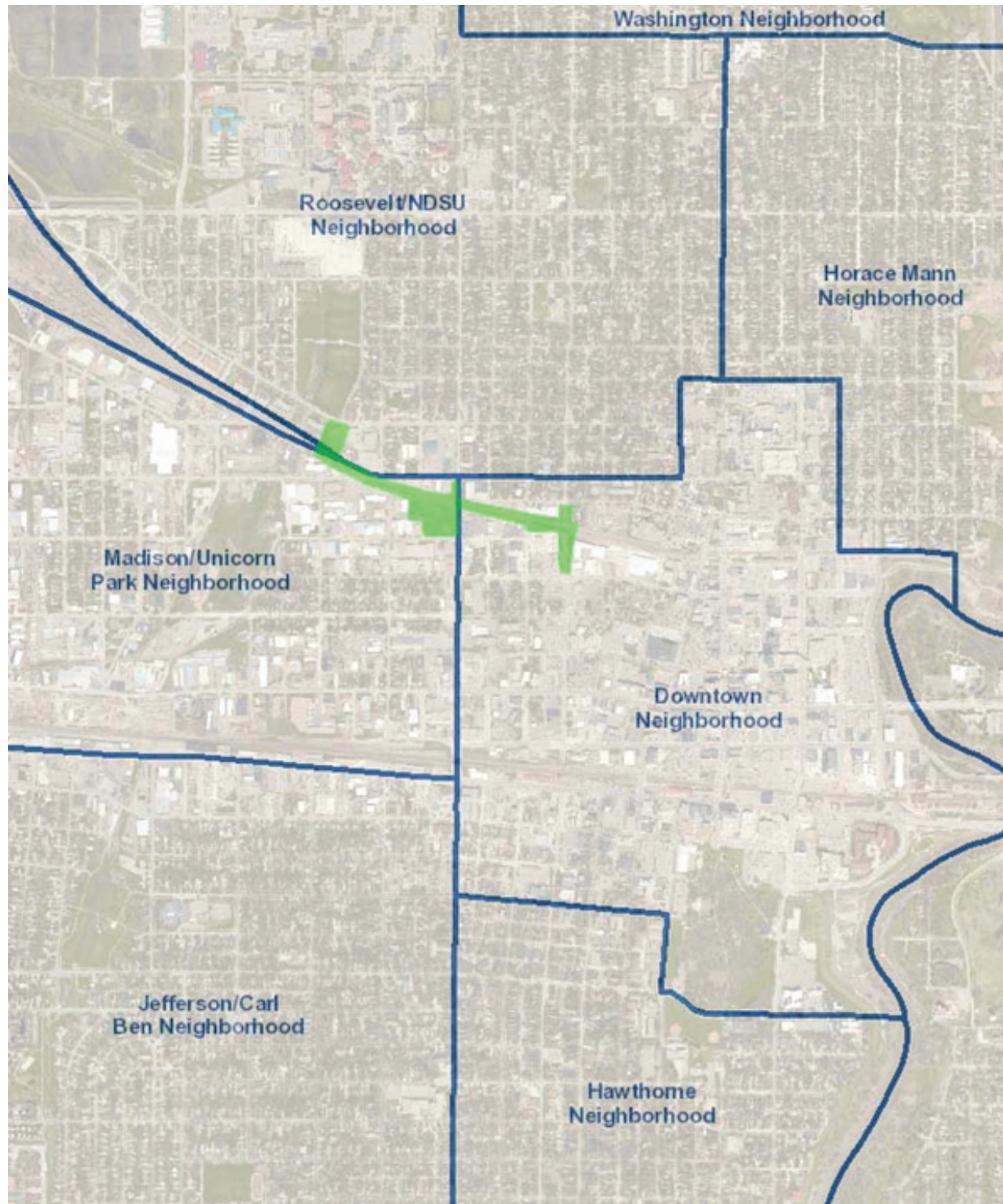
Proposed Greenway Site ■



This map illustrates where the greenway is located in relation to the MAT bus route and NDSU campuses.



