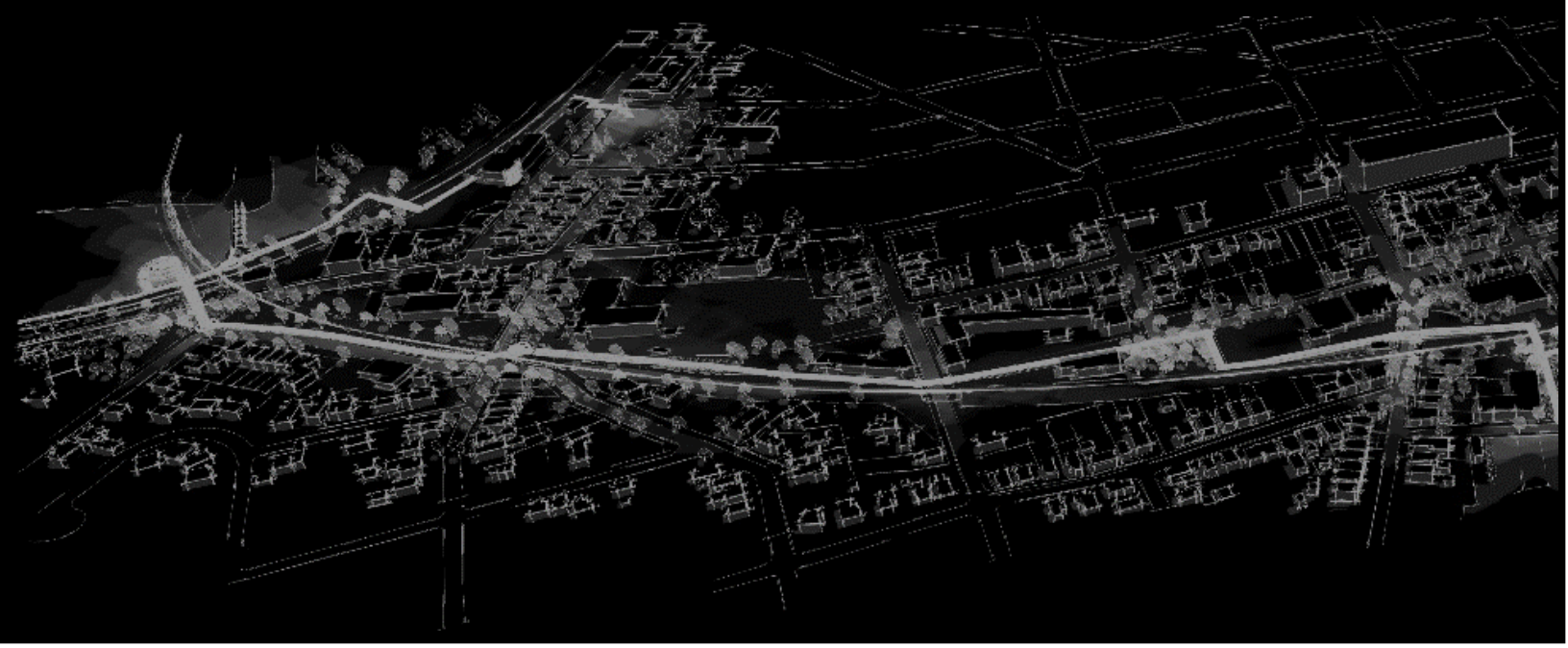
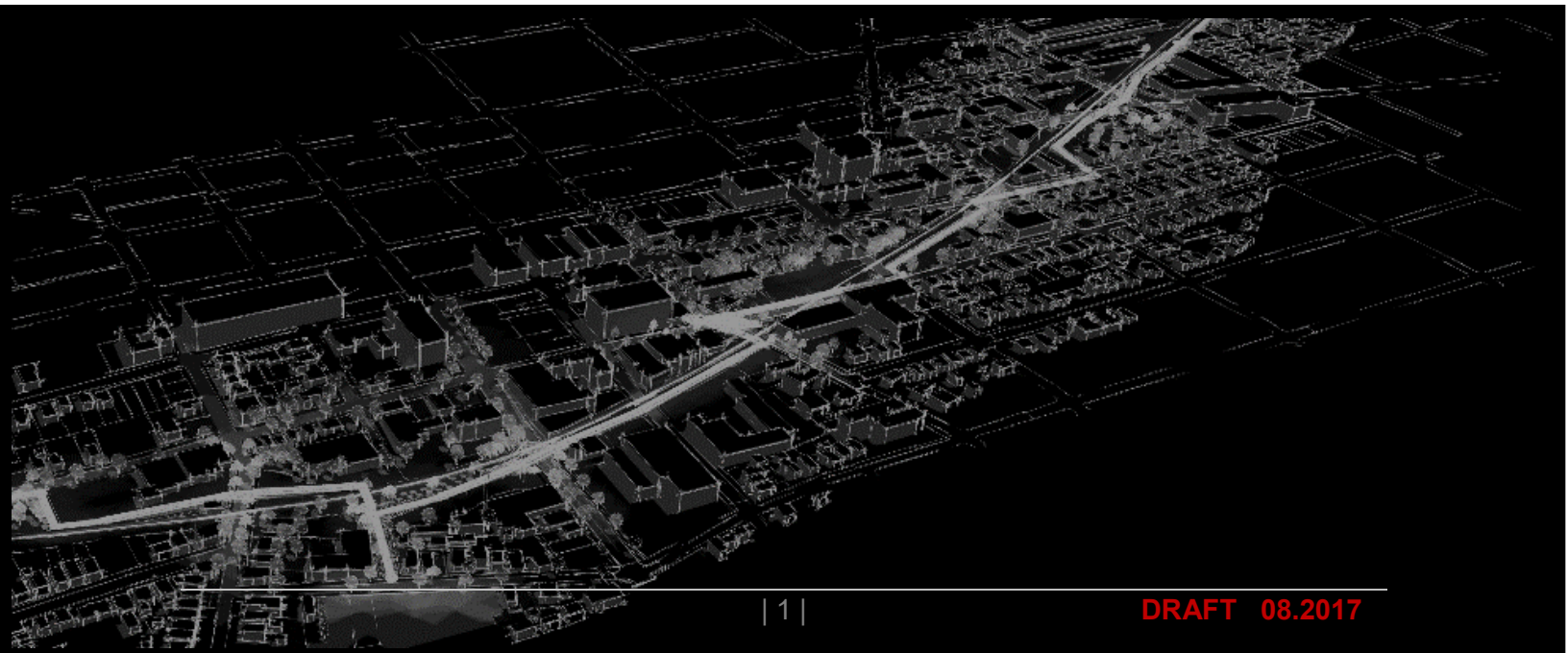


The Treeline
Allen Creek Urban Trail

MASTER PLAN REPORT
DRAFT 08.2017



RESOLUTION

The Treeline – Allen Creek Urban Trail contained herein was adopted by Resolution _____ by the Ann Arbor City Council on December ____, 2017.

Christopher Taylor, Mayor

and

ANN ARBOR CITY COUNCIL

_____
Jacqueline Beaudry, City Clerk

The Treeline – Allen Creek Urban Trail contained herein was adopted by the Ann Arbor City Planning Commission on November ____, 2017.

ANN ARBOR CITY PLANNING COMMISSION

Ken Clein, Chair
Alex Milshteyn, Vice Chair
Zachary Ackerman
Erica Briggs
Shannon Gibb-Randall
Scott Trudeau
Julie Weatherbee
Wendy Woods

_____
Sarah Mills, Secretary

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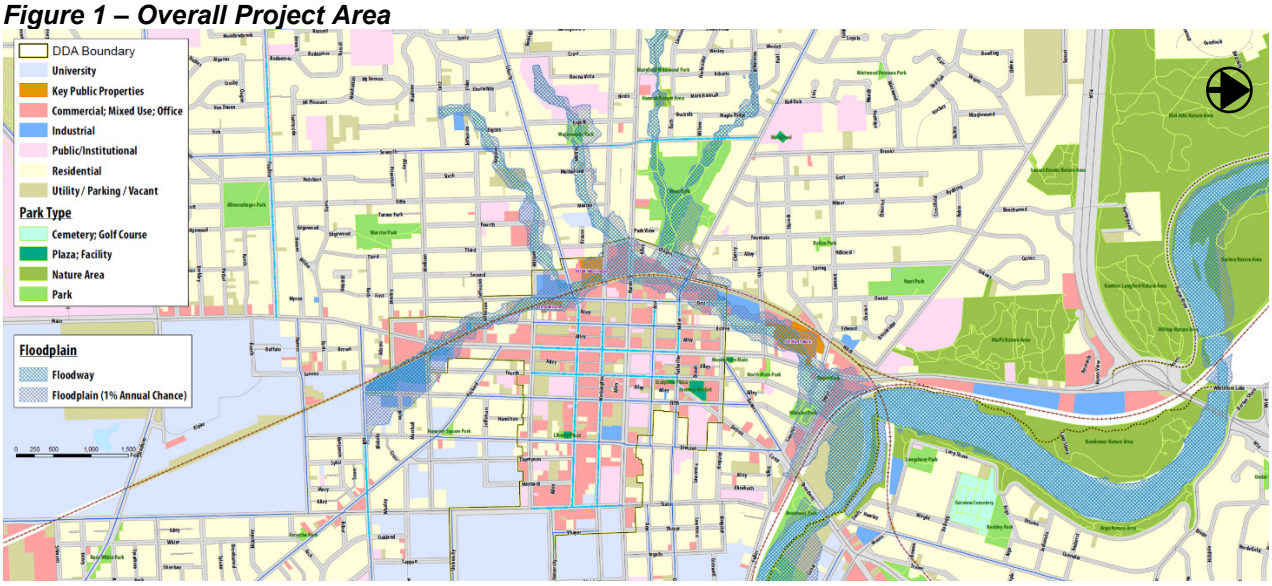
Chapter 1 – Overview

Background

The Treeline – a planned urban trail through the heart of Ann Arbor – is a transformative idea that will connect people and places across Ann Arbor. Previously referred to as the Allen Creek Greenway, the idea for an urban trail and improvements to the Allen Creek floodplain have been discussed for decades within the community. The Treeline will connect City-owned properties, neighborhoods, and downtown businesses while linking to the Huron River and the regional Border-to-Border trail (B2B Trail).

The project extent connects to the B2B Trail along the Huron River at the north end of the study, and connects to the South State Street and Stimson Street intersection on the south end.

Figure 1 – Overall Project Area



Residents of Ann Arbor will benefit from improved non-motorized connections within the community and to the Huron River. The B2B Trail, a county-wide greenway trail, on the west side of the Huron River, connects to the northern terminus of the study area. The B2B Trail has been identified as part of Michigan's Iron Belle Trail that is proposed as a contiguous network of trail connections from Belle Isle State Park in Detroit to Ironwood at the western end of the Upper Peninsula. A non-motorized connection to the B2B Trail from the City's core would provide a tremendous benefit to Ann Arbor's residents and economy.

Project Purpose

In 2011, the Ann Arbor City Council passed a *Resolution in Support of the Allen Creek Greenway* (The Treeline), recognizing its ability to address existing inadequacies in non-motorized connections within the community and specifically to the Huron River. In the spring of 2015 City Council passed a resolution to adopt the FY2016 budget which included funding a master plan for The Treeline and the project was identified as a City Council priority in 2016.

The objective was to develop a master plan that describes a feasible approach for the future development of The Treeline and to examine the critical factors influencing its feasibility and potential configuration. While the opportunity for The Treeline has been studied in detail many times before, this planning effort reflects the first time the City directly led a planning effort intended for final plan adoption as an element of the City of Ann Arbor Master Plan.

Many opportunities to improve the Allen Creek floodplain area have also been discussed in past planning efforts: (1) the future use of publically owned properties (721 North Main, 415 West Washington, and First and William Lot); (2) improvements to the floodplain and stormwater management practices; and (3) expansion of public open spaces. However, the Treeline master planning process – as directed by City Council – was to focus primarily on identifying the non-motorized connection across the study area, while recognizing that the Treeline can provide a framework for additional improvements through parallel or future projects.

Past Studies

Under the Allen Creek Greenway name, The Treeline has been studied extensively in previous years by a variety of groups, each bringing unique perspectives and considerations to the process.

Prior Allen Creek Greenway (Treeline) Reports:

- **2001 – Downtown Development Authority Plan Update: Allen Creek North**
  - » University of Michigan (U-M) student project, explores an early vision for the Allen Creek Greenway along the floodplain and/or railroad tracks. Considers changing land use context and potential non-motorized facilities connecting to the trail.

- **2005 – Allen Creek Feasibility Study**
  - » U-M School of Business student project, primarily focusing on a financial analysis of potential redevelopment sites along the floodplain and how increased property values along a potential greenway corridor could help support implementation.

- **2007 – Allen Creek Greenway Task Force: Findings & Recommendations**
  - » City Council appointed Task Force report, provides a thorough history of the potential greenway corridor. Recommendations focus primarily on different approaches for improving the city-owned properties at First & William, 415 West Washington, and 721 North Main.

- **2008 – Proposed Route of the Allen Creek Greenway, Essential Route & Future Opportunities**
  - » Allen Creek Greenway Conservancy (renamed the Treeline Conservancy) report, identifies a potential route alignment that primarily utilizes public parcels and the railroad corridor to accommodate a trail.

- **2012 – Visioning the Allen Creek**
  - » U-M Landscape Architecture student project, explores more detailed design approaches for a greenway trail and designs for city-owned properties along the corridor.

- **2014 – Green The Way: Moving Forward on the Allen Creek Trail**
  - » U-M Urban & Regional Planning student project, includes public outreach and surveys to identify trends and preferences among respondents in their non-motorized travel behavior. Conducted a destination survey identifying key locations and assets for trail system connections. The alignment and feasibility of four different route options is explored.

