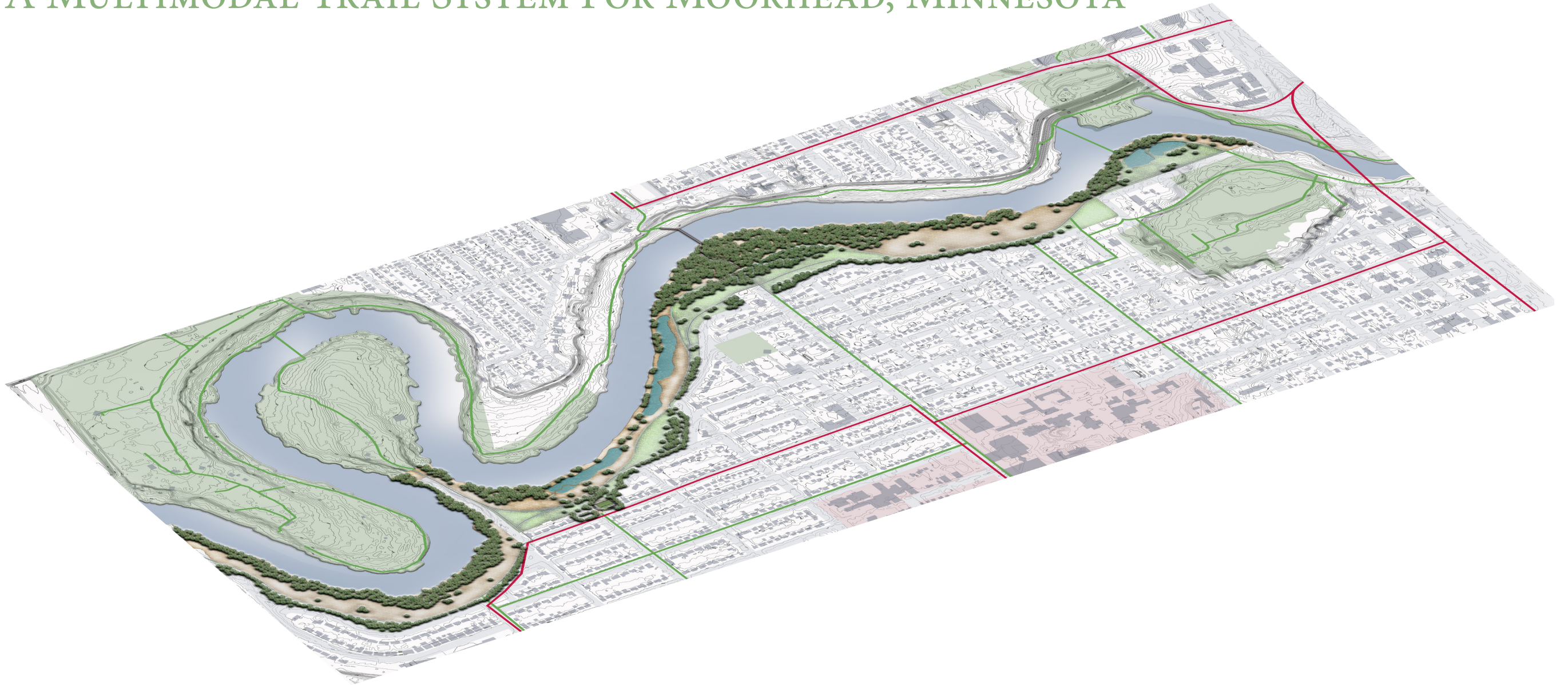


# GROWING GREENWAYS:

A MULTIMODAL TRAIL SYSTEM FOR MOORHEAD, MINNESOTA



# FARGO-MOORHEAD FLOODING HISTORY:



## PAST FLOOD LEVELS:

FLOOD OF 2009: **40.84'**

FLOOD OF 1997: **39.50'**

FLOOD OF 2011: **38.81'**

FLOOD OF 2010: **36.99'**

## FLOOD EVENTS:

100 YEAR FLOOD: **38.20'**

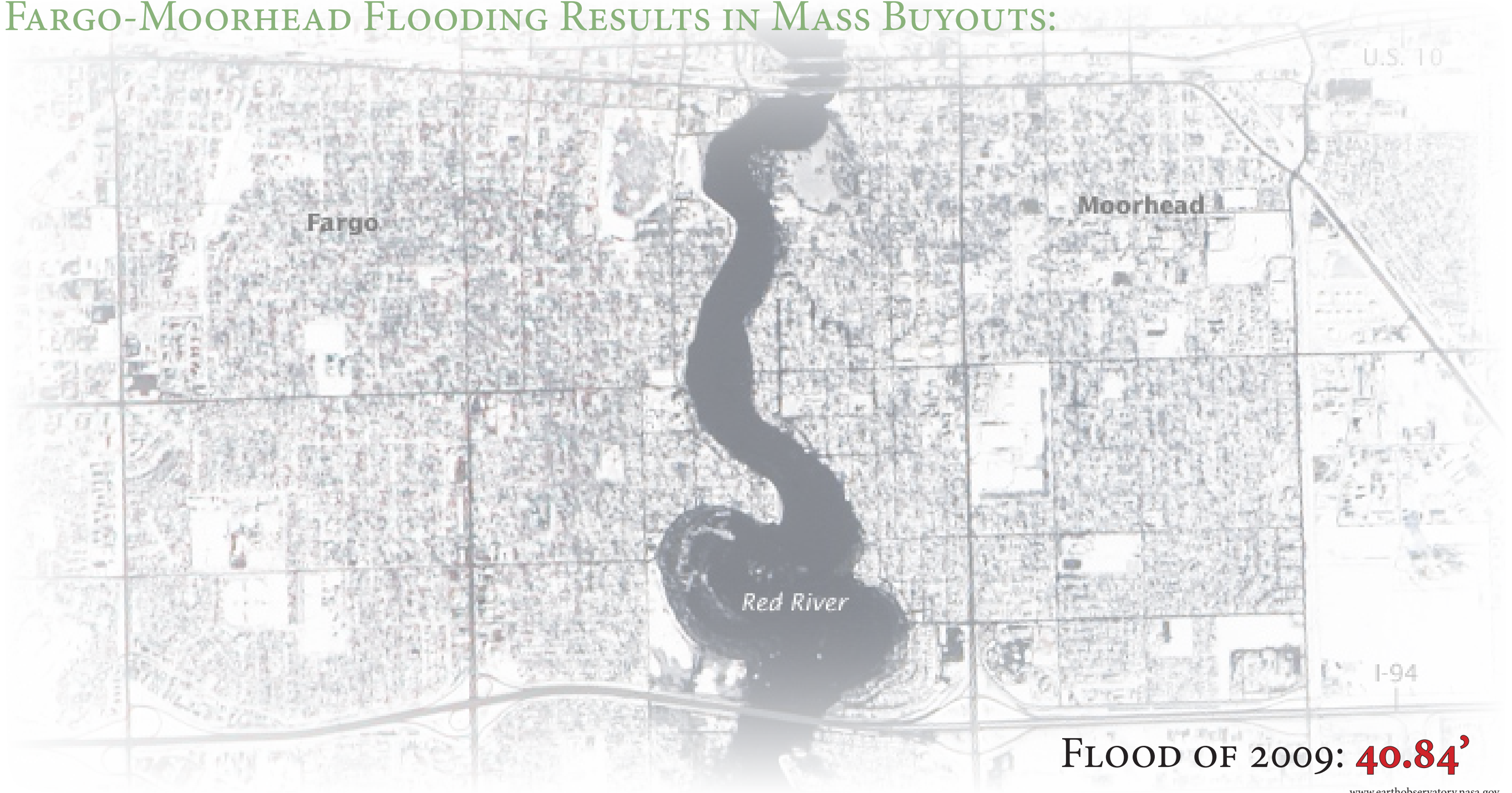
MAJOR FLOOD: **30.00'**

MINOR FLOOD: **18.00'**

ACTION CALLED: **17.00'**

CURRENT RIVER HEIGHT: **14.73'**

# FARGO-MOORHEAD FLOODING RESULTS IN MASS BUYOUTS:



FLOOD OF 2009: **40.84'**

# CALL OF ACTION



# FARGO-MOORHEAD FLOODING RESULTS IN MASS BUYOUTS:

FLOOD BUYOUT COUNT: **538** PARCELS



The past flood events have lead to:

- Mass Buyouts
- Levee Repair
- Levee Construction
- The FM Diversion