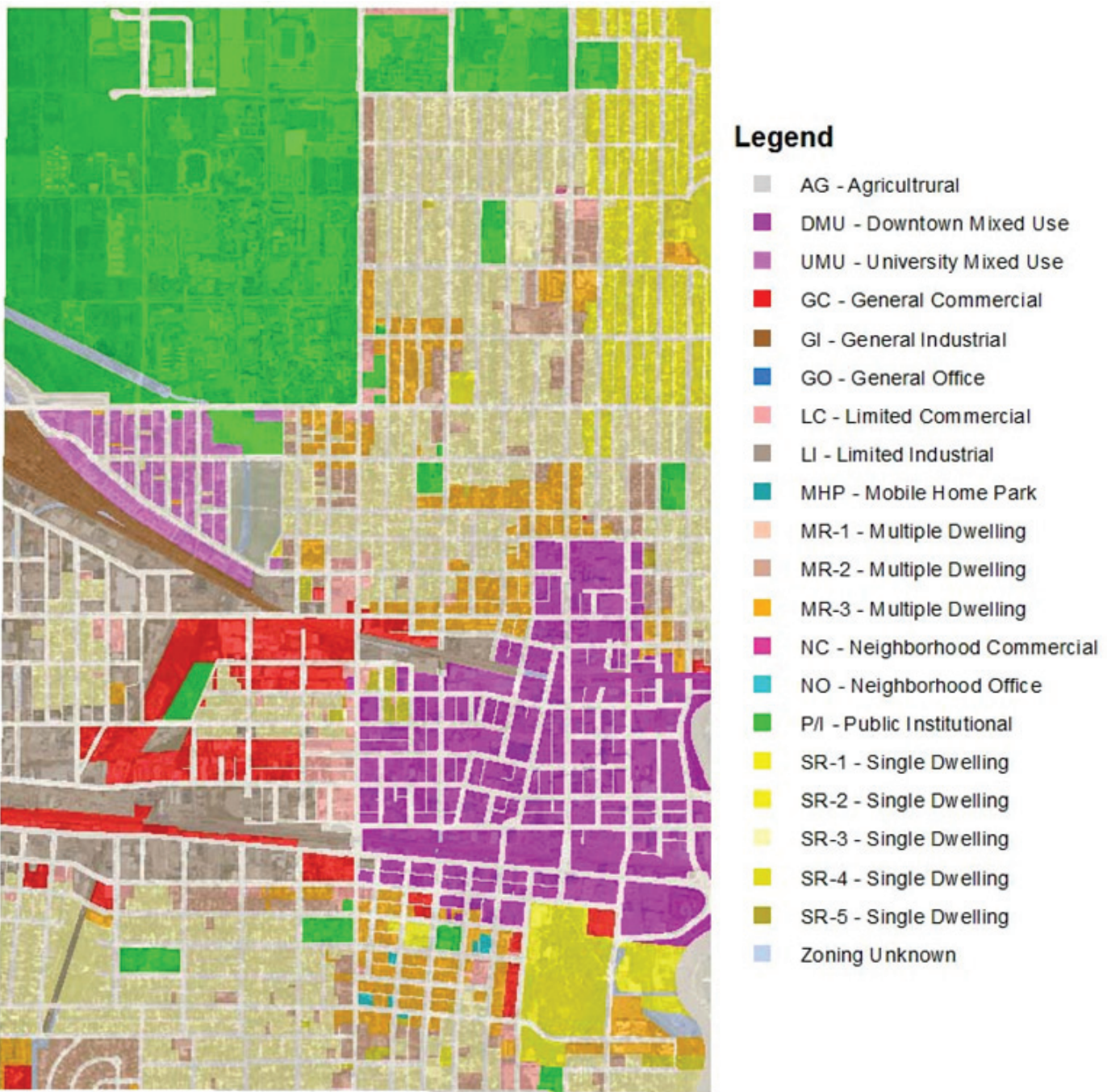
## Neighborhoods



The site is located on the border of three neighborhoods making it an ideal location for a public amenity, such as a greenway, to bring people together while serving a more diverse population. This location presents an opportunity to encourage more eco-friendly travel between the Roosevelt, Madison/Unicorn Park, and Downtown Neighborhoods.



### City of Fargo: Zoning



The site is located inbetween downtown mixed use, general commercial, and university mixed use. How could a greenway could support redevelopment in the UMU zone that is located Northwest of the site?



## Parks



Focusing on the the nearby parks within a few blocks of the proposed greenway. One of the strengths of this site is that there are nearby parks and open spaces that the greenway could connect to in order to enhance the green fabric of the city. If there is not a direct connection with the surrounding open spaces the greenway should at least improve the accesability of these spaces.



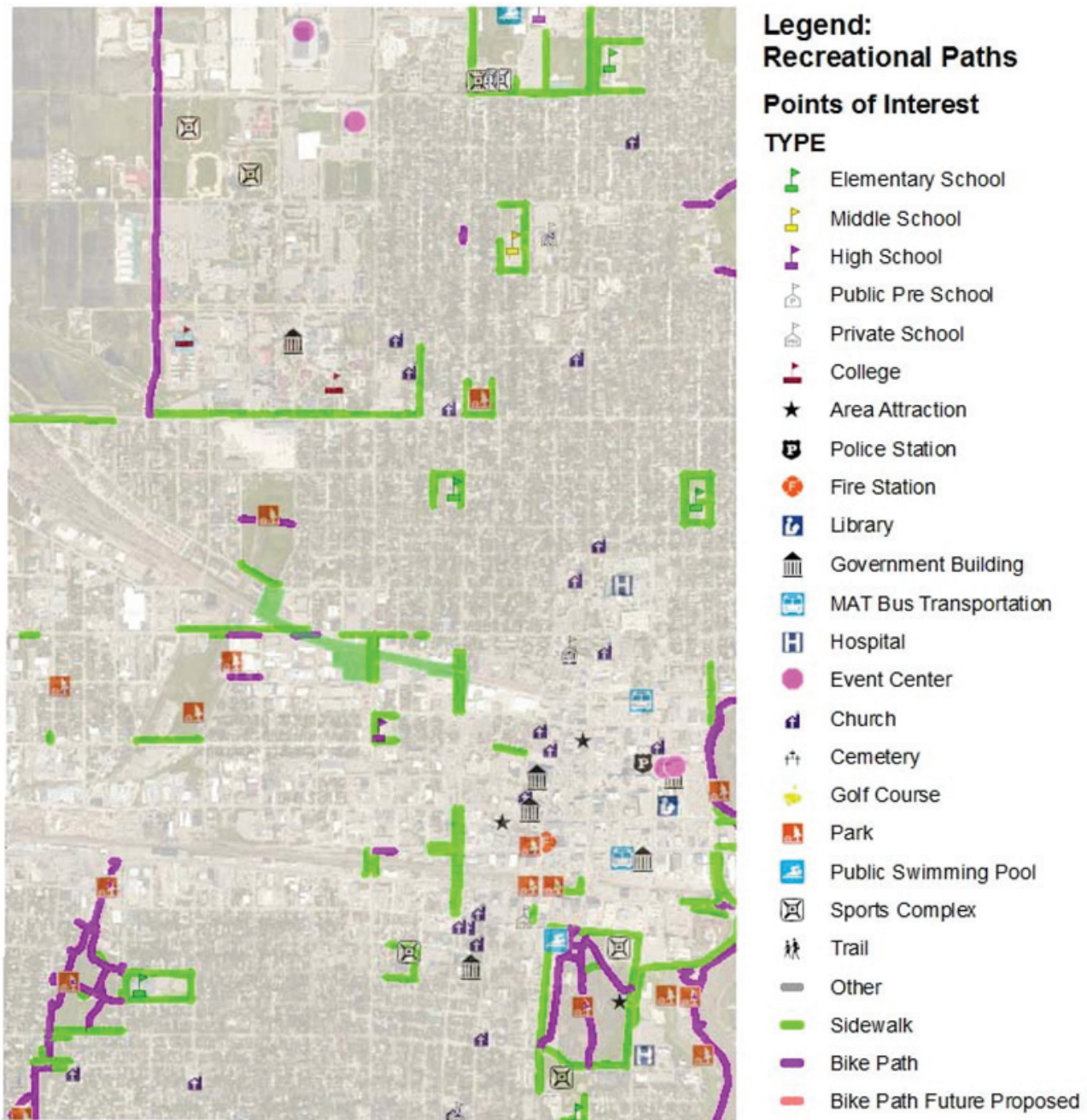
## Circulation (Streets)