Other Planning Studies

- **2013 – North Main Street/Huron River Corridor: Vision for the Future**
  - » Highlights challenges with crossing the North Main Street corridor as a pedestrian or bicyclist and suggests a pedestrian bridge over North Main Street and the Michigan Department of Transportation (MDOT) railroad corridor.

- **2013 – City of Ann Arbor Non-Motorized Transportation Plan**
  - » Identifies a conceptual corridor for the Allen Creek Greenway following the railroad corridor/Allen Creek floodplain.

- **2017 – Ann Arbor Parks and Recreation Open Space (PROS) Plan 2016-2020**
  - » Recognizes past planning efforts related to the Allen Creek Greenway and notes the greenway as an opportunity to consider alongside other active recreation proposals. Calls for development of an Allen Creek Greenway master plan.

Stormwater Management plans

- **2001 – Allen Creek Watershed Management Plan**
  - » Identifies water quality and quantity challenges within the Allen Creek Watershed and recommended actions. Calls for protection/restoration of floodplain areas as part of the Allen Creek Greenway project, with tributary connections as well.

- **2007 – City of Ann Arbor Flood Mitigation Plan**
  - » Identifies opportunity for a greenway plan to help catalyze restoration of open spaces and potential removal of obstructions to mitigate flooding.

- **2013 – Allen Creek Berm: Feasibility of Flood Reduction and Pedestrian Options Technical Memorandum**
  - » Determines that an opening in the MDOT railroad berm is feasible and could be coupled with a non-motorized tunnel to provide access to the north side of the berm.

Many additional related documents have a bearing on the Treeline project area. Please see Appendix C for a complete list of additional resources.

Planning & Engagement Process

Process

The planning process for The Treeline Master Plan engaged stakeholders, community leaders and residents in shaping the scope, content, and direction of the plan.

The project team identified the following goals for the Master Plan:

- Enhance connectivity between neighborhoods, businesses, and the Huron River.
- Promote health and safety in our community.
- Protect and enhance environmental quality in the Allen Creek watershed.
- Strengthen Ann Arbor's character and identity.
- Support economic vitality in Ann Arbor.

The project process included four phases, as outlined below.

PHASE 1: Project Initiation – Issues & Opportunities

The project team gathered and analyzed a wide range of data, reviewed prior studies, and benchmarked the trail opportunities against similar trail projects from across the country. Public engagement focused around validating project goals, discussing elements within the scope of The Treeline project, and understanding community issues and opportunities.

PHASE 2: Route Options & Evaluation

The project team developed potential route alignment variations, drawing from past studies, technical investigation, and stakeholder input. Potential routes were evaluated on a wide range of criteria to establish a baseline for comparison between different route options. Evaluation topics included:

- Greenway and User Experience
- Land Use and Economics
- Hydrology and Infrastructure
- Mobility and Transportation
- Cost and Implementation
- Management and Operations

See Chapter 2: *Route Evaluation* for additional information on the route evaluation process.

PHASE 3: Plan Recommendations & Strategies

Considering the results and feedback on the route alternatives and their evaluation, the project team developed a framework plan that identified a preferred trail alignment along with associated near-term improvements and other project opportunities. The framework was then refined based on stakeholder and citizen input, as well as meetings with property owners throughout the study area.

PHASE 4: Master Plan Documentation & Actions

Phase 4 focused on the documentation of The Treeline Master Plan, including conceptual illustrations of The Treeline. Implementation phases in coordination with the Treeline Conservancy (previously the Allen Creek Greenway Conservancy) are suggested. The project team presented the final report to boards and commissions for review and adoption as an element of the city's Master Plan.

Who is involved?

The Treeline Master Plan process was conducted in an open and transparent manner to the maximum extent possible. The process included a tiered level of engagement for review and input as materials were developed. An internal Project Management Team and a Technical Advisory Committee were engaged frequently throughout the process. The Treeline public engagement process included a Citizens Advisory Committee, the community at-large, a wide range of stakeholders and discussions with individual property owners.

A description of each group is outlined, below. A summary of key points heard throughout the extensive public engagement process are listed for each tier of the public engagement efforts. More detail, in the form of meeting summaries, can be found in Appendix B.

Project Management Team

The Project Management Team included City staff from Public Services and Community Services. The project team was responsible for providing direction on project decisions and coordinating the entire master plan process.

Technical Advisory Committee

The Technical Advisory Committee (TAC) included staff from many City units and departments, and representatives of the Washtenaw County Parks and Recreation Commission, the Washtenaw County Water Resources Commission, and the Washtenaw Area Transportation Study. The TAC role was to provide input on specific, technical aspects or broader elements of the master plan from the perspective of the unit, department or agency that they represent.

Citizen Advisory Committee (6 meetings)

The Citizen Advisory Committee (CAC) included individuals who represented a broad spectrum of interests related to development of the master plan. The CAC served in an advisory capacity and provided feedback, from a community perspective, on the master plan development including the scope, content, direction and recommendations of the plan, and provided guidance on the best approaches for engaging stakeholder groups and the broader public over the course of the project.

The public was able to access all CAC information, documents and correspondence through a project web page. The public was welcome to attend all CAC meetings which followed the guidelines in the Open Meetings Act.

Meetings:

- CAC #1 (May 4, 2016)
- CAC #2 (September 14, 2016)
- CAC #3 (January 11, 2017)
- CAC #4 (April 19, 2017)
- CAC #5 (July 19, 2017)
- CAC #6 (September 13, 2017)

What we heard:

- Excellent engagement and participation by CAC members throughout the process with a strong desire to see The Treeline move forward into implementation.
- In consideration of route alternatives, CAC members expressed a strong preference for off-street trail alignments with a desire for a continuous, barrier free trail facility to the maximum extent possible.
- Encouraged establishment/pursuit of green spaces adjacent to, or supporting the corridor to provide additional natural area, stormwater, and recreational functions.

Community at Large (4 meetings)

Community-wide meetings were held to engage the broad community and all interested stakeholders. Meetings were advertised through the City's e-mail notification and press-release process, invitations were sent to identified stakeholders, and CAC members were encouraged to help spread the word. Community-wide meetings were held at milestones throughout the master plan process to facilitate meaningful citizen input. Community-wide meetings were recorded and broadcast by the City's Cable Television Network (CTN).

Meetings:

- Community-Wide Introductory Meeting (November 19, 2015)
- Community-Wide Meeting #1 (June 16, 2016)
- Community-Wide Meeting #2 (February 16, 2017)
- Community-Wide Meeting #3 (October 4, 2017)

What we heard:

- Strong attendance at community-wide meetings.
- A community interest in getting answers to critical questions, such as:
  - » What role will the railroad play?
  - » What is the timing of improvements and trail development?
  - » Questions about the past planning studies and efforts, and why this project/effort is different?
- General agreement between the community at-large and the CAC members on the alignments and design components of the trail facilities.
- Complementing the meetings, MLIVE (online news) provided regular coverage of the CAC and community-wide meetings.

Stakeholders

Stakeholders included representatives from residential/neighborhood groups, agencies/public groups, non-profit groups/environmental organizations, business/commercial organizations and ad-hoc/grassroots organizations. Stakeholders were engaged because of their vested interest and/or expertise about The Treeline study area and potential implementation.

What we heard:

- Business Organizations & Commercial Neighborhoods:
  - » Concern regarding funding in relation to other downtown infrastructure projects (e.g., street design).
  - » Stated need for on-going coordination with downtown street development projects in proximity to The Treeline.

- Boards, Commissions, Agencies, Public/Non-Profit Groups:
  - » Reiterated a desire for an off-street alignment.
  - » Acknowledgement of the challenge of using the railroad corridor (tight physical constraints)
  - » Concerns raised about large grade/elevation changes, difficult street crossings, and the need to connect to the main trail alignment (when elevated).

- Residential Neighborhoods Associations, Environmental Organizations:
  - » Questions related to the physical design of trail (grades, hybrid option) and property access (i.e., railroad access, discussions with private property owners)

- Michigan Department of Transportation (MDOT)
  - » The project team met with Rail and Roads divisions.
  - » No major issues with bridging over MDOT roadways and/or railways provided required clearances and engineering standards can be satisfied.
  - » MDOT requested refined design proposals for engineering and leadership review at an appropriate time in the future.

- Treeline Conservancy
  - » Overall, lots of enthusiasm among the board members.
  - » Assisted with making initial contact with property owners

Key Property Owners

The University of Michigan (U-M), Watco Companies (including Ann Arbor Railroad), and other private property owners along the project corridor were engaged to obtain their input about preferred route alignments and project proposals. Property owner receptivity to a trail alignment being shown on their property as part of the master plan was assessed.

What we heard:

- Watco Companies
  - » Safety and liability is the primary concern. Watco Companies emphasizes the risk of a potential derailment and the impact it could have to a trail within the rail corridor.
  - » No precedent for a “rail with trail” in their holdings anywhere in the country.
  - » Watco Companies acknowledged that they want to be a good neighbor/steward in the Ann Arbor community.
  - » Route options that were mostly within the rail corridor raised significant concerns with Watco Companies and are not likely to be feasible options from their perspective.
  - » Watco Companies was encouraged to see that the preferred route alignment did not utilize the rail corridor in its entirety, and that only key essential segments of the railroad property were utilized.
  - » Future use of rail right-of-way will require detailed coordination with and approval from Watco Companies; it is acceptable to them to continue to show the proposed route in the Master Plan.

- University of Michigan
  - » U-M would rather see alignments that make use of public rights-of-way on State Street, Hill, Division, and Hoover around the south campus area.

- Other Private Property Owners
  - » Conversations have occurred with many property owners and in collaboration with the Treeline Conservancy. No new agreements have been made with property owners. The project team sought to determine whether property owners were amenable to showing a conceptual trail alignment through their property, understanding that design and operational details would need to be worked out to the satisfaction of affected property owners.
  - » Overall, private property owners were very supportive and saw the potential value an urban trail would bring to their tenants, businesses, or property users.
  - » For new development projects along the preferred route, the City is requesting easements from property owners during the site plan approval phase.

Design Direction

Design Principles

The Treeline responds to a number of design principles and best practices. Many of these principles arose from the stakeholder and community engagement process, reflecting the values and desires of key, future trail users:

- **Continuity**: Minimize the number of stops and breaks for trail uses in order to provide a continuous experience. Additionally, design the trail so that it is distinct and identifiable within the urban context.
- **Safety**: Focus on an off-street alignment to the maximum extent possible and improve (or separate) street crossings to encourage a high level of safety. Minimize street crossings and discourage illegal trespassing on the railroad corridor and other private properties.
- **Accessibility:** Serve all users of all abilities, including pedestrians, cyclists, and other non-motorized travelers. Meet universal design and/or ADA design requirements.
- **Connectivity**: Provide frequent points of access to The Treeline. Provide direct connections to existing parks and natural areas, where possible. Link to the core of downtown and other economic, civic, and cultural assets. Provide an alternative to automobile use.
- **Sustainable**: Manage stormwater and run-off generated by the urban trail. Improve the water quality of the floodplain and consider feasible opportunities to manage off-site runoff. Use sustainable design practices (material selection, energy efficiency, etc.)
- **Transformative:** Be an amenity embraced by the community that promotes health, economic investment, tourism, and community identity.

The Treeline project, and the rich planning history informing it, have considered a number of additional opportunities that reach beyond the urban trail component. These include:

- Integration and connection to other open spaces within, and proximate to, the Allen Creek floodplain as part of the urban trail network and connected system of open spaces.
- Management of stormwater and/or flood waters within the Allen Creek floodplain.
- Connection to other non-motorized facilities, such as bike lanes, trails, and sidewalks.

The framework plan (Chapter 3) identifies many of these opportunities and how they can be pursued in parallel with, or subsequent to, the implementation of the urban trail.

Why an "Urban Trail"?

The Treeline is described in this report as an "Urban Trail," which acknowledges the complex urban environment through which it passes. While past planning efforts have identified this trail opportunity as a "greenway," opportunities for creation of large and/or wide open space or natural area along the urban trail are limited. Private property, the existing street grid, buildings, utilities, and other built infrastructure limit the availability of land for larger green spaces within the context of the this planning effort.

Sustainability Framework Connection

The City of Ann Arbor's Sustainability Framework lists sixteen shared, overarching city-wide goals that address sustainability objectives for the city. The Treeline provides a means of furthering at least ten of these goals, outlined below:

Engaged Community - Ensure our community is strongly connected through outreach, opportunities for engagement, and stewardship of community resources.

Human Services - Provide services that meet basic human needs of impoverished and disenfranchised residents to maximize the health and well-being of the community.

Safe Community - Minimize risk to public health and property from manmade and natural hazards.

Active Living & Learning - Improve quality of life by providing diverse cultural, recreational, and educational opportunities for all members of our community.

Economic Vitality - Develop a prosperous, resilient local economy that provides opportunity by creating jobs, retaining and attracting talent, supporting a diversity of businesses across all sectors, and rewarding investment in our community.

Transportation Options - Establish a physical and cultural environment that supports and encourages safe, comfortable, and efficient ways for pedestrians, bicyclists, and transit users to travel throughout the city and region.

Sustainable Systems - Plan for and manage constructed and natural infrastructure systems to meet the current and future needs of our community.

Integrated Land Use - Encourage a compact pattern of diverse development that maintains our unique sense of place, preserves our natural systems, and strengthens our neighborhoods, corridors, and downtown.

Clean Air & Water - Eliminate pollutants in our air and water systems.

Healthy Ecosystems - Conserve, protect, enhance, and restore our aquatic and terrestrial ecosystems.