## THESIS STATEMENT:

I propose a design for a Multimodal Greenway in the Red River Corridor of the Fargo-Moorhead Metropolitan area. I intend to demonstrate methods to increase local commuter options reduce automobile traffic and promote a healthier community.

## PROJECT GOALS:

### DESIGNING FOR ALTERNATIVE TRANSPORTATION.

- Connect people to destinations by providing more sustainable alternative routes to motor vehicle transportation.
- Create strong connections to the existing public transit.
- Create safe, comfortable trails connecting larger green spaces along the Red River.
- Improve existing transportation system with introduction of a multimodal greenway.

### DESIGNING FOR THE COMMUNITY.

- Strengthen social bonds by creating destinations for community gathering and collaboration of all ages.
- Improve the quality of life and overall health of local users with sustainable choices.
- Change local commuter habits to more sustainable ones.

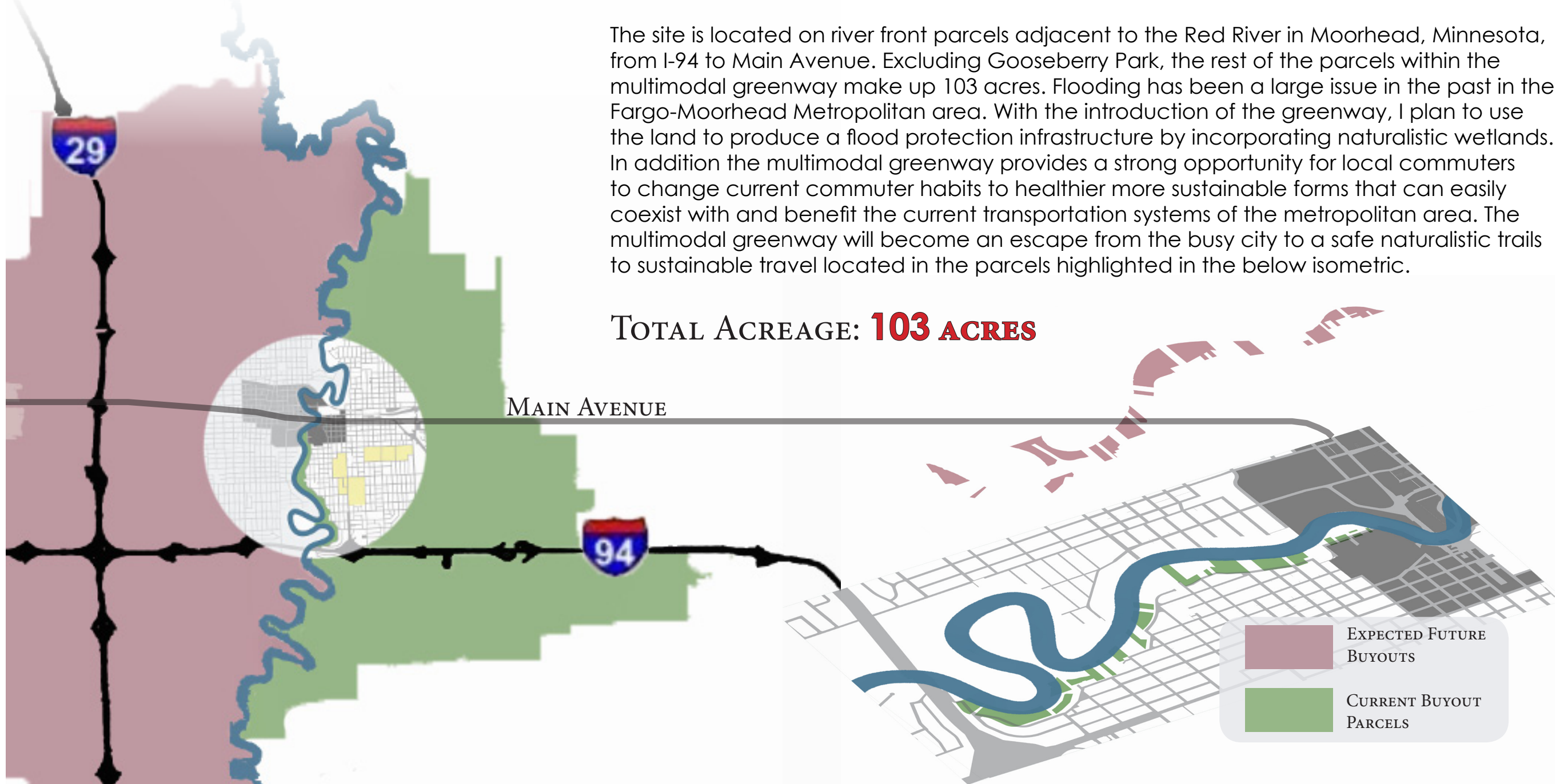
### DESIGNING FOR THE ENVIRONMENT.