Streets allow people to travel from point “A” to point “B”, therefore this map illustrates the circulation patterns in the city. The arrows denote that University avenue and 10th street are both one-way streets. In addition to being designated one-way streets they are two of the more heavily traveled roads in the area.



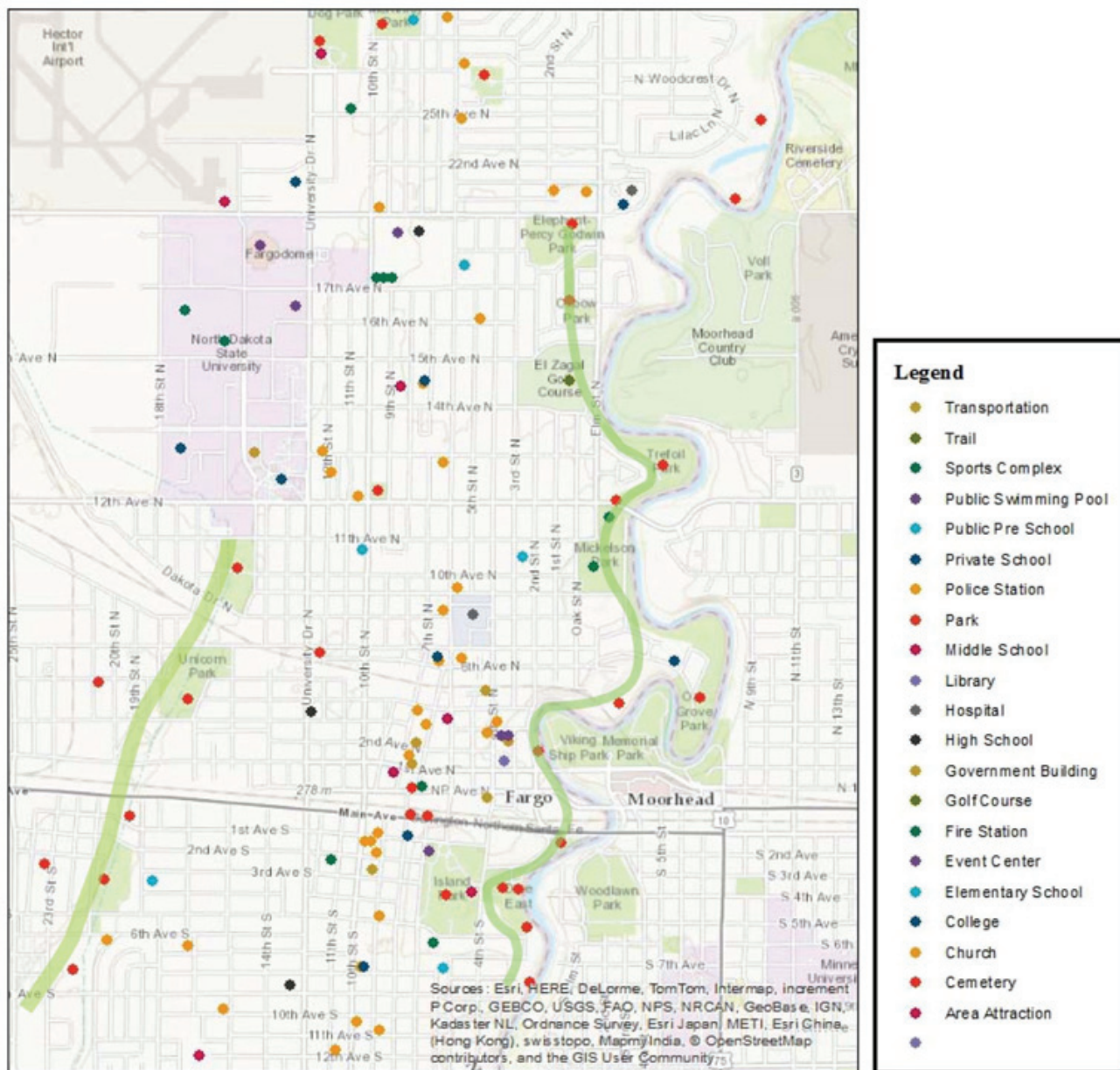
## Recreation and Points of Interest (POI)



It is interesting to note where the recreational paths and points of interest are in relation to my site. It is beneficial to see how a greenway may fit into the context of the cities existing trails, sidewalks, and POI.

Consider how a greenway can integrate with existing circulation patterns.

### Points of Interest and Patterned Greenspace



This map illustrates the major points of interest located in the City of Fargo. It is interesting to note that all of the parks in the city are organized in linear patterns. The addition of a greenway should strengthen this pattern.



## Elevations



The darker colors are lower in elevation and the lighter colors are higher elevation. It is clear that the entire city is almost completely flat. The greenway crosses over two underpasses at University avenue and 10th street. This offers a unique opportunity to celebrate the change in elevation by designing an overlook.