Chapter 2: Corridor Analysis

Overall Corridor

The overall project area is based on desired connection points, rather than an explicit boundary. The northern extent makes a connection to the county-wide Border-to-Border Trail (B2B Trail), which follows the Huron River corridor as it passes through Ann Arbor. The southern extent is to the State Street and Stimson Street intersection. The alignment of the urban trail "corridor" between these points is expected to roughly parallel the Allen Creek floodplain, making use of rights-of-way and other property as feasible. The Watco Companies railroad corridor generally follows along the Allen Creek floodplain as well. The length of the project corridor from the B2B Trail at Long Shore Drive south to State Street and Stimson Street, roughly following the railroad tracks, is approximately 2.6 miles.

The corridor analysis was conducted using: existing maps; studies and plans; field observations; and, through robust community engagement.

Photo taken by: John Sullivan; Images provided by: Treeline Conservancy

Land Use Context

The area on the west side of the study corridor is primarily residential neighborhoods from North Main Street/Depot Street Area to South Main Street at Hill Street. The area east of the corridor and north of Hill Street is a mixture of land uses, including single-family, commercial, retail, and the core of downtown Ann Arbor. South of Hill Street, land uses adjacent to the corridor are primarily used by the University of Michigan (U-M) for administrative, operations, and athletic facility uses.

Community destinations along the corridor provide significant recreational, economic, and community benefit (see Figure 2):

- **Parks & Recreation Facilities:**
  - » B2B Trail along the Huron River
  - » Bandemer Park
  - » Argo Canoe Livery & Argo Cascades Area
  - » Bluffs Nature Area
  - » Wheeler Park
  - » West Park
  - » YMCA
  - » Elbel Field (U-M Facility – used for intramural activities, band practice and other recreation)

- **City-Owned Properties**
  - » 721 North Main Street
  - » 415 West Washington Street
  - » First & William Lot

- **Economic & Cultural Assets**
  - » North Main Corridor District
  - » Downtown Commercial Districts (Kerrytown & Main Street Area)
    - ▪ Wide variety of dining, entertainment, and retail establishments
    - ▪ Significant job and employment centers
  - » Residential Districts (e.g., Water Hill, Old West Side, Old 4th Ward)
  - » Planned and future redevelopment sites (e.g., Kingsley Condominiums, 615 South Main Street)
  - » U-M Sports Stadiums and athletic fields

Economic Opportunities

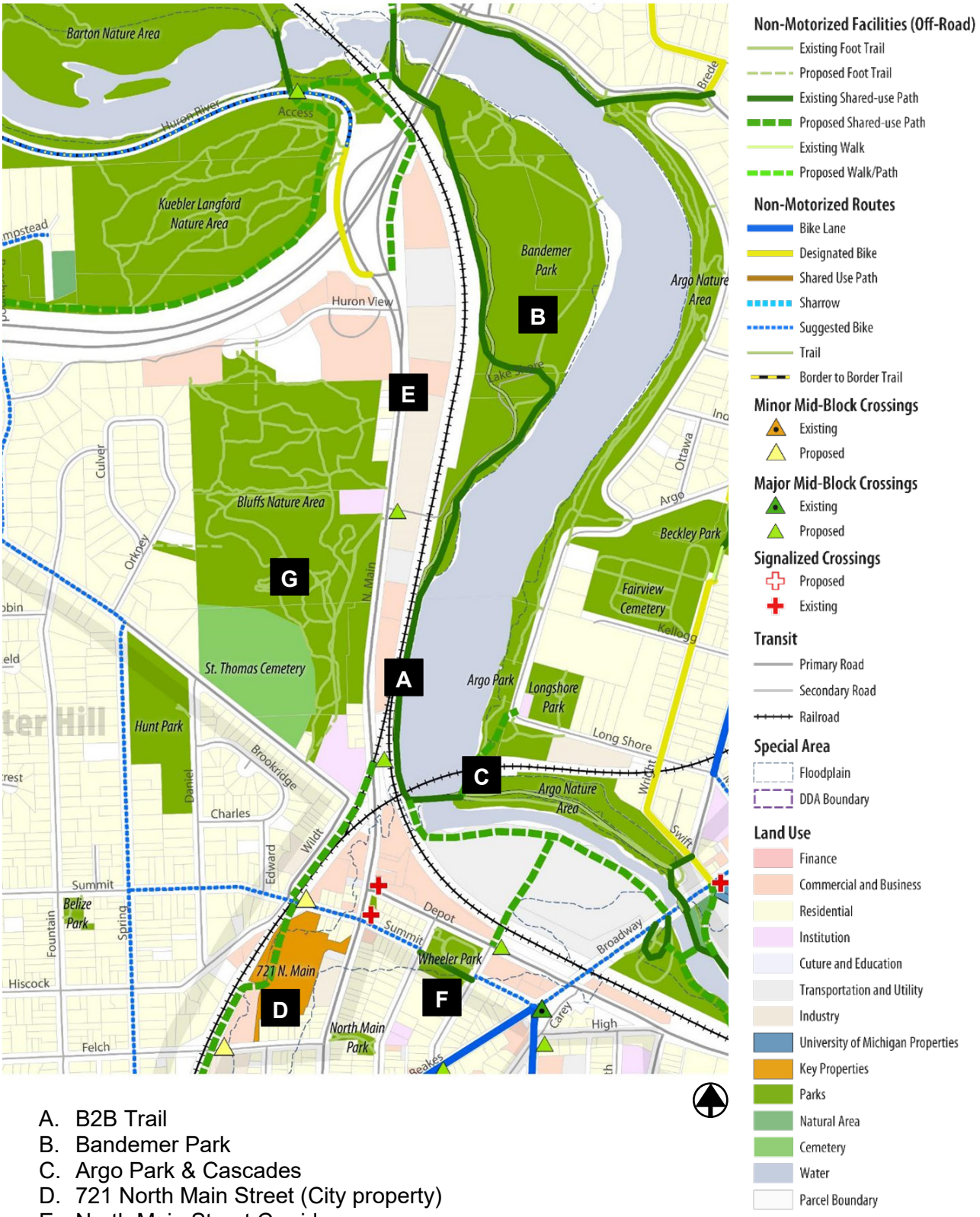
The Treeline has the potential to enhance and support economic activity in the City of Ann Arbor in the following ways:

- Greenways and urban trails have well-documented case studies showing the positive economic benefits to property owners in close proximity. Trail amenities and green spaces increase property value and can better attract tenants or buyers.
- Regional tourism benefit as a result of The Treeline connection to the (B2B Trail) and the state-wide Iron Belle trail system.
- Local tourism benefit as a result of The Treeline connection to the Argo Cascades (via the B2B Trail). Activity and use of the Huron River waterfront has increased significantly in recent years as the Argo Cascades has grown as a regional recreational attraction. The ability to connect Argo Cascades users, via an off-street trail, to the downtown area and its associated businesses could provide a significant benefit from a retail spending and tourism standpoint.

Connection to Open Spaces

Access to adequate open space within the downtown area is a concern, especially considering recent increases in the downtown residential population. The Treeline can be an open space and recreational amenity for downtown and near-downtown areas. The urban trail can provide space for fitness activities like running and bicycling, but can also facilitate connections to other parks and open spaces – most notable those along the Huron River.

Figure 2 – Land Use & Transportation Map: North Study Area

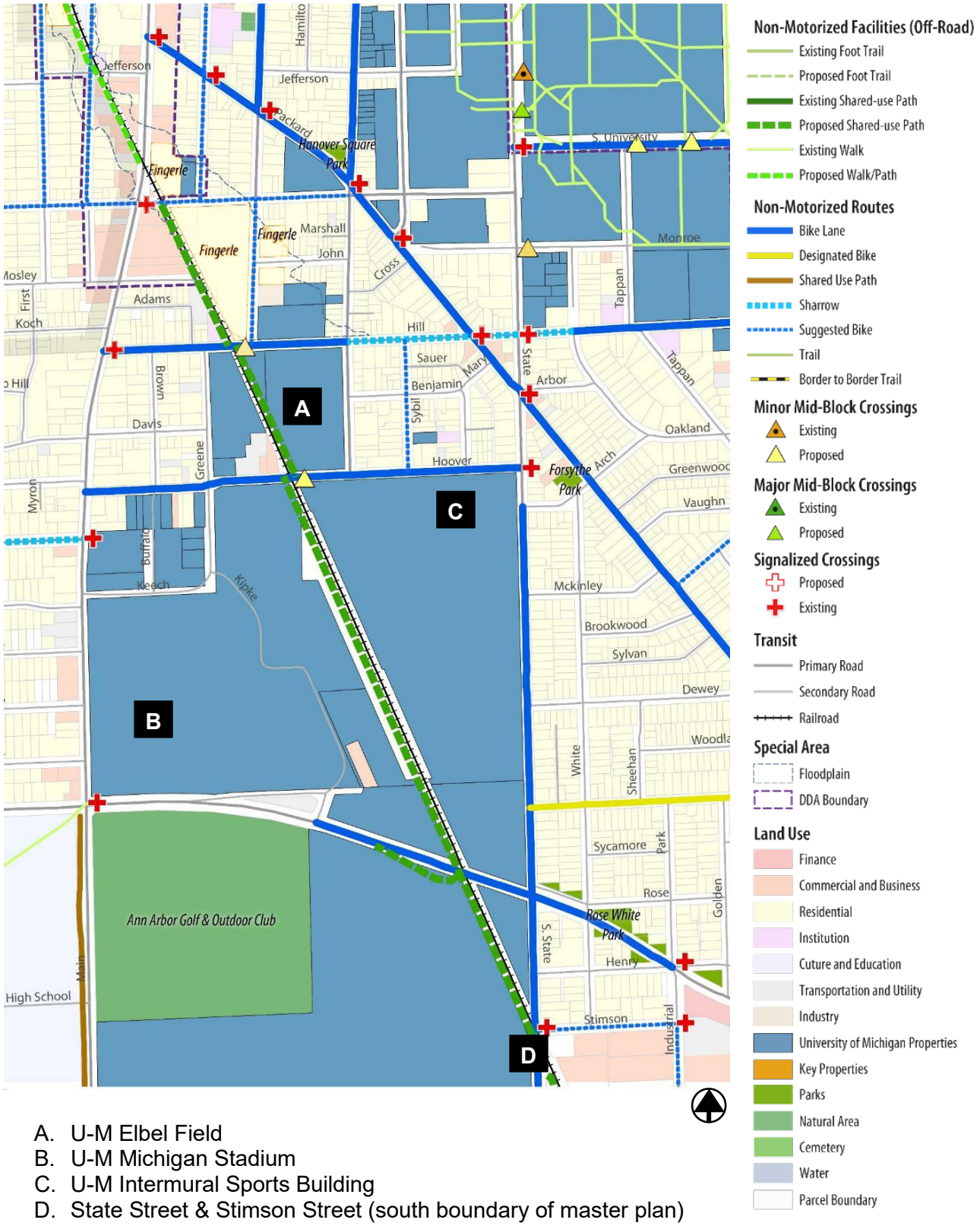


A. B2B Trail
B. Bandemer Park
C. Argo Park & Cascades
D. 721 North Main Street (City property)
E. North Main Street Corridor
F. Wheeler Park
G. Bluffs Nature Area

Figure 3 – Land Use & Transportation Map: Central Study Area

A. 721 North Main Street (City property)
B. 415 West Washington Street (City property)
C. First & William Lot (City property)
D. West Park
E. YMCA
F. Kerrytown District
G. Main Street District

Figure 4 – Land Use & Transportation Map: South Study Area



A. U-M Elbel Field
B. U-M Michigan Stadium
C. U-M Intermural Sports Building
D. State Street & Stimson Street (south boundary of master plan)

Transportation

As an urban trail project, the interface between The Treeline and other transportation systems is critically important. Broadly, the Treeline interfaces with the following systems:

- Non-motorized facilities both on-street and off-street
- Street network
- Railroad corridors
- Sidewalks and pedestrian areas
- Transit operations and bus stops

Non-Motorized System

The Treeline (under the Allen Creek Greenway name) has been identified in The City of Ann Arbor Non-Motorized Transportation Plan Update 2013 as a conceptual route roughly following the railroad corridor and intended to provide a north-south connection to the Huron River. Maps 2, 3, and 4 (above) show non-motorized system information. The following key points should be considered relative to the city's non-motorized network:

- The B2B Trail provides non-motorized access along the Huron River, and smaller paths and trails provide access through park spaces. However, there are currently no other dedicated off-street non-motorized corridors in the downtown area or near-downtown neighborhoods.
- Conventional bike lanes are used throughout the city and the project area and sharrows are used in narrower corridors, especially in the downtown.
- On-street bike facilities (e.g., bike lanes and sharrows) may work well for confident cyclists, but children and many adults do not feel comfortable riding in the roadway and will ride on sidewalks instead.
- The Treeline has the opportunity to provide an effective north-south "spine" as a separated bicycle and pedestrian facility. This facility can connect to the existing and planned bicycle infrastructure and help improve mobility through core parts of the city.
- The Ann Arbor Downtown Street Design Manual identifies First Street, Ashley Street, Liberty (west of First Street) and William Street as bicycle emphasis corridors where higher level bicycle facilities should be considered. Future street projects could complement or be coordinated with The Treeline facilities.
- Increasing non-motorized connectivity into, and out of, the downtown area can reduce vehicle demand and in turn reduce pressure on the parking system while lowering street congestion and energy (fuel) consumption.

While the current phase of work on the Treeline identifies the South State and Stimson intersection as the southerly end point, there is an opportunity to extend the urban trail further south. In November 2016 City Council passed a *Resolution to Consider an Allen Creek Greenway Master Plan Phase II Project* which requests that staff consider adding a Phase II effort to the City's Capital Improvement Plan and that staff be aware that future projects along the South State Street corridor should not preclude development of a future, urban trail extension, south to the City's southern boundary.