- Design a multimodal greenway to encourage users to engage and interact with the environment.
- Create more naturalist habitat.
- Design for flooding.

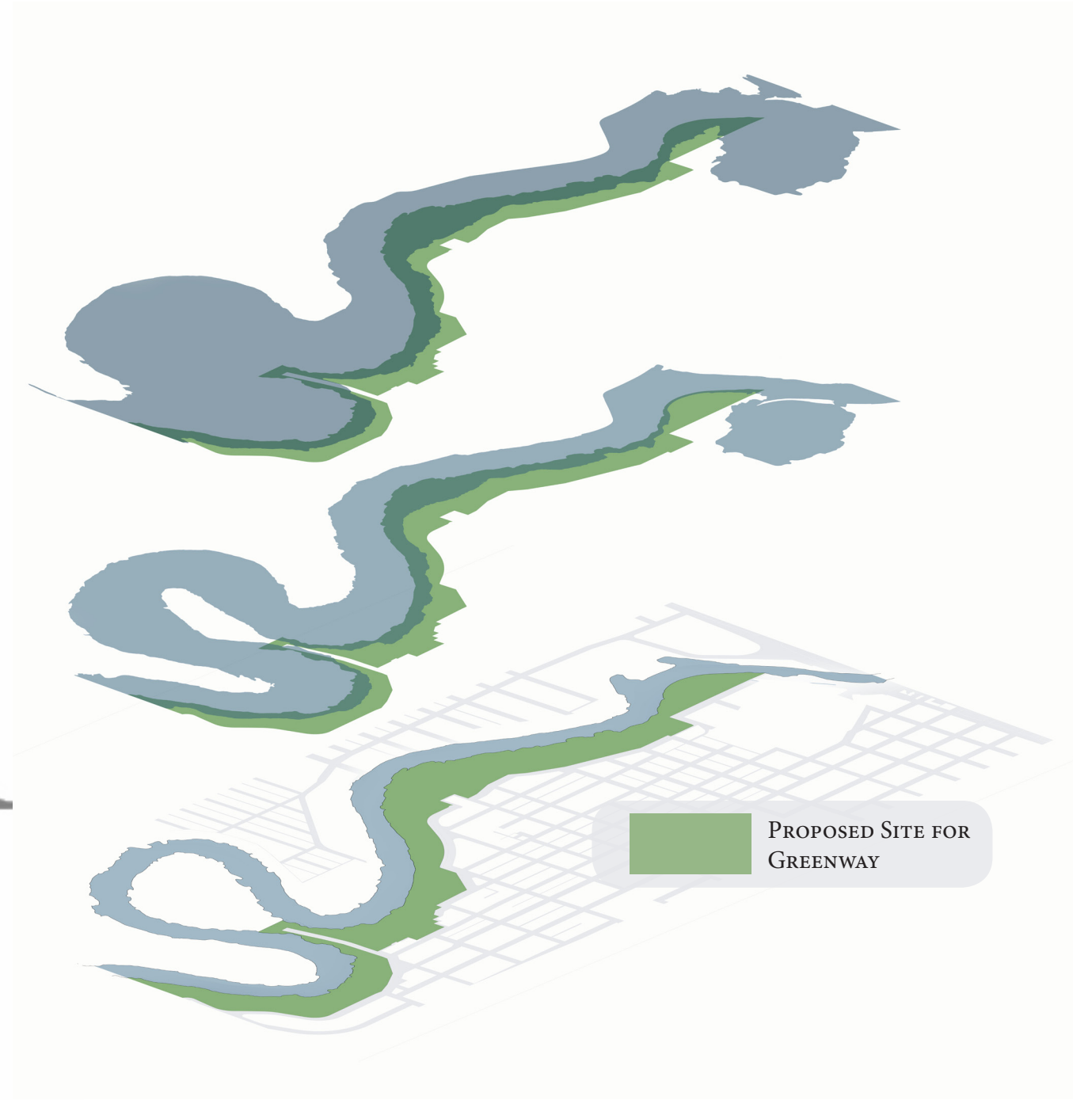
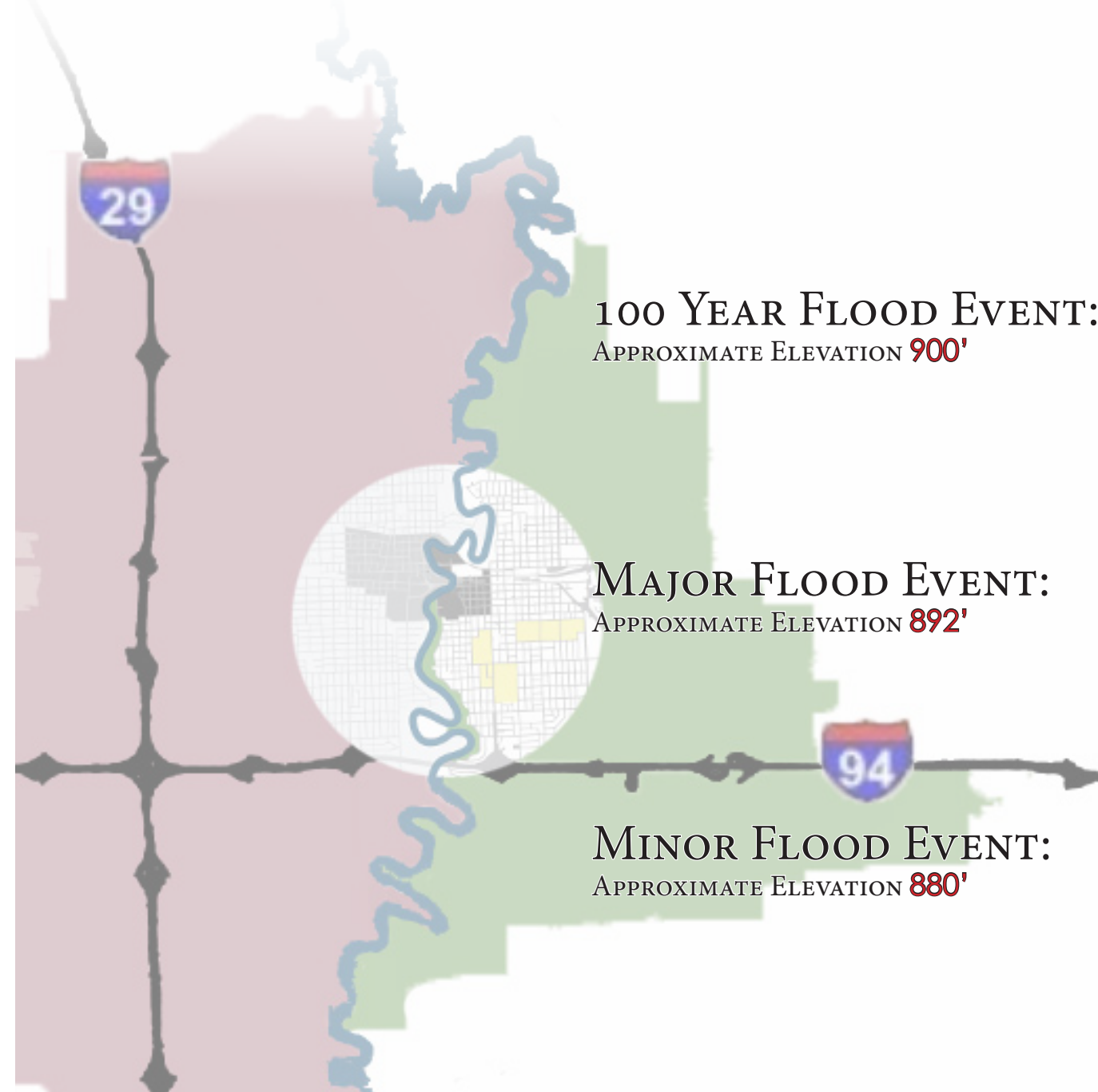
## SITE SELECTION:

The site is located on river front parcels adjacent to the Red River in Moorhead, Minnesota, from I-94 to Main Avenue. Excluding Gooseberry Park, the rest of the parcels within the multimodal greenway make up 103 acres. Flooding has been a large issue in the past in the Fargo-Moorhead Metropolitan area. With the introduction of the greenway, I plan to use the land to produce a flood protection infrastructure by incorporating naturalistic wetlands. In addition the multimodal greenway provides a strong opportunity for local commuters to change current commuter habits to healthier more sustainable forms that can easily coexist with and benefit the current transportation systems of the metropolitan area. The multimodal greenway will become an escape from the busy city to a safe naturalistic trails to sustainable travel located in the parcels highlighted in the below isometric.

TOTAL ACREAGE: **103 ACRES**

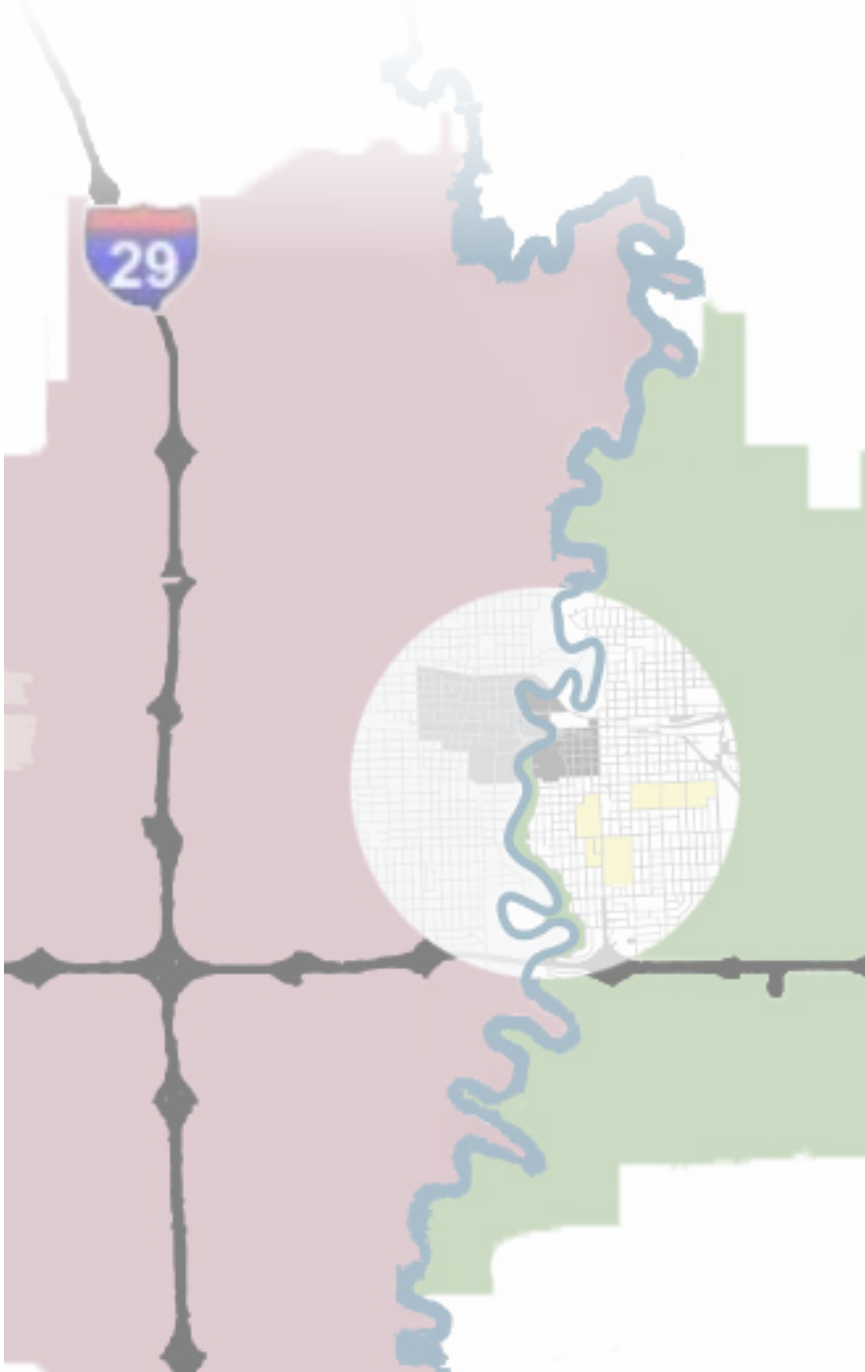


# SITE FLOOD LEVELS:

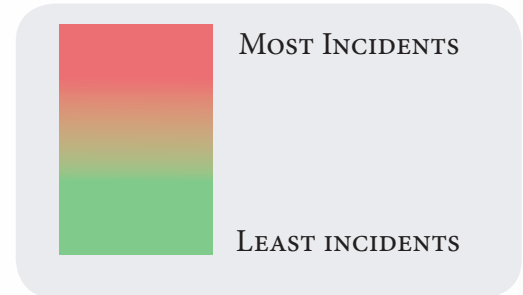




# SITE ANALYSIS:



CRASH INCIDENTS INVOLVING PEDESTRIANS AND MOTOR VEHICLES:



EXISTING BIKE TRAILS AND SHARED USE PATHS:



EXISTING BUS ROUTES: AND CITY DESTINATION POINTS:



# HOW A MULTIMODAL GREENWAY COULD HELP

FARGO-MOORHEAD METROPOLITAN COUNCIL OF GOVERNMENTS

## 2014 LONG RANGE TRANSPORTATION PLAN

How can the addition of a multimodal greenway benefit the Fargo-Moorhead Metropolitan area? Reading into Metro COG's 2014 Long Range Transportation Plan I found many reasons why the metropolitan area would benefit from the introduction of a greenway such as the following:

- Vehicle miles traveled per year would lower
- Lower carbon emissions and improved air quality
- Lower traffic levels and road noise
- Faster emergency vehicular response time
- Lower infrastructure maintenance costs in roads and parking facilities



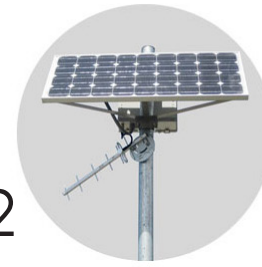
# ENCOURAGING MORE INVOLVEMENT:

## THE DERO ZAP PROGRAM

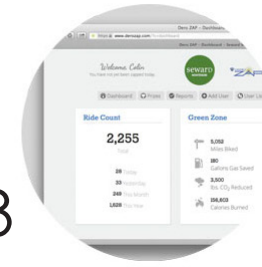
PARTICIPANTS OF THE PROGRAM ARE ENTERED TO WIN PRIZES DEPENDING ON THERE PERSONAL LEVEL OF ACTIVITY IN THE PROGRAM. LOCAL SUPPORTING BUSINESSES MAY OFFER DISCOUNTS TO CUSTOMERS WHO PARTICIPATE OR INCORPORATE INSURANCE BENEFITS TO EMPLOYEES WHO PARTICIPATE.



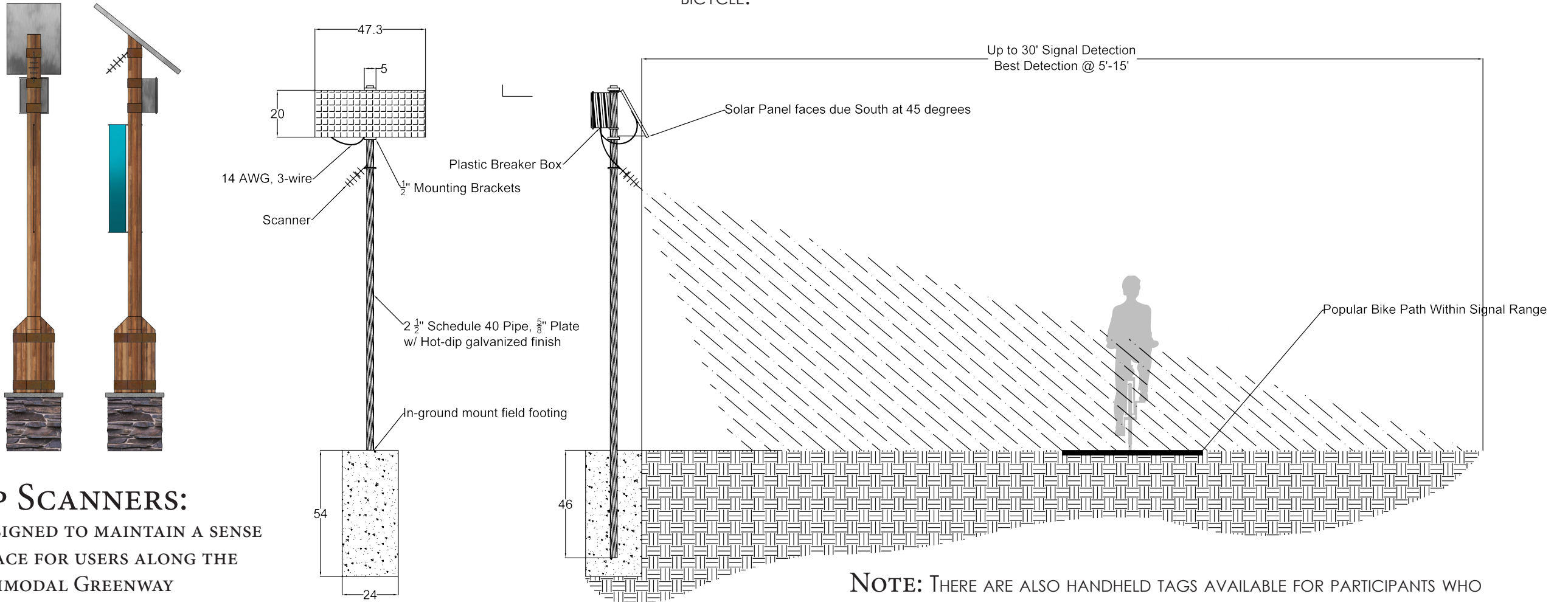
1 ATTACH THE FREE RIGID TAG TO THE FRONT WHEEL OF YOUR BICYCLE.



2 SCANNERS DETECT USERS AS THEY PASS BY.



3 USE DERO'S WEB APP TO TRACK YOUR ACTIVITY.



**ZAP SCANNERS:**  
REDESIGNED TO MAINTAIN A SENSE OF PLACE FOR USERS ALONG THE MULTIMODAL GREENWAY

**NOTE:** THERE ARE ALSO HANDHELD TAGS AVAILABLE FOR PARTICIPANTS WHO PREFER TO WALK OR ROLLER BLADE.

## RESEARCH HYPOTHESIS:

By introducing a multimodal greenway with progressive flood control and an incentive program we can change transportation patterns. Improving the health of the community by lowering the number of vehicles on the road, lower traffic levels for safer streets and emergency response time as well as the city's budget for infrastructure such as street repair and additional parking. It can also dramatically effect individual health by increasing ones physical activity and relations in the community and lower the average vehicle miles traveled in the metropolitan area. Lowering the number of vehicle miles traveled in the metropolitan region means lowering the traffic levels which will cut down on carbon emissions improving air quality and noise pollution. Once established I expect great success in number of users and improvements to the community as well as future expansion to include all the parcels adjacent to the Red River.