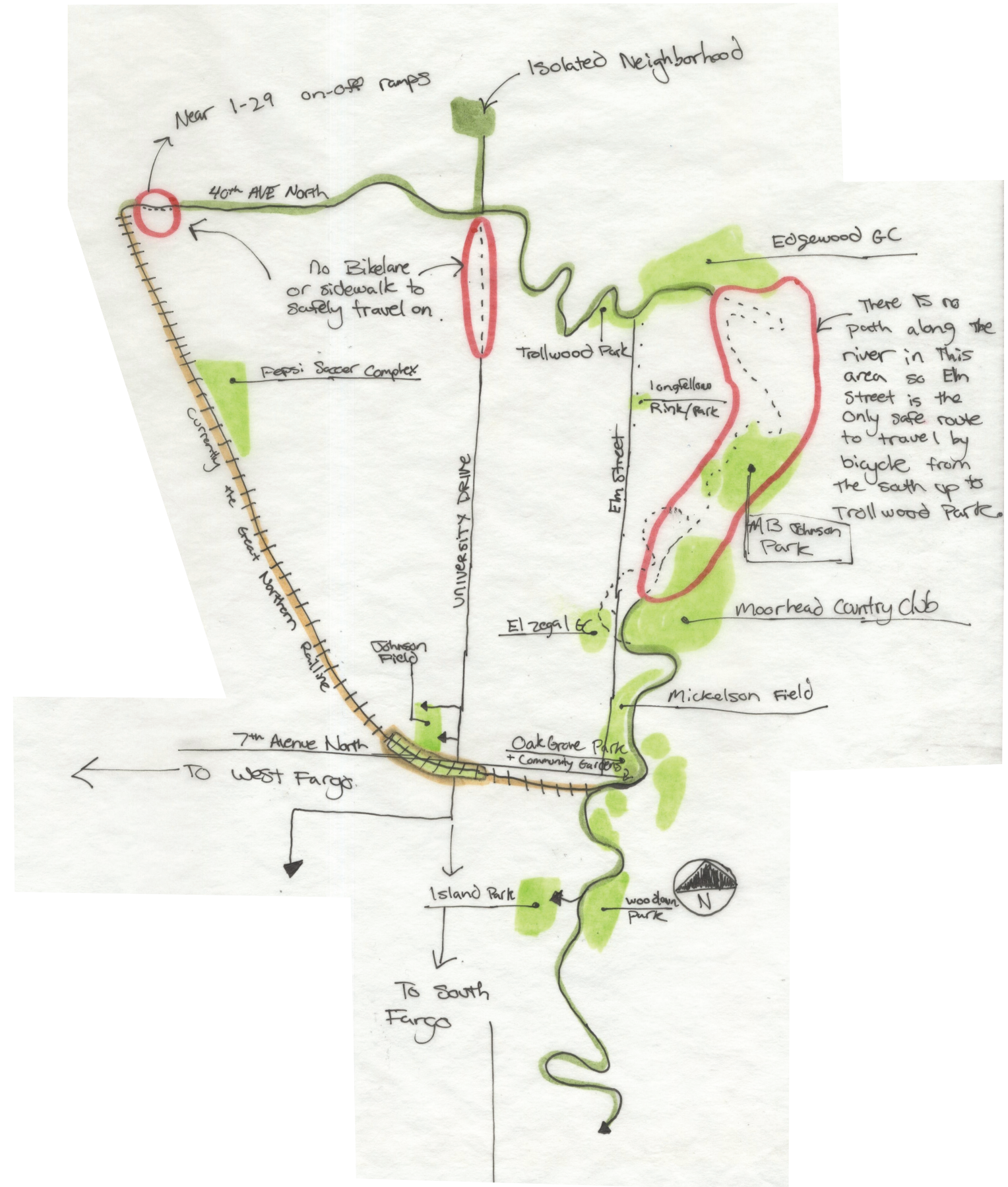
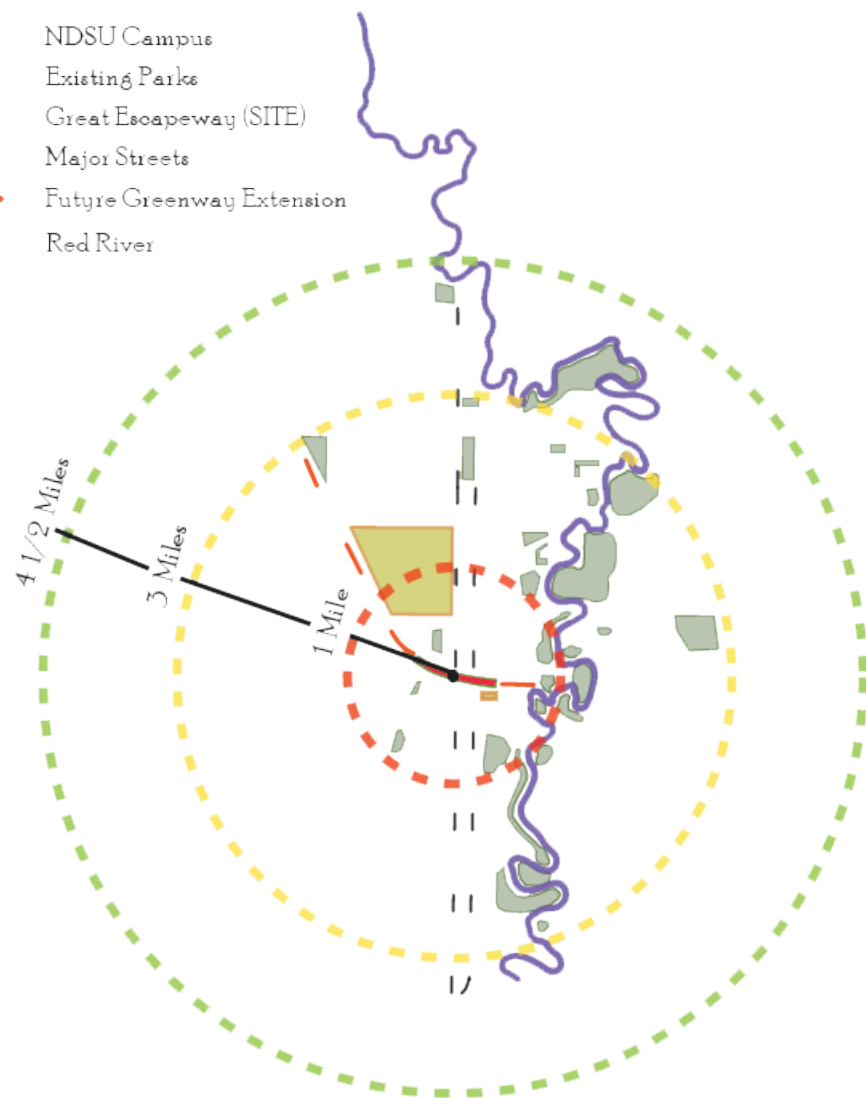
**Chapter 6:  
Site Analysis**