Street Network

The street network, and how The Treeline will interface with it, is a critical planning and design consideration. While the rates of pedestrian and bicycle accidents are relatively low in the City of Ann Arbor, it is important to consider how major roads will be crossed in a safe manner for The Treeline users. Key observations relative to the street network include:

- Most streets in the study area are local residential streets or two-lane roads.
    - First Street and Ashley Street function as a one-way pair from Kingsley to Madison Street.
- The North Main Street, South Main Street, and Huron Street corridors are the highest volume roadways in the project area, and vary from 3-5 lanes in width depending on the street section.
- Crossing Huron Street is a major consideration for any potential trail alignment. An existing High Intensity Activated Crosswalk (HAWK Beacon) at Huron Street and Chapin Street could be utilized as part of a near-term connection, but may not be a comfortable crossing location for all users.
- The North Main Street intersections at Summit Street and Depot Street are challenging on-grade crossing points for pedestrian and bicyclists. Given the lane configuration on North Main Street, there is little opportunity for expanding non-motorized facilities. The Treeline alignments that can avoid these challenging intersections are preferable.
- South Main Street and Madison Street is also a challenging crossing location given the lack of bicycle facilities on South Main Street, a very narrow sidewalk/pedestrian space, and a diagonal railroad crossing.
- While some potential street crossings contain full signalization, including pedestrian crossing signals, many intersections are 4-way or 2-way stop sign controlled. Ensuring that any street crossings along the Treeline include safe intersection treatments is critical.
- The right-of-way widths within the study area are typically 66-feet wide. Frequently, two-way roadways within the project area contain 34- to 36-foot pavement widths (including parking lanes). Separated bicycle/non-motorized facilities would require parking lane removal on one or both sides of the street along with curb relocation on at least one side of the street.

Railroad corridors

Watco Companies owns the north-south railroad corridor throughout the study area and operates as a short-line freight service. Ann Arbor Railroad is a subsidiary entity within Watco Companies responsible for general operations on the railroad. The Watco Companies railroad track is elevated across the Huron River, the Michigan Department of Transportation (MDOT) Amtrak railroad corridor and North Main Street (I-94BR).

The Ann Arbor Railroad track continues south with an at-grade crossing at Summit Street and then along an embankment with grade-separated crossings at Felch, Miller, Washington and Huron streets. The railroad comes to grade between Washington and Liberty and continues south with at-grade crossings at Liberty Street, First Street, William Street, Ashley Street, Jefferson Street, South Main Street, Madison Street, Hill Street, Hoover Street and South State Street. Throughout this corridor, the railroad rights-of-way varies considerably in width. Pedestrians commonly use the Ann Arbor Railroad right-of-way as a footpath, especially in the vicinity of Michigan Stadium on football and other sport game days. The existing practice of walking along the rail corridor is dangerous and illegal.

The MDOT railroad corridor carries Amtrak service into the city, with a train station at Depot Street and Fifth Street. South of the Huron River, the MDOT railroad is located on top of a wide berm that physically separates the public street rights-of-way to the south from the Huron River and B2B Trail. Creating a connection through this berm to provide non-motorized access to the river is advancing under a parallel flood relief project referred to as the Allen Creek Railroad Berm Opening Project.

Environmental

Stormwater Management

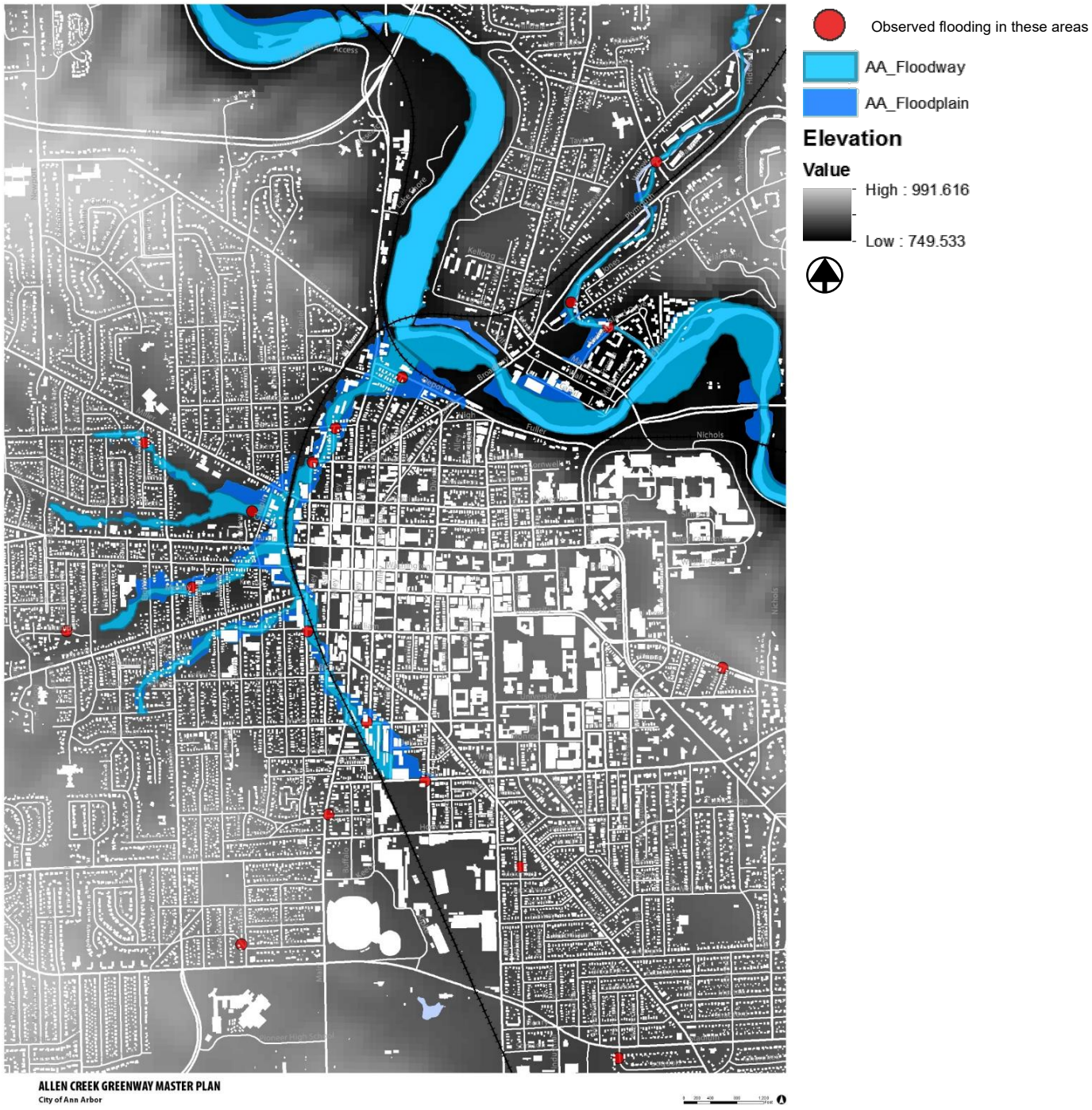
The Treeline corridor is largely within the Allen Creek floodplain and floodway. A floodplain, which consists of a floodway and flood fringe zone, is the land adjacent to a stream or river that experiences occasional or periodic flooding. In this case, the "stream" is the historic Allen Creek, which is currently contained within a large underground pipe as part of the city's stormwater system. The floodway is the land area adjacent to a stream that carries base flow during a flood event and which must be kept as open as possible to facilitate moving water. Existing flooding concerns pose the following challenges and considerations for the trail design:

- Understand the floodplain dynamics and ensure that people do not become trapped in flooded areas. Provide alternative routes and/or signage to alert people to flood risks.
- Vertical obstructions (i.e., fencing, benches, etc.) within the floodway need to be avoided and/or minimized.
- Creation of The Treeline may allow removal of some structures in the floodplain and floodway along the trail alignment and hence improve flood water flows by removing obstructions and barriers.
- Creation of stormwater management facilities along the Treeline can potentially collect and store runoff from adjacent areas. During smaller rain events, additional storage areas for capturing and infiltrating stormwater will benefit water quality in the Allen Creek watershed.
- The Treeline design will meet the city's adopted Green Street Policy, which requires managing stormwater generated from new impervious areas (e.g., trail surface). A combination of bioswales along the trail and underground storage/infiltration beds can be used to meet these objectives.
- It is important to consider how future rainfall patterns may change the floodplain. Facilities should be designed, where feasible, to accommodate a broader range of water volumes to buffer against changing weather and climate patterns.
- The city is pursuing acquisition of parcels within the floodplain in response to property owners' inquiries. Parcels have been acquired previously using Pre-Disaster Mitigation (PDM) grant funding through the Federal Emergency Management Agency (FEMA) to improve floodplain management. Future opportunities should be considered as The Treeline moves into implementation.

Utilities

- "Daylighting" the Allen Creek, which means opening up the large stormwater pipes containing the creek to the surface as a restored stream, is currently not deemed feasible by the Washtenaw County Water Resources Commission (WCWRC, see memo in Appendix C). The area of land needed for successful daylighting is not available within proximity to the Allen Creek drainage line. Should larger parcels or land areas become available, there may be opportunities to explore localized daylighting.
- There is significant utility infrastructure within the corridor, including:
    - Power lines following along the west side of the trail tracks
    - Large sanitary collection system trunklines along many of the streets and parallel to the railroad corridor.
    - Significant water mains north of Huron Street and along Summit Street and Madison Street.
    - In all cases, trail designs must appropriately consider the presence of utility infrastructure and be designed such that operations and maintenance of utilities can be accommodated.

Figure 5 – Allen Creek Floodplain and Floodway Areas



Environmental Contamination

Some properties within the Allen Creek floodplain and The Treeline project area have been subject to environmental contamination as a result of historic land use practices. Implementation of The Treeline needs to consider potential contamination and ensure that areas designated for public recreational use meet or exceed appropriate environmental standards.

Route Evaluation

Determining a feasible route for the Treeline is a complex process given the variety of physical conditions, land uses, property ownership, roadway conditions, and site-specific constraints. Multiple possible trail alignments and route variations could be feasible for each section of the corridor.

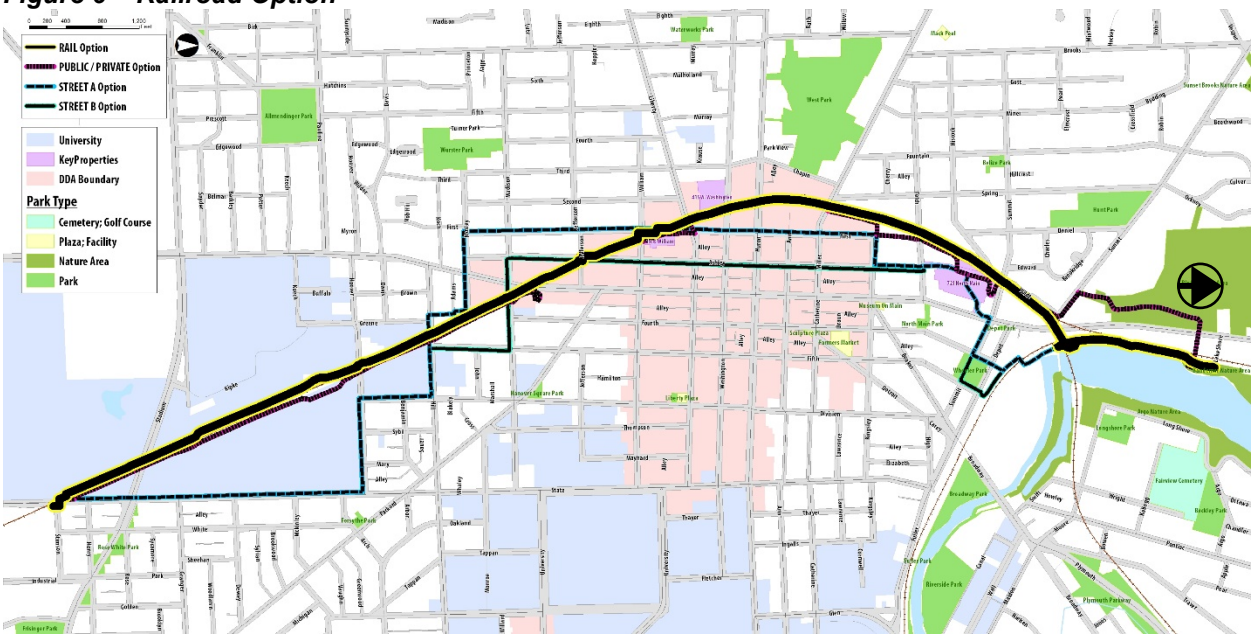
To understand and evaluate a set of distinct options for the entire corridor the project team assembled four route alignments based on various assumptions regarding property ownership and access. These options were used as “what-if” scenarios by the project team and stakeholders to assess pros and cons. The evaluation process was structured in this manner knowing that the preferred trail alignment would likely draw elements from across the different alternatives.

Route Alternatives

Railroad Option

The intent of this option was to seek an off-street alignment that maximized use of the railroad corridor (assuming access for the trail is provided) and publically owned parcels. This alignment reflected the community’s historic vision of a trail primarily utilizing the active railroad corridor, often referred to as a rail-with-trail.