# MASTER PLAN:



-  BUS ROUTES
-  BIKE ROUTES
-  CONCORDIA
-  EXISTING PARKS
-  MAIN TRAIL
-  SECONDARY TRAIL
-  WETLANDS
-  PRAIRIE
-  MOWED TURF



# MASTER PLAN:



-  BUS ROUTES
-  BIKE ROUTES
-  CONCORDIA
-  EXISTING PARKS
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-  WETLANDS
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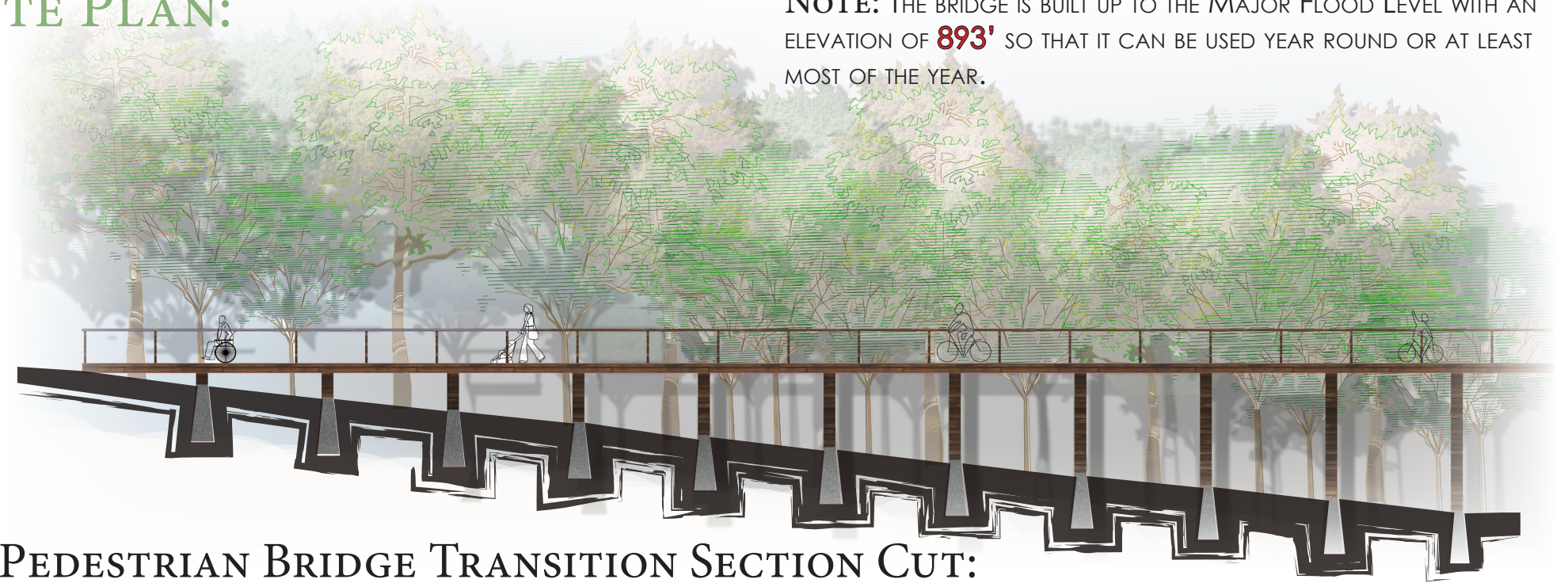
# MASTER PLAN:



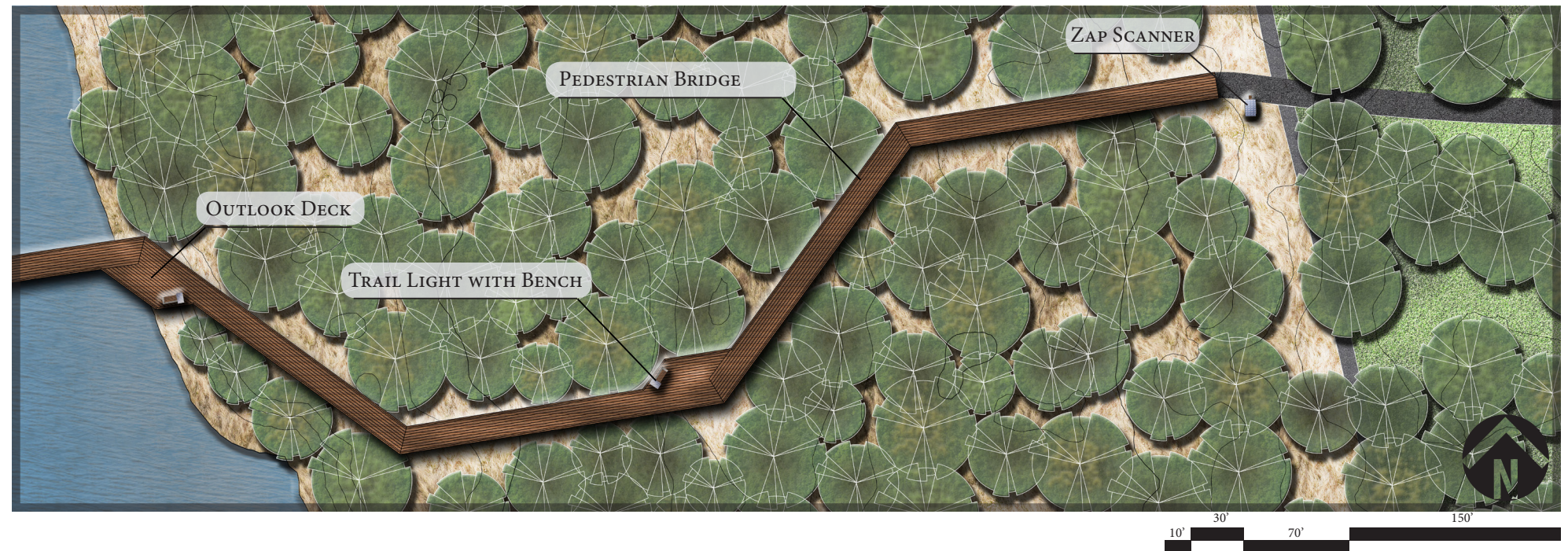
# PEDESTRIAN BRIDGE SITE PLAN:



**NOTE:** THE BRIDGE IS BUILT UP TO THE MAJOR FLOOD LEVEL WITH AN ELEVATION OF **893'** SO THAT IT CAN BE USED YEAR ROUND OR AT LEAST MOST OF THE YEAR.