# Big Idea : Completing the Larger Loop

A greenway along the Great Northern Rail corridor will bring North Fargo a step closer to having a much more extensive trail system for the community to enjoy. Based on survey results students preferred to run on a closed circuit route instead of a linear route. The larger vision for the City of Fargo responds to what the ideal running environment is according to the student survey results.

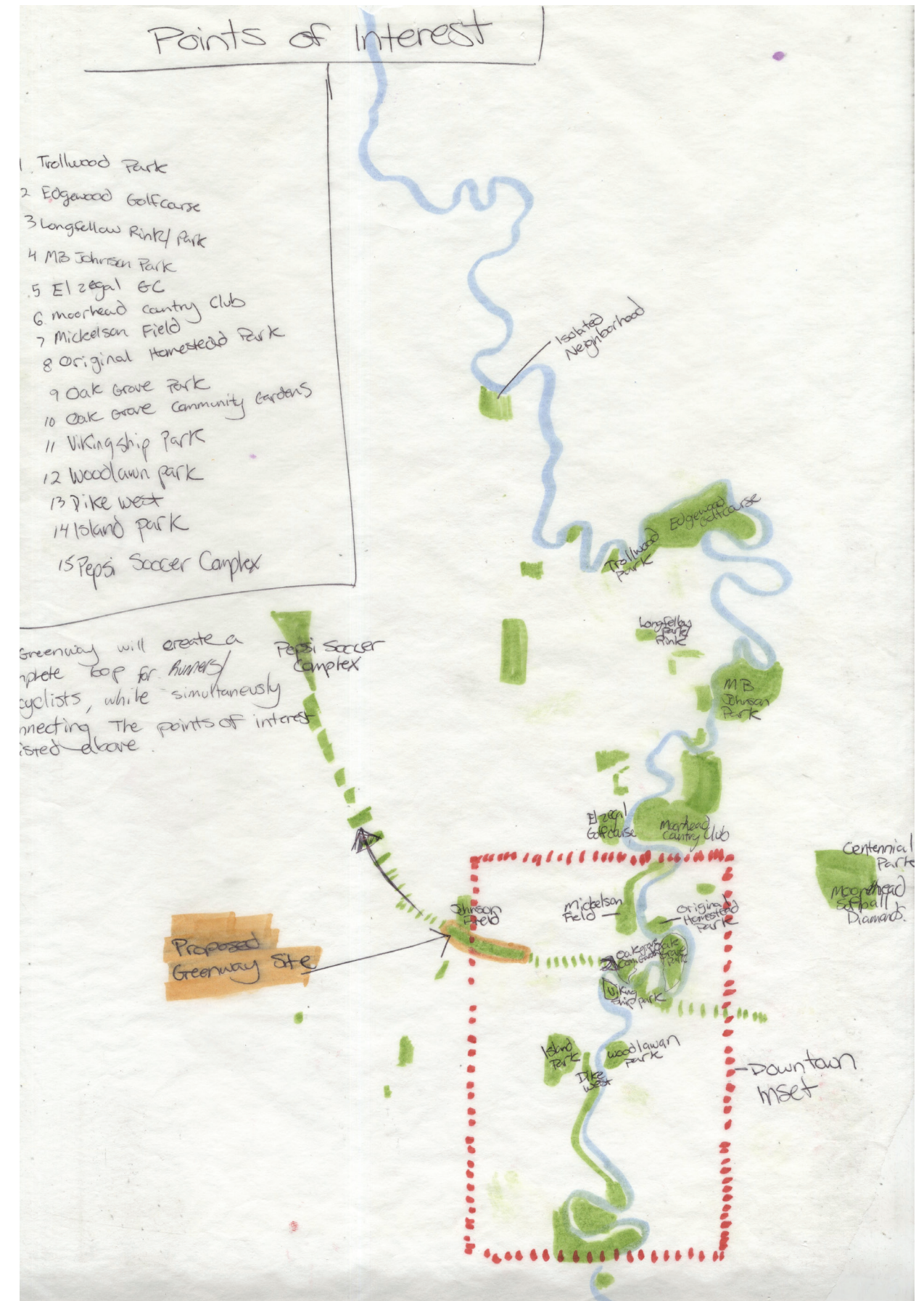
-  NDSU Campus
-  Existing Parks
-  Great Escapeway (SITE)
-  Major Streets
-  Future Greenway Extension
-  Red River





# Locating Points of Interest: Understanding the Context of the Area

The location of entrances and points of interest on the greenway is relative to where the popular spots are currently located, as well as, where new ones may be established.