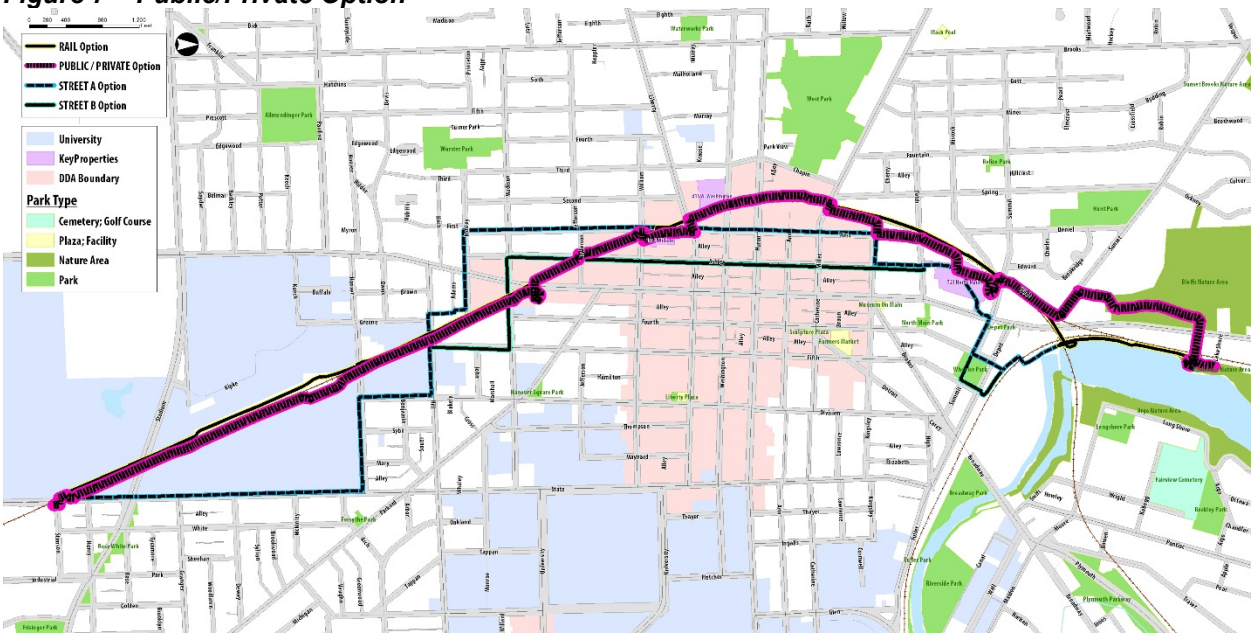
Figure 6 – Railroad Option



Public/Private Off-Street Option

This option was developed to accommodate an off-street trail alignment that would avoid the use of the railroad corridor and maximize the use of public *and* private property. This option relied heavily on obtaining access to private property from a large number of property owners.

Figure 7 – Public/Private Option



On-Street/Public Property Options

Two options were explored that exclusively utilized city-owned public properties and street rights-of-way. The resulting alignment options included significant portions of on-street trail design. One option focused on connections along First Street (Street A) and generally traversing through residential areas. The other option emphasized use of Ashley Street and a closer connection to downtown commercial areas (Street B).

Figure 8 – Street A: First Street Option

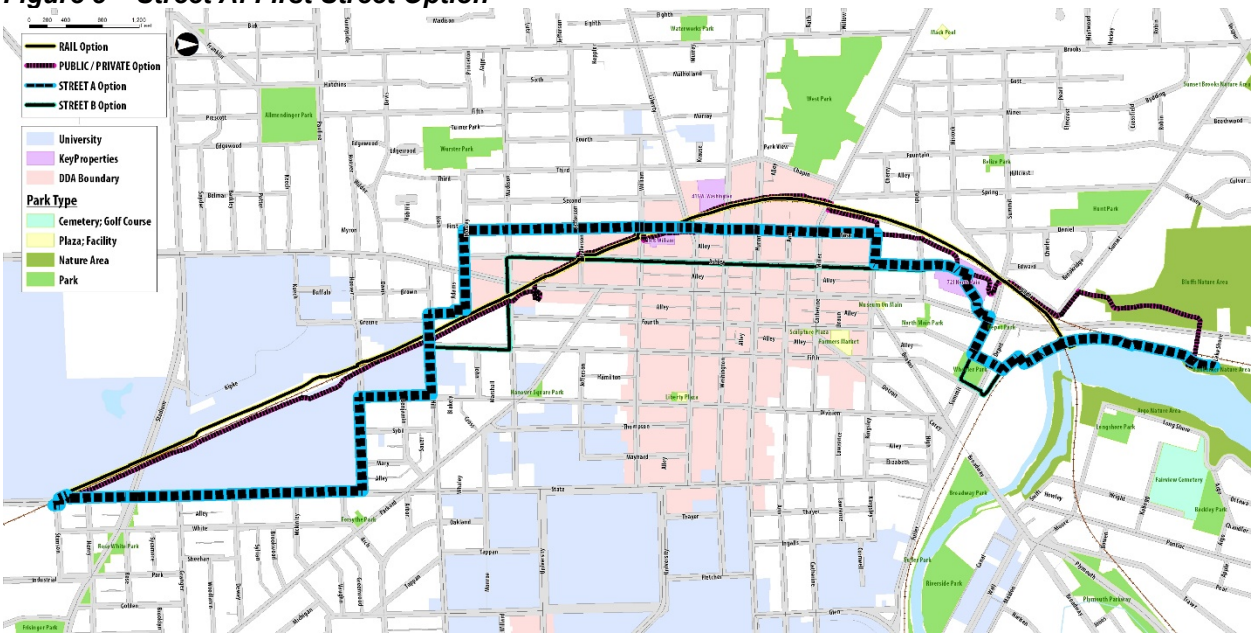
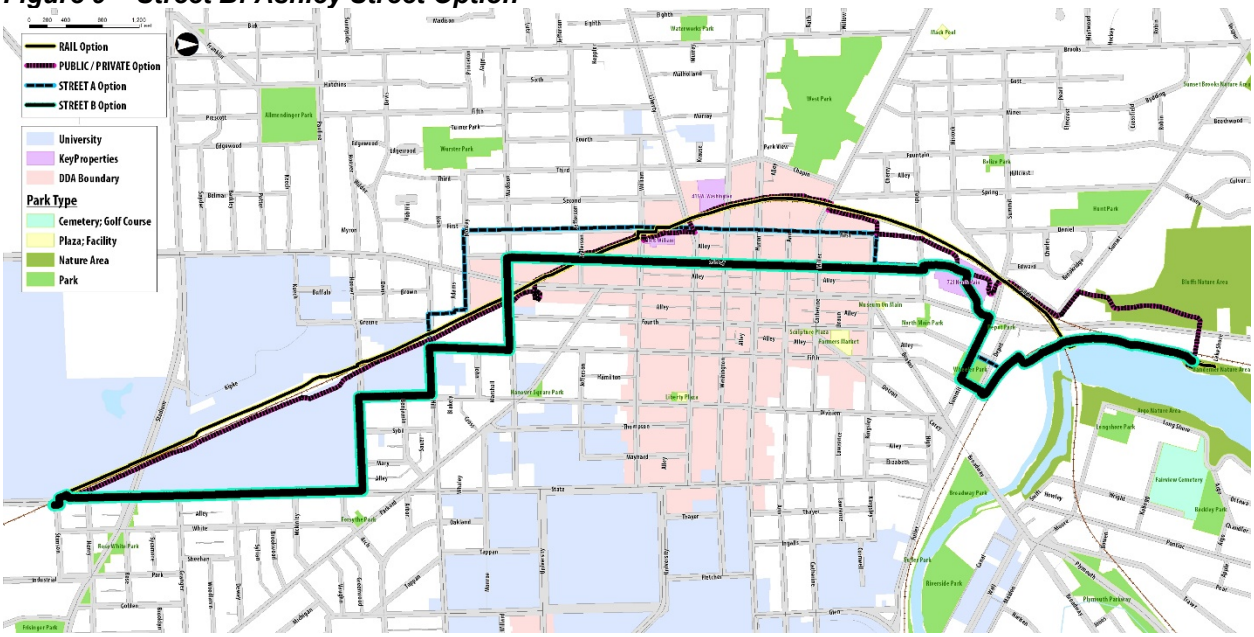


Figure 9 – Street B: Ashley Street Option



Evaluation Process & Criteria

The trail alignment for each route option was broken down into a series of segments based on street crossing locations. Segments were evaluated across a series of 28 criteria to gauge the relative pros and cons of each route option. Each segment was scored (on a scale of 1-5) for each criterion. An average score for the entire route option was calculated and adjusted to account for route length.

User Experience

User experience criteria relate to how comfortable, safe, and accessible The Treeline is for trail users.

Benefits

- **Continuity:** Length of travel before interruption/required break point.
- **Points of access (plaza/trailheads):** Number of access points.
- **"Eyes on the Trail":** Trail visibility from public space or other active areas.
- **Unique views from the trail:** Locations where broader/longer/novel views are possible.
- **Open space access/creation:** Type of open space (existing vs. potential) and ease of connectivity or access to it (e.g., directly on the trail versus nearby or adjacent).

Challenges:

- **Elevation transitions:** Grade/steepness and elevation change, considers potential ramp requirements.
- **Street crossings:** Type of crossing (4-way stops, signals, etc.).
- **Road crossing intensity:** Crossing distance and/or vehicle volumes.
- **Road speeds:** Speed of parallel and cross-traffic.

Mobility & Transportation

These criteria relate to impacts on the roadway operations as well as opportunities for increasing connection to other non-motorized facilities and transit operations.

Benefits
- **Bike connectivity:** Connection points to existing and proposed bicycle infrastructure
- **Transit Stops:** Number of transit stops within 1/4 mile
- **Track separation:** Amount of buffer space between trail and rail tracks

Challenges:
- **Travel/turn lane elimination:** Locations of possible lane reduction
- **Parking space removals:** Number and type of parking spaces lost (long or short-term metered vs. residential permit vs. open parking)
- **Right-of-way adjustments:** Locations where additional rights-of-way may be needed
- **Curb modification:** Length of street curb to be modified (along with utilities)
- **Railroad on-grade crossings:** Number of rail crossings within existing street right-of-way that need to be enhanced/improved

Hydrology & Infrastructure

These criteria relate to route impacts and benefits to utility infrastructure as well as green infrastructure opportunities.

Benefits
- **Stormwater treatment opportunities:** Areas with opportunities to manage larger volumes of stormwater.

Challenges:
- **Utilities (Water, Storm Sewer, Sanitary):** Locations where major utilities may be impacted. Also considers street lights, utility poles, and street tree impacts.

Mixed Impacts:
- **Floodplain interactions:** Area within floodplain, floodway, or other flood prone areas. Includes potential removal of barriers within the floodplain and increasing storage (positive), and potential barriers created (negative).

Land Use & Economics

These criteria describe potential benefits relating to nearby commercial and residential areas. Challenges consider potential impacts to private properties and/or other non-city owned public lands.

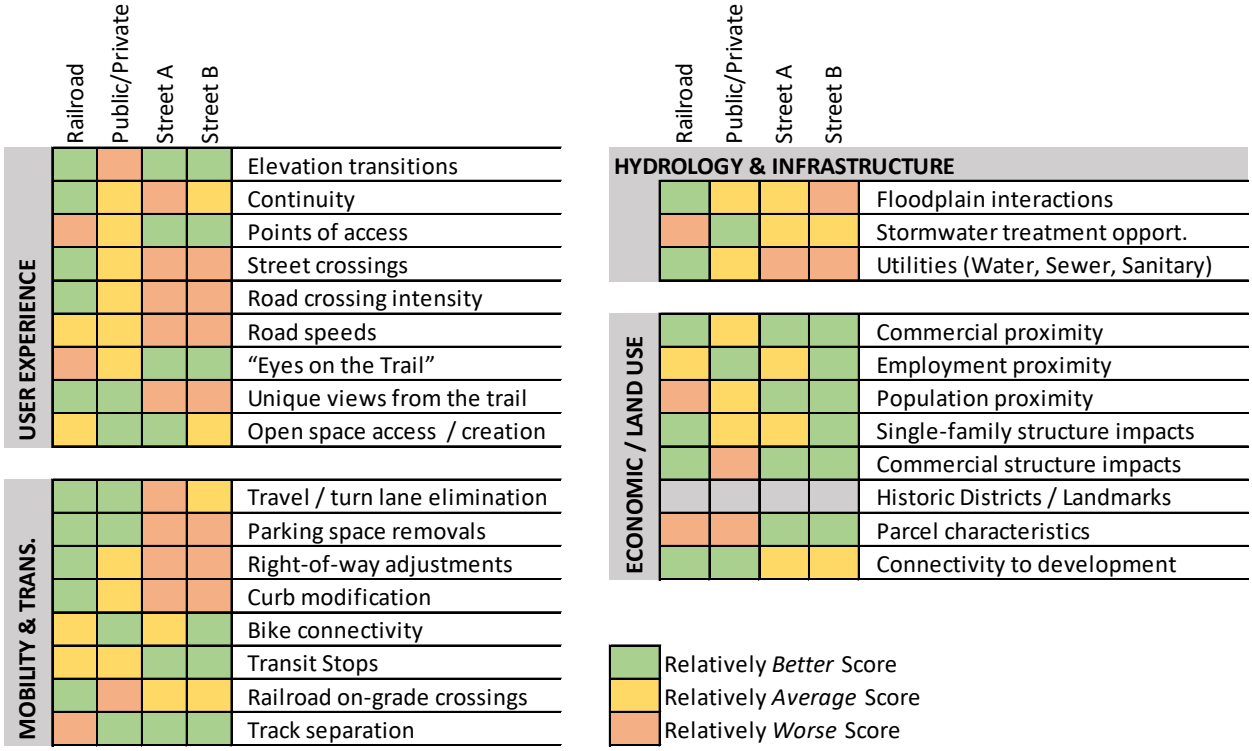
Benefits:
- **Commercial proximity:** Concentration of commercial destinations
- **Employment proximity:** Concentration of jobs within proximity of the corridor
- **Population proximity:** Population density near the corridor
- **Connectivity to development:** Number and size of adjacent/nearby properties under development

Challenges:
- **Single-family houses:** Number of single-family houses/residential units potentially impacted
- **Commercial structures:** Number of structures potentially impacted
- **Parcel characteristics:** Number of parcels with challenging access conditions

Mixed Impacts:
- **Historic Districts/Landmarks:** Length of route within historic districts. Could be a positive in terms of historic interpretation, or negative in terms of additional design challenges within a historic district.