PEDESTRIAN BRIDGE TRANSITION SECTION CUT:

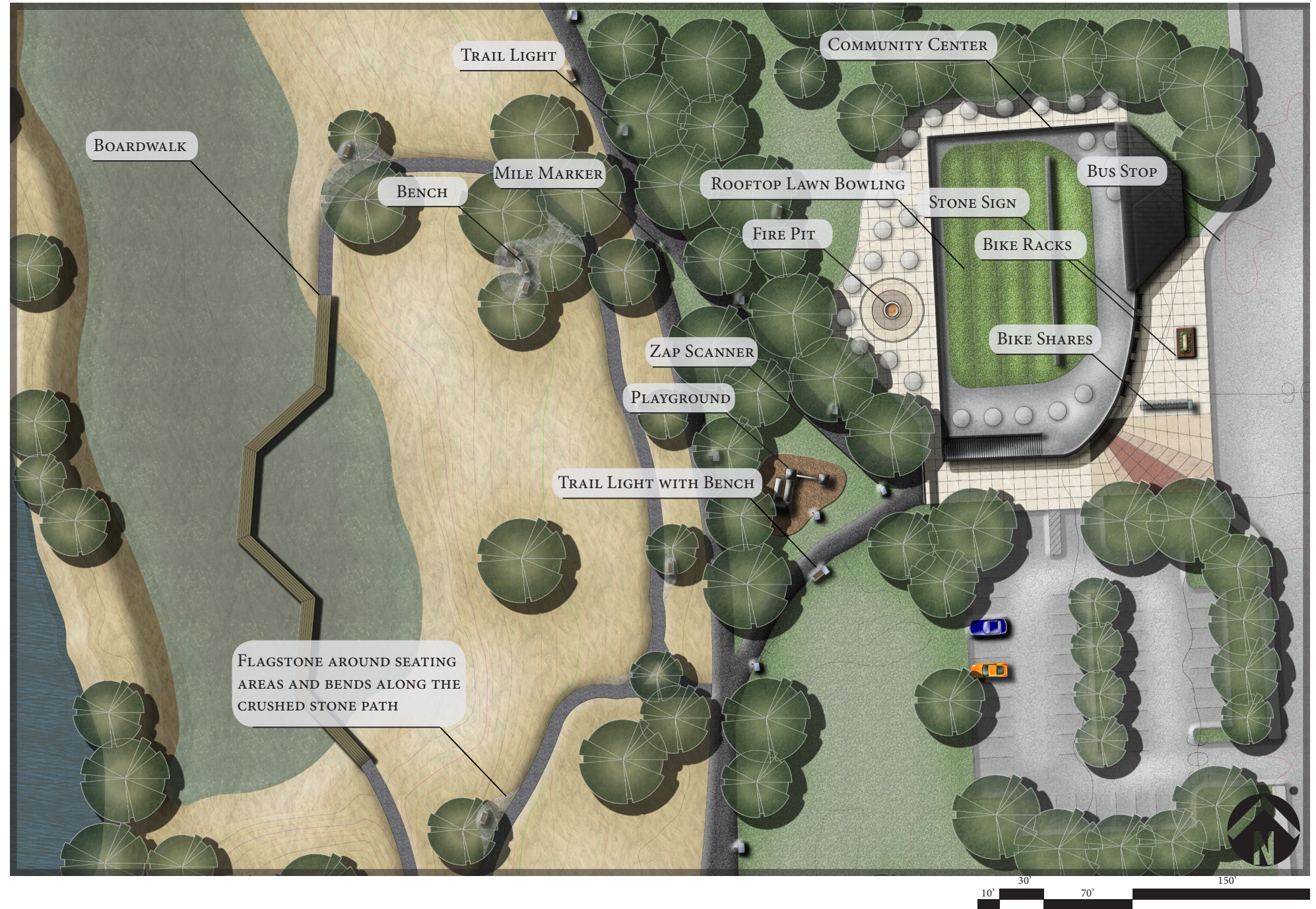




# BOARDWALK PERSPECTIVE:



# COMMUNITY CENTER SITE PLAN:



# COMMUNITY CENTER PERSPECTIVE:

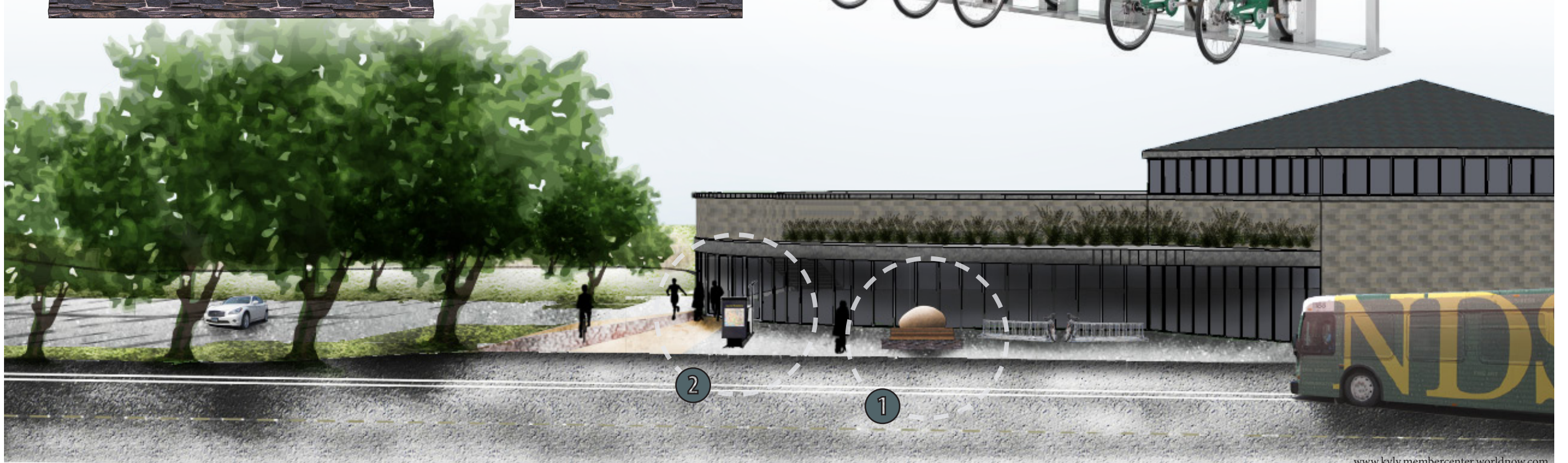
STONE SIGN

1



BIKE SHARES

2



# CRUSHED STONE PATH:

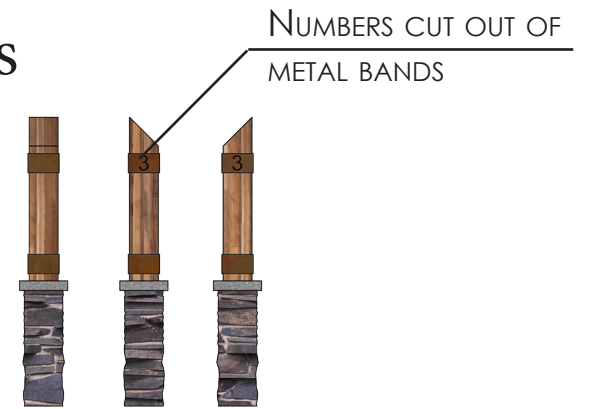


FLAGSTONE AROUND SEATING AREAS AND BENDS ALONG THE CRUSHED STONE PATH

## MILE MARKERS

1

MILE MARKERS ARE PLACED ALONG THE TRAILS TO ALLOW USERS TO NAVIGATE EASILY



## BENCHES

2

NOTE: SOME BENCHES MAY BE ATTACHED TO PARK LAMPS DEPENDING ON LOCATIONS



# TYPICAL TRAIL TYPES:

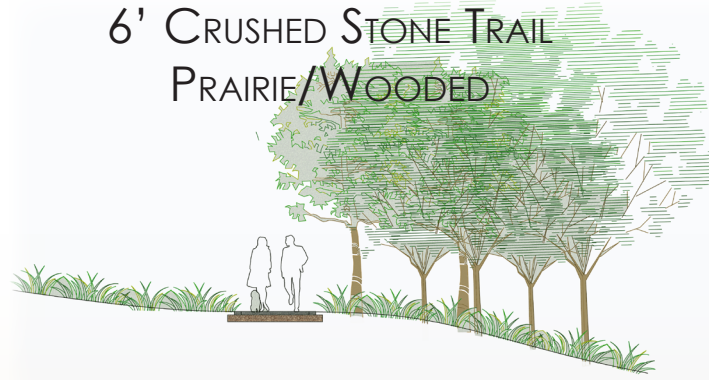
8' ASPHALT BIKE TRAIL  
MAINTENANCE LAWN



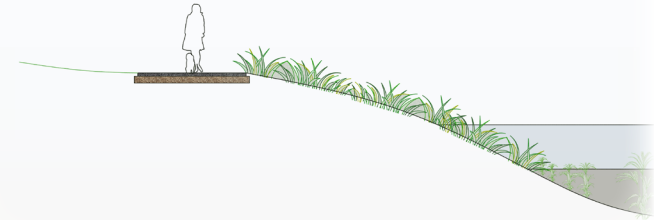
8' ASPHALT BIKE TRAIL OR  
6' CRUSHED STONE TRAIL  
MAINTENANCE LAWN/PRAIRIE



8' ASPHALT BIKE TRAIL OR  
6' CRUSHED STONE TRAIL  