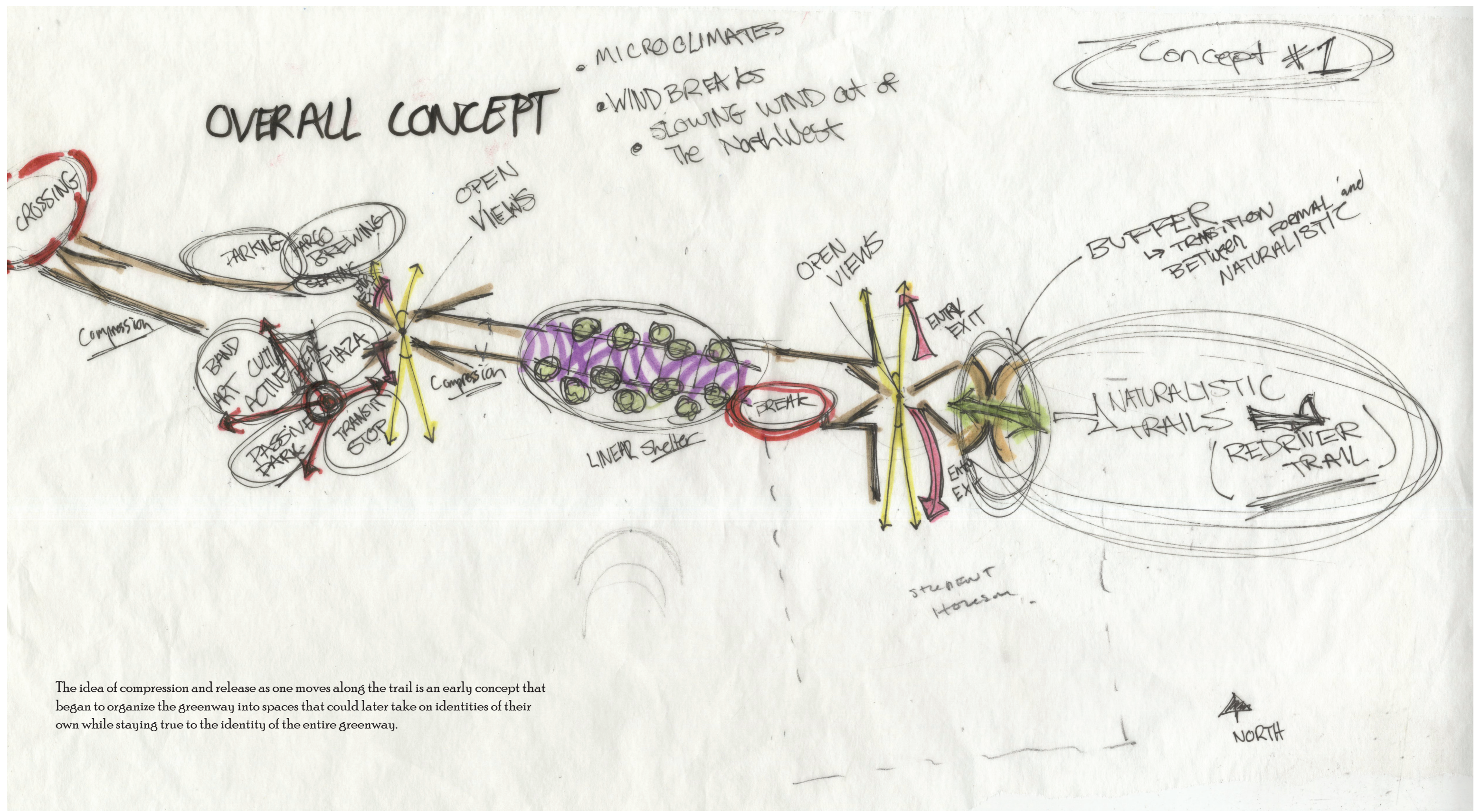






## **Chapter 7: Design Development**



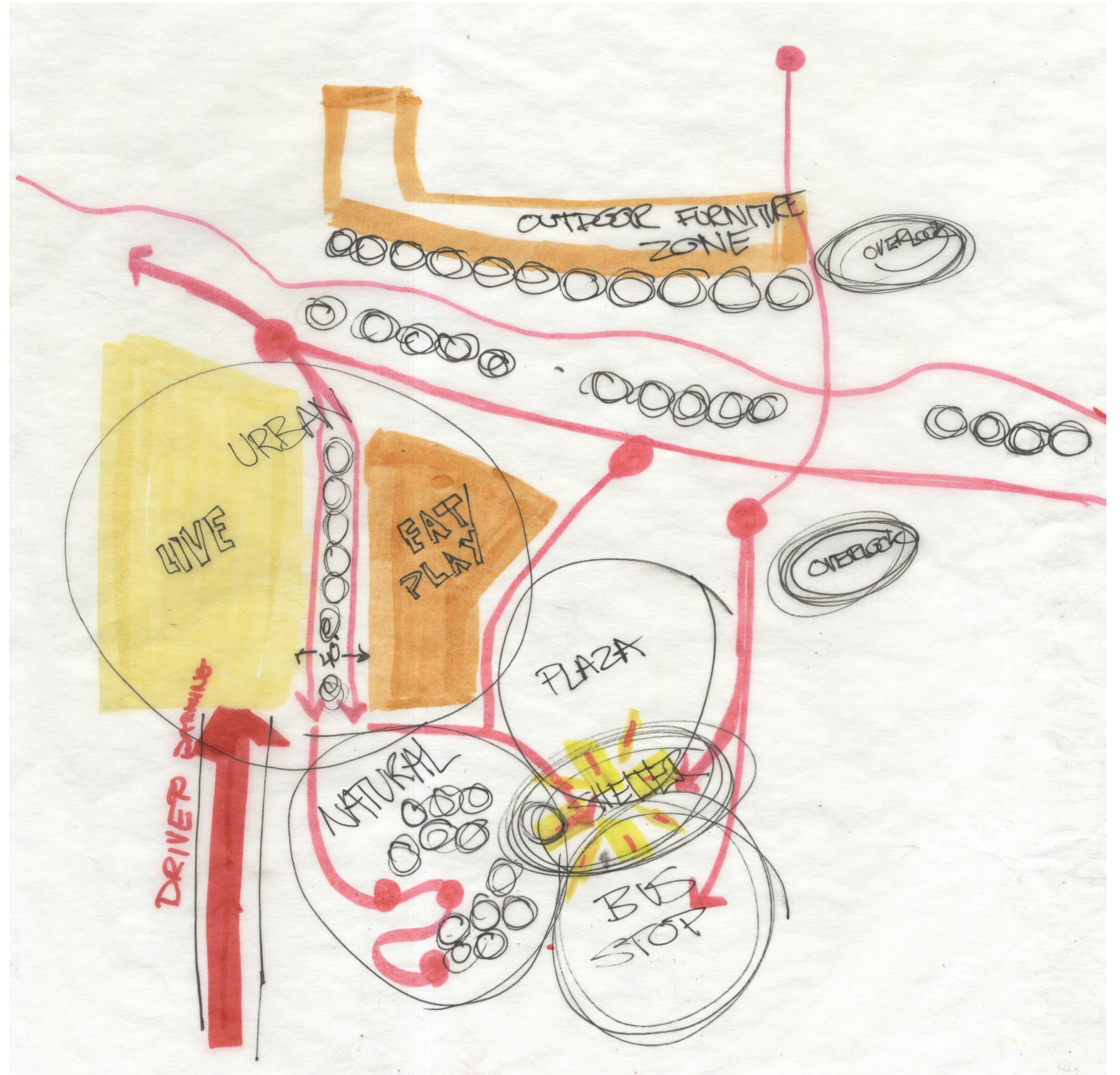
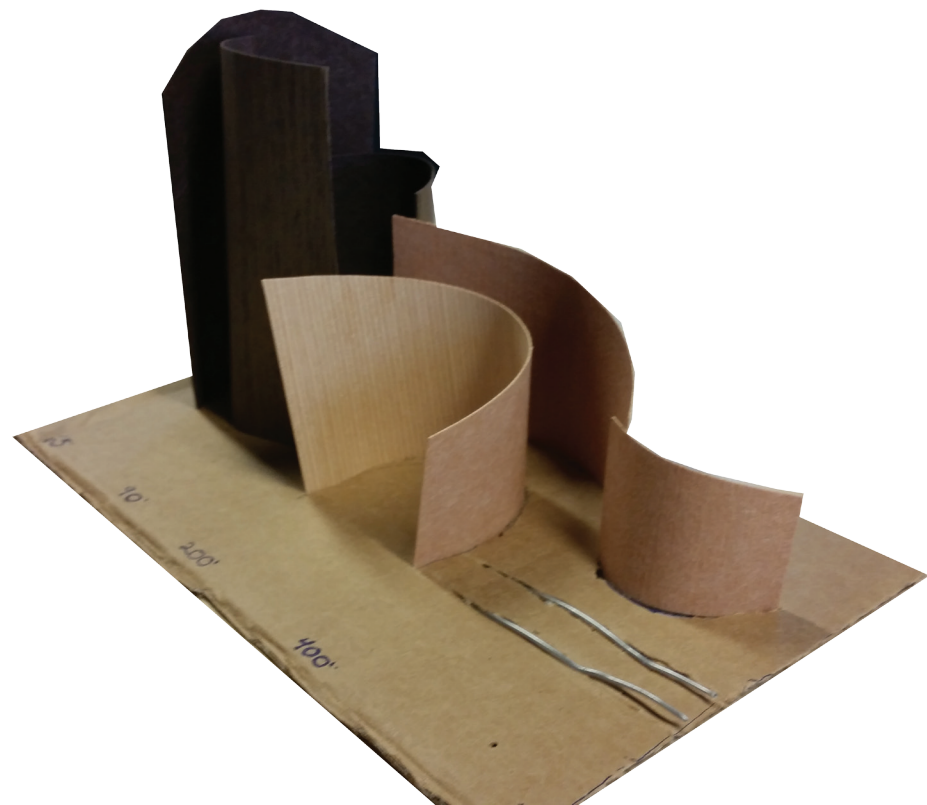


The idea of compression and release as one moves along the trail is an early concept that began to organize the greenway into spaces that could later take on identities of their own while staying true to the identity of the entire greenway.