Findings & Community Feedback

The chart below summarizes the overall findings for each route option evaluated. The colored boxes in the chart reflect the relative performance of each criterion compared across the four route options. More specifically, for criteria reflecting *benefits*, better scores (green boxes) typically means more of a beneficial opportunity exists. For *challenges*, better scores (green boxes) typically means that less of the challenges were evident compared to the other options.



Summary of Evaluation

- **The RAIL option performs the best overall.**
  - » Most aligned with the community's preference for a contiguous off-street trail that minimizes road crossings, but has some connectivity limitations.
  - » BUT, this option is contingent on significant access to the rail corridor, which is likely not feasible.

- **The PUBLIC/PRIVATE option performs in the middle overall.**
  - » Largely reflects stakeholder preference for an off-street trail - although the experience is less continuous and has more jogs and interruptions.
  - » Highly reliant on negotiating property access rights for the trail with land owners.
  - » Provides the best opportunities for associated trail enhancements (e.g., connections to open space and stormwater management opportunities).

- **The STREET options (First Street and Ashley Street) perform similarly, but lowest overall.**
  - » The context for STREET A is more residential in character with less intense road crossings. The context for STREET B is more commercial in character, traversing along more high traffic roads, but providing higher levels of access to jobs and commercial areas.
  - » Both street options require significant street reconstruction.
  - » Does not reflect stakeholder preference for an off-street trail.

Chapter 3: Treeline Framework

Overall Direction

This chapter presents The Treeline Framework, which describes essential design characteristics, guiding principles, and the preferred route for the urban trail. This framework has been developed over the course of the project in collaboration with the Technical Advisory Committee (TAC), the Citizen Advisory Committee (CAC), community stakeholders, and the public at-large.

Building the Framework

The route option evaluation process (described in Chapter 2) was undertaken with the intention of informing a preferred trail alignment. The results of the analysis were considered along with broad stakeholder engagement to determine a preferred alignment. This alignment responds to the following key guiding principles that affect the feasibility and potential benefits of The Treeline:

- **Feasibility**
  - » Available physical space, potential for property access, and engineering and construction factors are essential considerations for implementation.
- **Continuity of experience**
  - » Use off-street routes to the greatest extent possible, which will provide grade separated crossings over major roadways or other barriers.
  - » Create on-grade street crossings that improve safety.
  - » Physical trail design that uses common elements (e.g., construction materials, signage, fixtures) to clearly identify the urban trail.
- **Designed to serve all users, all ages, and all abilities.**
  - » Safety, continuity, connectivity, and universal access are critical design elements.
  - » All trail sections, including elevated and bridge sections, be designed for vehicle loads for maintenance vehicles and/or emergency vehicles.
- **Connectivity to assets**
  - » Create frequent points of access to, and from the trail to allow access to recreation destinations, neighborhoods, business districts, and other amenities.
  - » Provide secondary connectors and linkages to connect the trail to other transportation systems and facilities.
- **Unique experiences**
  - » Look for ways to create special landmarks and destinations. There is potential for the trail to become a destination.
- **Responsive and opportunistic**
  - » Recognize opportunities to expand the scope and impact of the urban trail as implementation moves forward. This may include creation of larger open spaces adjacent to the trail.
  - » Create opportunities to improve floodplain and stormwater management.
  - » Take advantage of opportunities or alternative routes that deviate from the proposed route alignment as land use patterns and land ownership changes occur along the corridor.
  - » Coordinate with other capital projects for opportunities to advance The Treeline.

Trail Design

This section describes the physical design of trail amenities. As a master plan, this document describes the typical and preferred conceptual trail design. As portions of the trail project move into detailed design phases, many design considerations will be resolved. Final trail design may deviate from what is described below.

Design Assumptions

The following design assumptions describe specific features or approaches to the trail implementation that this master plan assumes will be addressed and/or incorporated as implementation proceeds:

Trail Layout & Materials

- The preferred trail corridor is 30-feet wide with up to 20-feet of pavement for trail use.
  - » Separated bicycle and pedestrian zones should be pursued wherever feasible throughout the corridor.
  - » These optimum dimensions may not be possible in all locations.
- All trail widths and paving materials will be an accessible surface for all users.
- Where the trail is elevated or separated from the surface grades, connector walkways at the street level will be created to provide access onto the primary trail at frequent locations.
- Where the trail is within the street right-of-way (i.e., on-street segments) a curb barrier will separate it from roadways providing protected bicycle and pedestrian facilities.
  - » Removal of on-street parking (if present) and/or travel lanes may be necessary for some on-street sections.

Green Infrastructure Elements

- Landscaping, habitat creation, and stormwater management features will be included within the 30-foot corridor width. Where space and land access permits, these features may be expanded into a wider zone.
- The Treeline is not a floodplain management or flood control project. However, there may be opportunities for improving floodplain conditions.

Trail Amenities

- Site amenities, such as lighting, benches, waste/recycling receptacles, wayfinding, security measures, interpretive/art elements, and other furnishings are included in the design assumptions for the trail.
- The trail will be well lit for pedestrian use.
- Landscaping and greening will be incorporated, including trees, native plantings, and restoration areas.
- Design may include call boxes or other security enhancing elements.

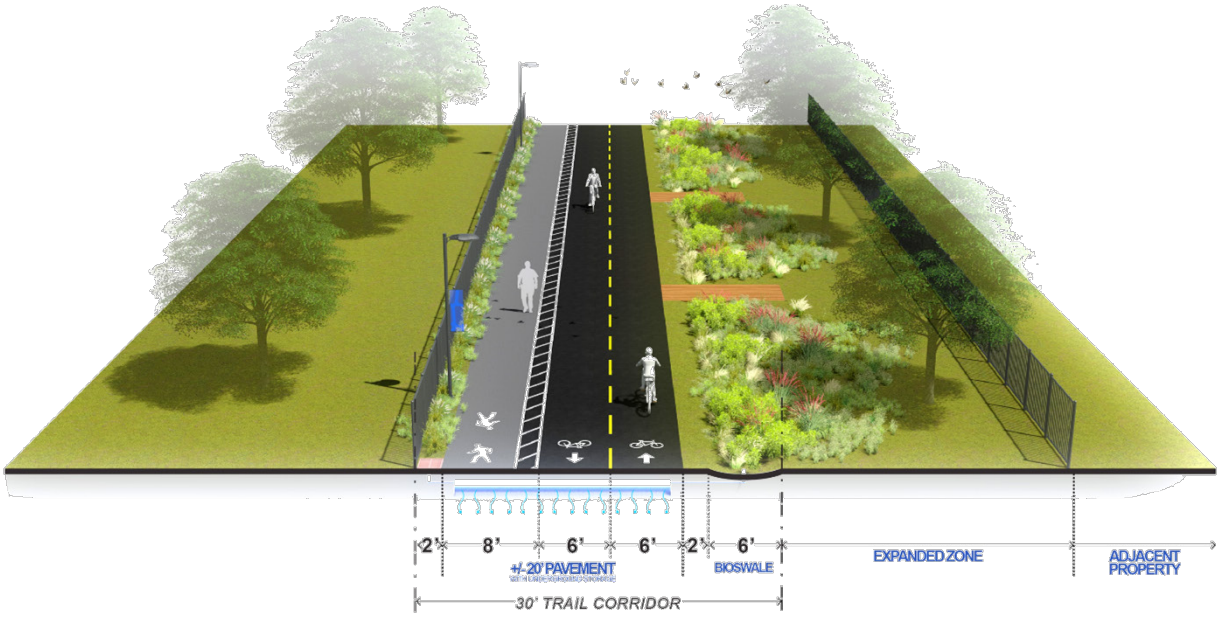
Preferred Cross-sections

The following cross-sections and generalized illustrations portray the preferred design of the trail sections in four different conditions: (1) off-road trails on public or private property; (2) off-road trails within, or partially within, the railroad corridor; (3) on-road trail sections within the street rights-of-way; and (4) elevated and/or ramped trail sections.

Off-Road Trail on Public or Private Land

- Preferred dimensions:
  - » 30-feet width for the trail corridor and all associated amenities
  - » 20-feet paved width
  - » Separated pedestrian and bicycle flow
- Use expanded areas, where room and property access can be obtained, for additional landscape, habitat, recreation, or other open space features
- May require secure fencing to separate trail from adjacent property.
- Stormwater runoff generated by the trail can be managed through a combination of surface and underground treatments (e.g., bioswales and infiltration beds, respectively).

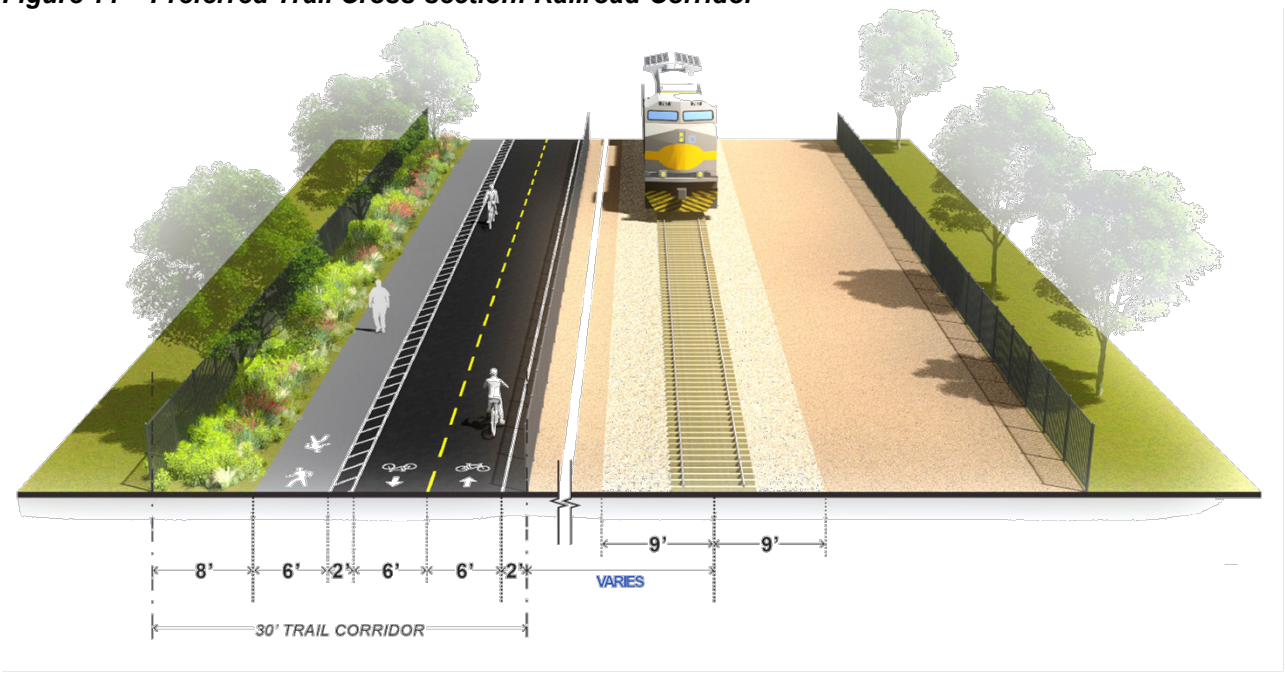
Figure 10 – Preferred Trail Cross-section: Off-Road



Off-Road Trail Within (or partially-within) the Railroad Corridor (next page)

- Railroad "envelope" must remain clear (i.e., no trail components): this includes 9-feet in each direction from the center of the tracks.
- Other rail-with-trail projects typically maintain a 15-foot minimum separation between the trail edge and the center of the tracks. A 25-foot minimum is often preferred where space allows.
- The existing railroad corridor right-of-way is typically 50-feet in width, limiting the ability to accommodate the trail fully within the corridor.
- Will require secure fencing to separate trail from active rail line, and between the trail corridor and adjacent private property.
- Opportunity to work with the railroad to enhance the visual quality of the railroad corridor.
- *Viability of options within the rail corridor is dependent on further discussion and review with Watco Companies.*

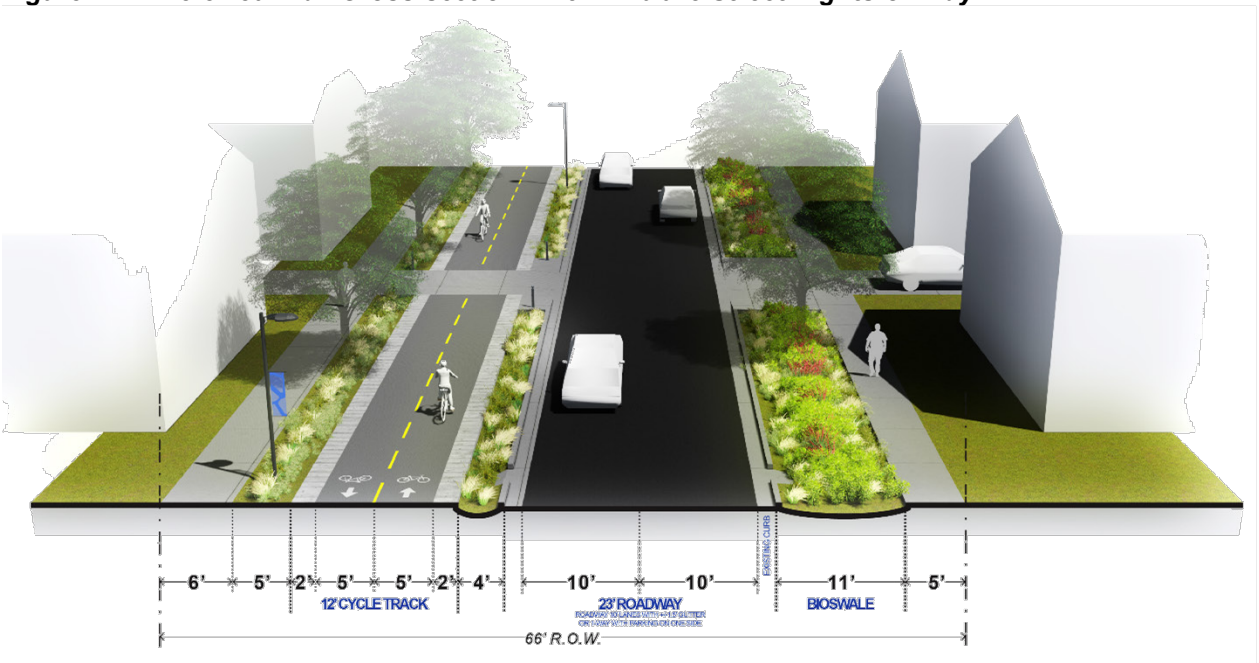
Figure 11 – Preferred Trail Cross-section: Railroad Corridor



Trail within Public Street Rights-of-Way (below)

- Street rights-of-way are typically 66-feet wide within the project area.
- Expand sidewalk width to a 6-foot minimum.
- Construct a separated bicycle facility (e.g., cycle track) on one side of the street with removal of parking lane. Street reconstruction may be necessary to accommodate the cycle track.
- Incorporate landscaping enhancement on both sides of the street.
- Follow the city's Green Streets Policy as required to manage stormwater.
- On-grade street crossings, at intersections and mid-block, should prioritize pedestrian and bicycle safety using best practices and appropriate design guidelines.