PRAIRIE/WOODED

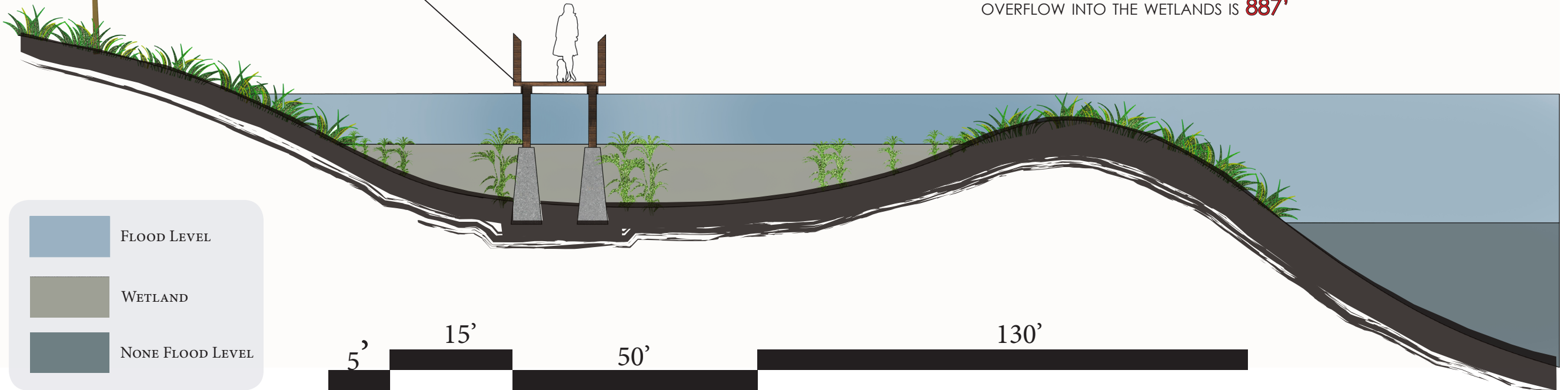


8' ASPHALT BIKE TRAIL OR  
6' CRUSHED STONE TRAIL  
MAINTENANCE LAWN/WETLANDS



## WETLAND SECTION CUT

6' BOARDWALK



**NOTE:** LOWEST ELEVATION FOR THE RIVER TO  
OVERFLOW INTO THE WETLANDS IS **887'**



FLOOD LEVEL



WETLAND



NONE FLOOD LEVEL

5'

15'

50'

130'

## CONCLUSION:

With the city's property growth along the Red River due to the current buyouts we can do more than simply construct new levees. We can use the properties to develop an uninterrupted multimodal greenway that can coexist with flood protection measures. Introduction of such a greenway would become an asset to the city as well as its residents in improving the transportation of individuals and the overall community health of the metropolitan region.

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QUESTIONS?