# Design Concept: Main Hub

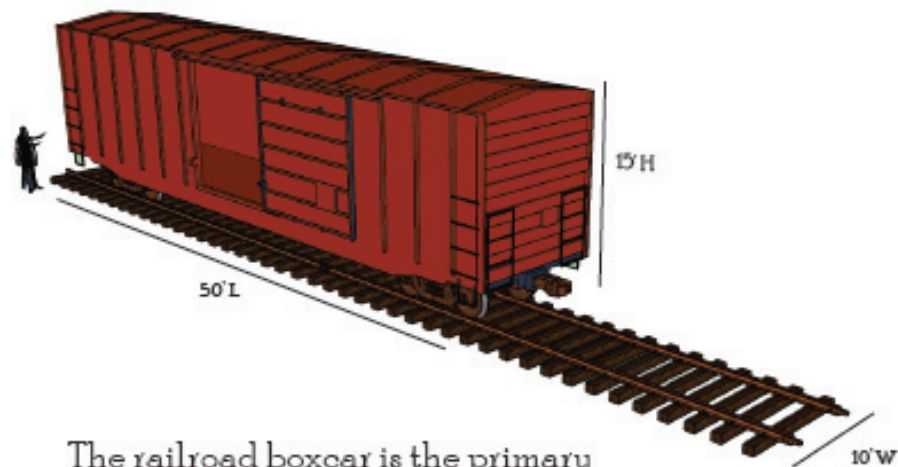
The process model, shown below, begins to explore the types of spaces that can be created along the greenway. Continuing to play with the idea of scale, as well as, compression and release in the development of outdoor spaces.





# Detail Concepts:

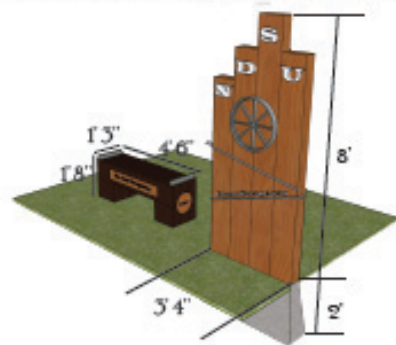
The boxcar is a simple form that provides rhythm in the landscape by means of linear repetition.