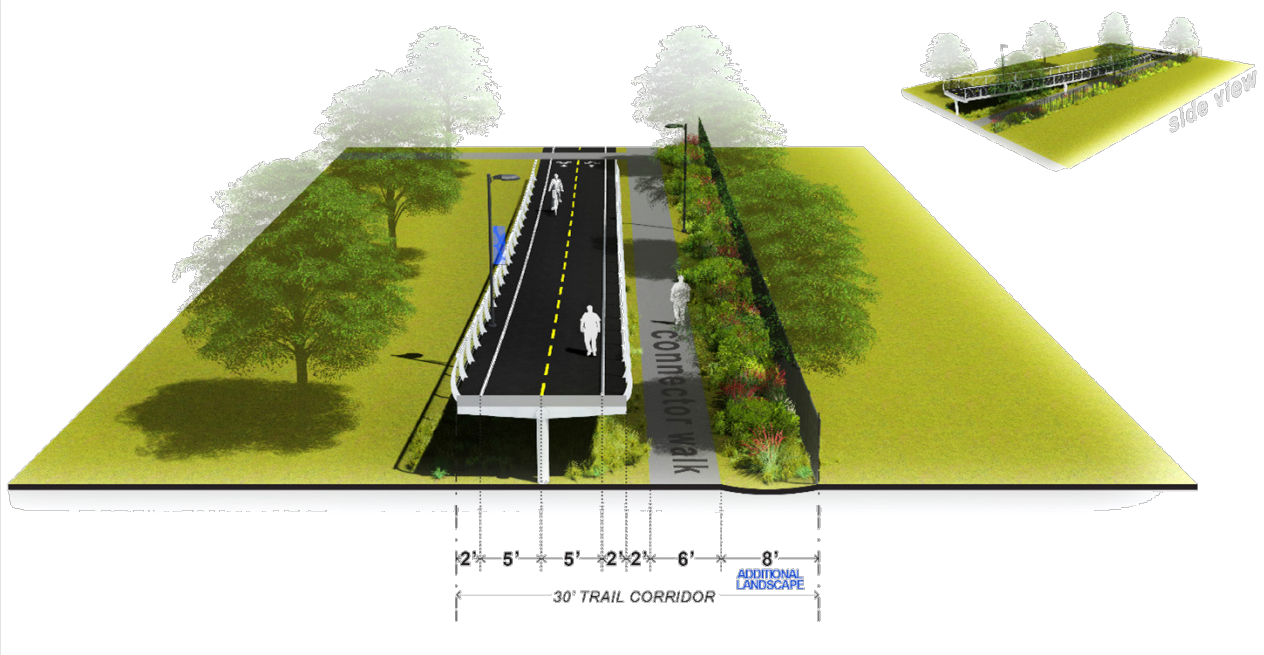
Figure 12 – Preferred Trail Cross-section: Within Public Street Rights-of-Way



Elevated/Ramped Trail

- Elevated trail and ramp sections provide access to bridges for crossing major roads and/or railroad corridors.
- All ramp sections to meet Americans with Disability Act (ADA) guidelines. A 7% slope was used for planning purposes to account for landings and other ADA design requirements.
- Connector walks provide access points from adjacent sidewalks to the primary trail section. These walks may be on-grade or ramped depending on available land.
- The width of trail in elevated ramp sections can vary between 14-feet to 20-feet depending on cost and land availability.
- Areas adjacent to and/or below the elevated ramp should be designed with green infrastructure elements.
- In some cases, the area below the elevated section may continue to be used by private land owners for their uses (e.g., vehicle parking where there is adequate vertical clearance).

Figure 13 – Preferred Trail Cross-section: Elevated/Ramped



Preferred Alignment

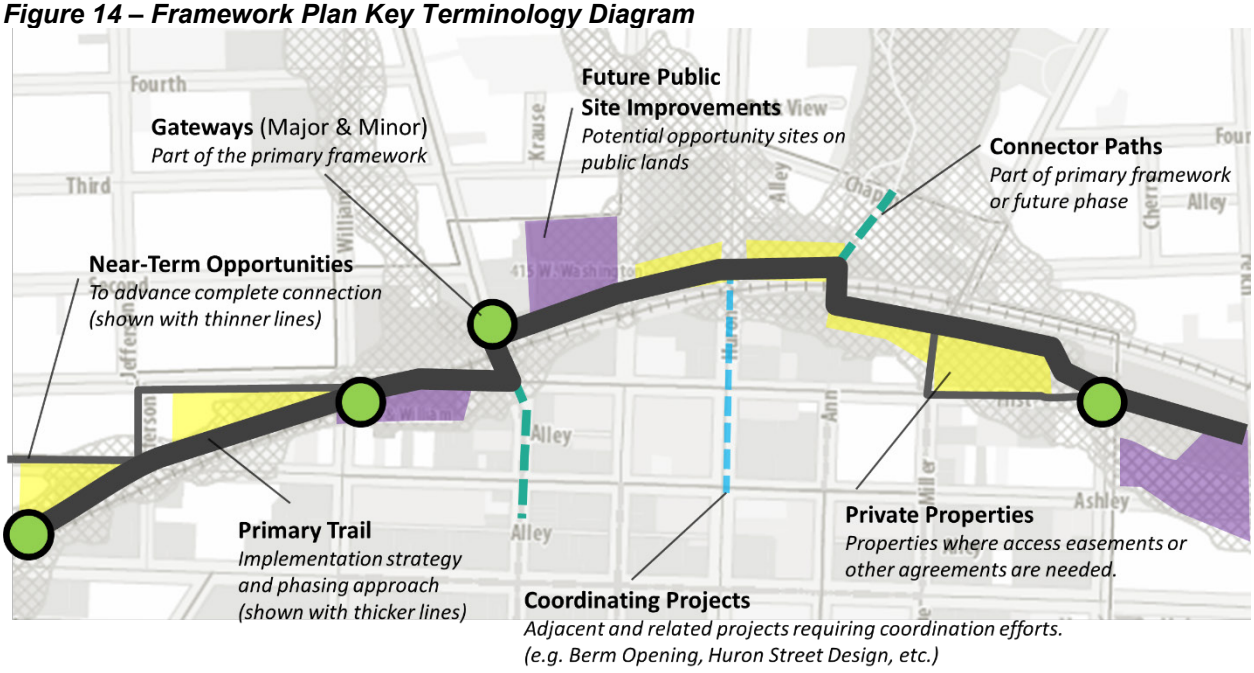
This section of the Treeline Framework describes the preferred trail alignment and other associated connections and features.

Key Terminology

The plans on the subsequent pages identify the following elements.

- **Primary Trail:** This is the primary, technically feasible, and preferred alignment for the main trail feature.
- **Connector Paths:** These are supporting sidewalks or secondary pathways used to connect to the primary trail.
- **Near-Term Opportunities:** These are routes that can provide connectivity between primary trail alignments before all primary sections are complete.
    - » Near-term projects/improvements are expected to remain in place and be designed to provide lasting benefits to complement the Primary Trail.
- **Coordinating Projects:** Adjacent and related projects requiring coordination efforts.
- **Major Gateways:** Signature points of access at key locations and/or high visibility/traffic areas.
    - » May also include areas where modest additional green space and/or interpretive elements can be incorporated.
- **Minor Node/Gateway:** On-grade points of access from public space (rights-of-way, etc.) onto the Primary Trail.
- **Future Public Site Improvements:** Public properties that accommodate the Primary Trail and necessary amenities.
    - » Uses beyond what are needed for the greenway; to be determined as part of future, parallel, or on-going efforts.
- **Private Properties:** Properties where an easement or access agreement for the Primary Trail are needed.

Figure 14 – Framework Plan Key Terminology Diagram



Important Framework Notes

- The viability of options within the rail corridor is dependent on further discussion and review with Watco Companies, U-M, and with other private property owners.
- Properties with an "**X**" on the maps indicate property owners that have either not been engaged or have not endorsed the urban trail alignment as shown on these plans.
  - » The primary trail alignment is still shown on these properties in recognizing that there may be opportunities to pursue the alignment in the future as circumstances change.
  - » Near-term or other alternative alignments may be pursued where future property access is uncertain and/or not supported by property owners, or where other access opportunities become available.
- Unless otherwise noted, no formal easements or other access arrangements have been made along the trail route with any property owners.

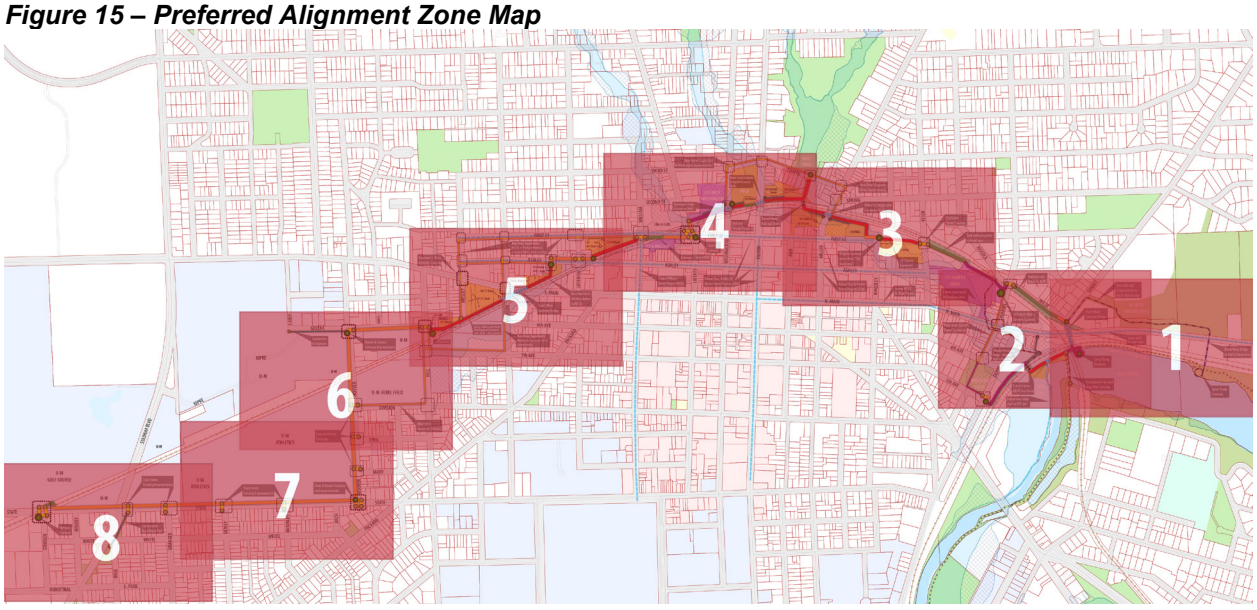
Zone Map

The framework plan is described in a series of zone maps, from north (at right) to south (at left), per the map below.