The railroad boxcar is the primary inspiration for the design of the buildings.

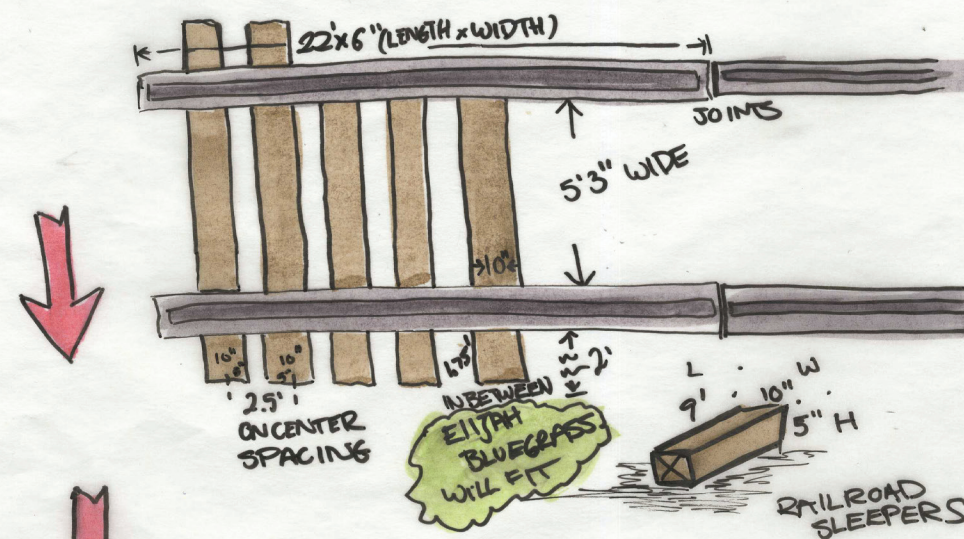


Custom benches and signage are constructed using material with similar dimensions to railroad timbers.

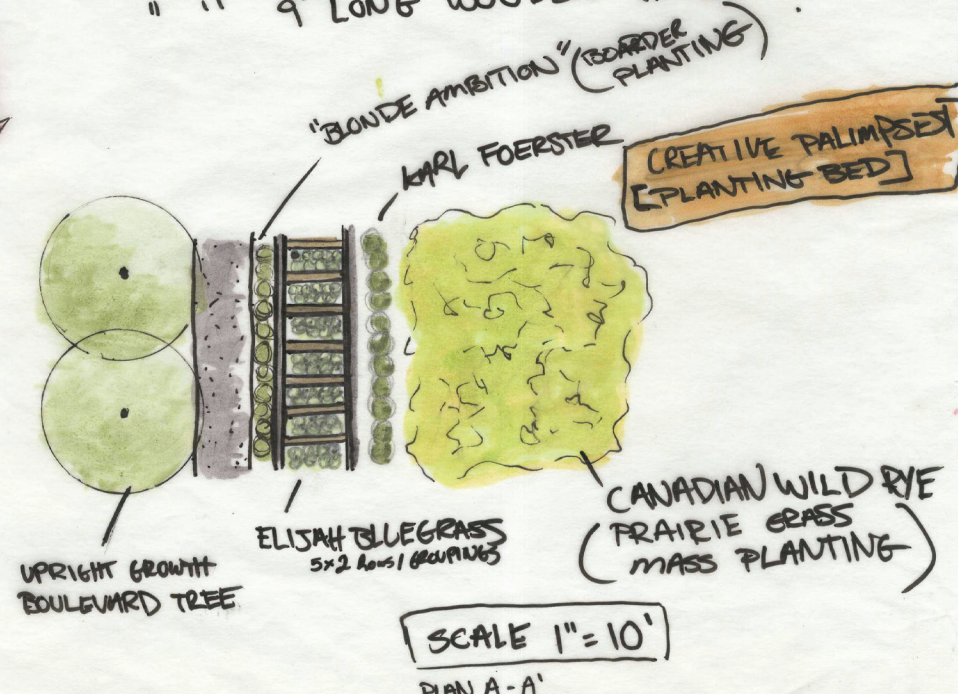


## HARDESCAPE MATERIALS

- RECYCLED/DECOMPOSED GRANITE
- RAILROAD TIMBERS/STEEL RAIL
- USED IN PAVING GRAVEL TO SIGNAL POI/ INTERSECTIONS



WHAT CAN I DO WITH 22' LONG STEEL RAILS?  
 " " 9' LONG WOODEN TIMBERS?



## **Chapter 8: Design Solution**



# Preliminary Masterplan





# Final Masterplan

Master Plan





# Main Hub:

The bikeshare in an urban plaza located on the greenway node adjacent to University Drive and 5th Avenue North





# Main Hub:

View facing North towards the proposed pond and pedestrian bridge.





# Typical Trail Section:

Typical view along the Great Escapeway





## **Chapter 9: Discussion**

## Research Summary

Based on the knowledge that the City of Fargo may reroute the Great Northern Railway, I propose to repurpose the former railway as a multifunctional greenway. The information that has been collected will continue to be utilized to develop a comprehensive design that demonstrates the potential benefits of a greenway to Fargo and North Dakota State University. Research results as applied to site concepts and elements: Through my research I discovered various examples, concepts, and values that have provided relevant information for designing successful greenways. In order to design a successful greenway the site values that should become the focus of design are:

- **Minimizing conflicts** at intersections and between cyclists, runners, and pedestrians.
- Design 3 nodes along the greenway to **provide local access** to nearby neighborhoods.
- Using **wayfinding** techniques to unify the greenway corridor from a usability and character standpoint.
- To encourage **year-round use** of outdoor facilities by improving microclimates through creative design interventions
- Improving **public health and safety** by promoting social interaction between students, faculty, and Fargo residents, as well as, encouraging a variety of recreational activity.
- Creating visual and physical **connections** that create a unique sense place that encourages recreation and alternative travel for people living near campus and downtown.



## References & Appendix

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