The Zones are as follows:

- Zone 1 – Argo Pond
- Zone 2 – North Main & Depot
- Zone 3 – Felch to Miller
- Zone 4 – Huron to William
- Zone 5 – Jefferson to Hill
- Zone 6 – Hill to Hoover
- Zone 7 – Hoover to Dewey
- Zone 8 – Dewey to Stimson

Figure 15 – Preferred Alignment Zone Map



Zone 1 – Argo Pond

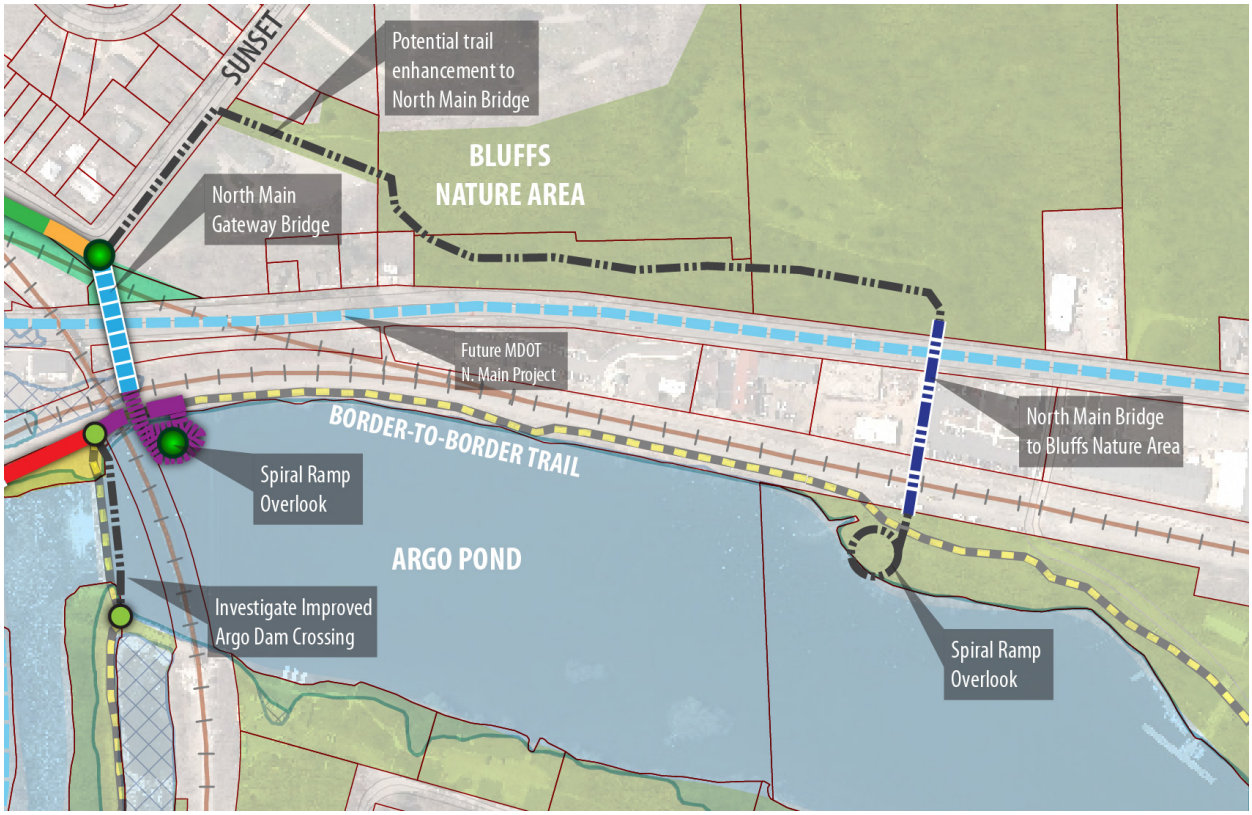


Figure 16 – Zone 1 Preferred Alignment Map

PRIMARY TRAIL TYPES
- On Public Land
- Elevated on Public Land
- On Private Land
- Elevated on Private Land
- On Railroad Land
- Elevated on Railroad Land
- Bridge Section
- Tunnel Section
- Within Street Right-of-Way
- Street Crossing

- Connector Path & Entry Node
- Other Trail Opportunities
- Coordinating Projects
- Street Intersection Enhancement
- Major Gateway
- Minor Gateway / Node
- Private Parcels
- Rail Parcels
- Public Parcels
- Floodway
- Floodplain

NOTE: Thinner lines for the primary trail types indicate possible near-term opportunities

1) Properties with (X) indicate property owners that have not been briefed on the urban trail alignment.
2) Unless otherwise noted, no easements or other access arrangements have been made along the trail route.

Primary Trail

- The Treeline will connect to the Border-to-Border Trail (B2B Trail) near Argo Dam (see Zone 2), and as such there is no primary trail designated within this zone.

Other Opportunities

- The northern end of The Treeline at Wildt Street has the potential for an improved connection through Bluffs Nature Area. This would be a new paved trail to the east of the existing nature/mountain bike trails part-way along the hill face.
- A new pedestrian bridge over North Main Street with a spiral ramp overlook, providing connection to the B2B Trail just south of Lake Shore Drive.

- The North Main Street corridor is identified as a future Michigan Department of Transportation (MDOT) planning study to explore a redesign of the roadway. There may be opportunities for improved bicycle or pedestrian facilities on North Main Street to provide access to The Treeline or other amenities.
- Continue to coordinate with the Washtenaw County Parks and Recreation Commission to extend the existing B2B Trail segment to Dexter and beyond.

Zone 2 – North Main & Depot

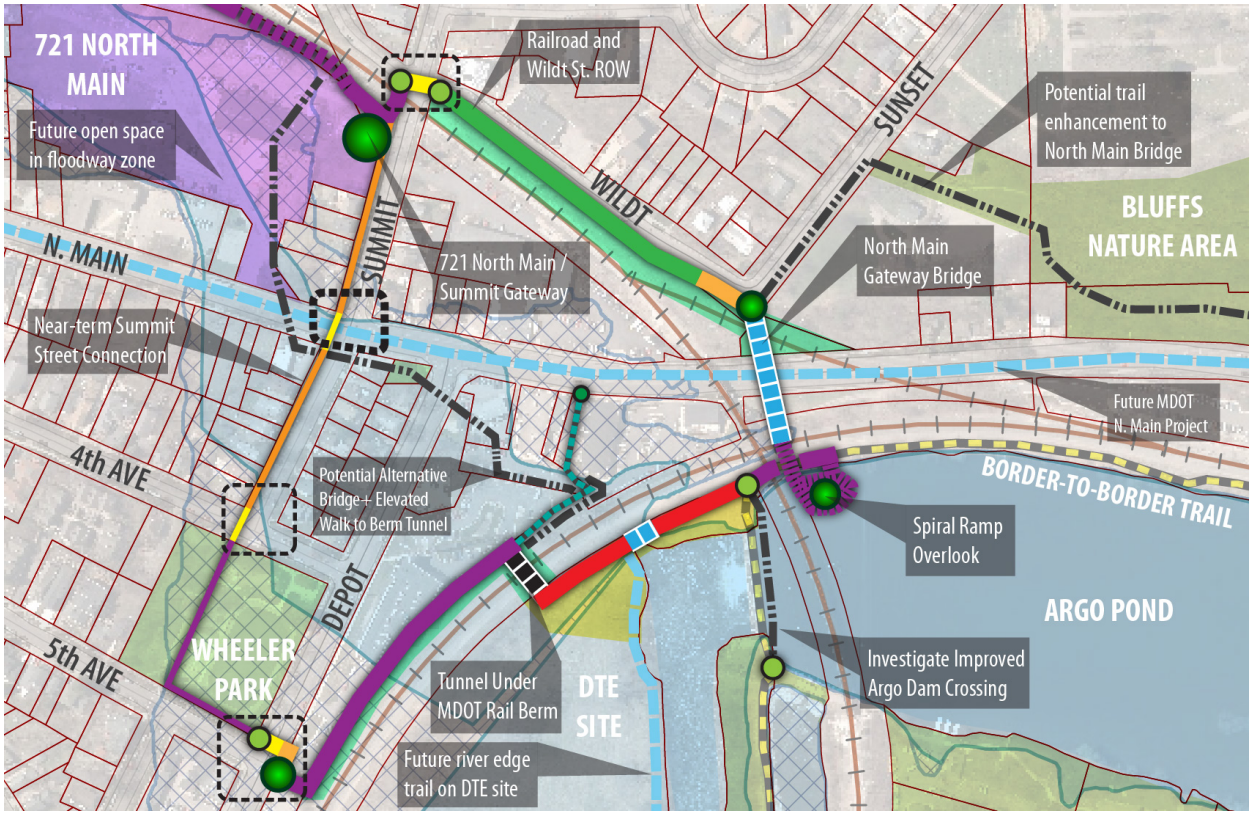


Figure 17 – Zone 2 Preferred Alignment Map

PRIMARY TRAIL TYPES

- On Public Land
- Elevated on Public Land
- On Private Land
- Elevated on Private Land
- On Railroad Land
- Elevated on Railroad Land
- Bridge Section
- Tunnel Section
- Within Street Right-of-Way
- Street Crossing

- Connector Path & Entry Node
- Other Trail Opportunities
- Coordinating Projects
- Street Intersection Enhancement
- Major Gateway
- Minor Gateway / Node
- Private Parcels
- Rail Parcels
- Public Parcels
- Floodway
- Floodplain

NOTE: Thinner lines for the primary trail types indicate possible near-term opportunities

1) Properties with (X) indicate property owners that have not been briefed on the urban trail alignment.
2) Unless otherwise noted, no easements or other access arrangements have been made along the trail route.

Primary Trail

- The primary trail begins with a connection to the B2B Trail just north of the existing railroad bridge that crosses over North Main Street and Argo Pond.
  - » A wide spiral ramp, designed for pedestrians and bicycle use, will connect from the B2B Trail to a gateway bridge that crosses over North Main Street and the MDOT railroad to terminate at the corner of Wildt Street and Sunset Street.
  - » The ramp structure can be designed with a signature overlook, providing views over the Huron River and Ann Arbor skyline.
- The primary trail will follow along Wildt Street to the Summit Street intersection, which will be improved for safer crossing along with trailhead amenities at the corner of the City-owned, 721 North Main Street property.

- Another primary trail connection to the B2B will take advantage of the planned non-motorized tunnel under the MDOT railroad berm.
    - » This tunnel will connect to a trail on the DTE property that runs north and links to the B2B Trail. On the south side of the tunnel, a new trail is proposed parallel to the MDOT rail berm and connects to the Depot Street and Fifth Ave intersection.

Other Opportunities

- An improved trail through Wheeler Park and on-street bicycle improvements along Summit should be considered to support connectivity in this area. Improve the Summit and North Main intersection for pedestrian safety.
- An alternative option for the pedestrian bridge could connect to the MDOT berm tunnel and cross North Main and Summit Streets in an elevated manner, returning to grade within the 721 North Main property.
- Continue to explore redevelopment/restoration options for the City-owned 721 North Main property in relation to the trail.

Zone 3 – Felch to Miller

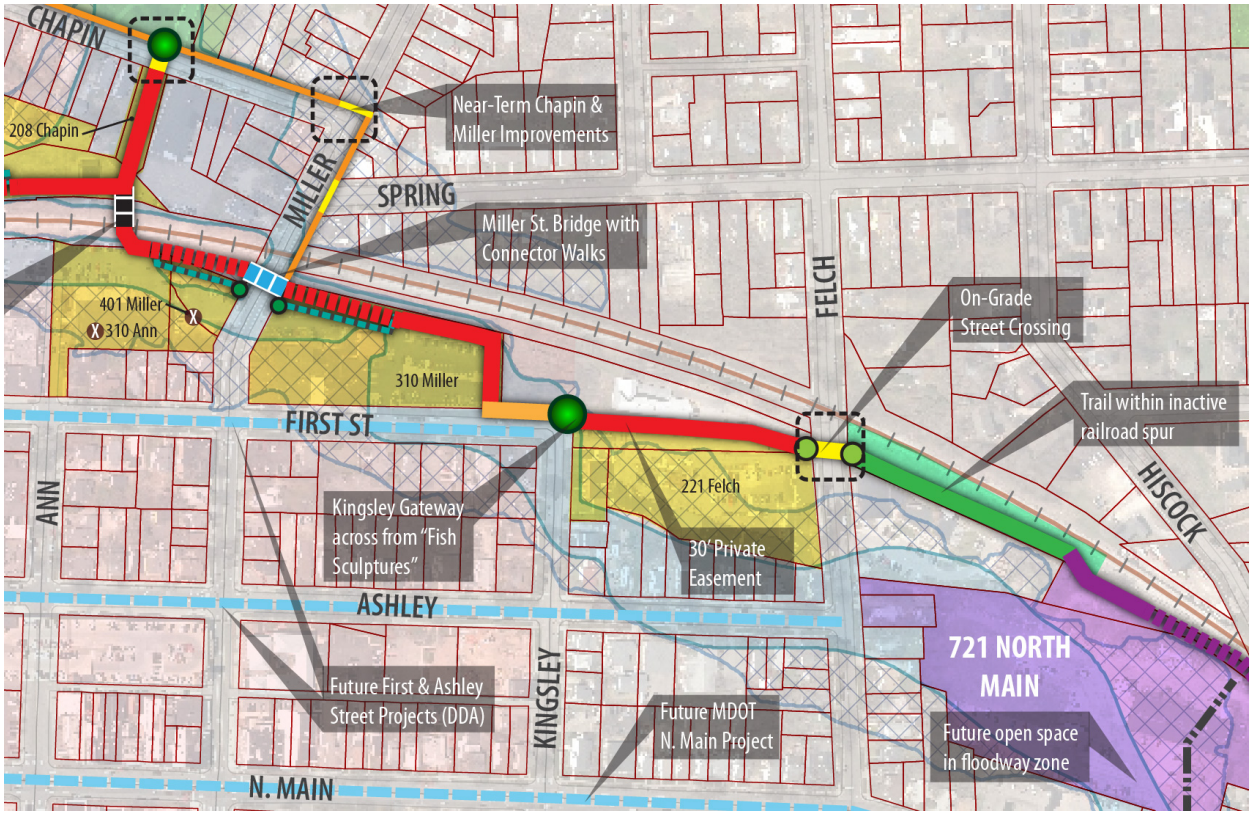


Figure 18 – Zone 3 Preferred Alignment Map

PRIMARY TRAIL TYPES
- On Public Land
- Elevated on Public Land
- On Private Land
- Elevated on Private Land
- On Railroad Land
- Elevated on Railroad Land
- Bridge Section
- Tunnel Section
- Within Street Right-of-Way
- Street Crossing

- Connector Path & Entry Node
- Other Trail Opportunities
- Coordinating Projects
- Street Intersection Enhancement
- Major Gateway
- Minor Gateway / Node
- Private Parcels
- Rail Parcels
- Public Parcels
- Floodway
- Floodplain

NOTE: Thinner lines for the primary trail types indicate possible near-term opportunities

1) Properties with (X) indicate property owners that have not been briefed on the urban trail alignment.
2) Unless otherwise noted, no easements or other access arrangements have been made along the trail route.

Primary Trail

- From the 721 North Main Street trailhead (at Summit Street and Wildt Street), the primary trial will move south following the western edge of the 721 North Main Street property. The trail will utilize an inactive railroad spur that connects down to Felch Street.
- A midblock crossing will bring the trail across Felch Street onto a 30-foot wide easement secured for the urban trail as part of the Kingsley Condominiums development at 221 Felch Street.
- The trail will pass through the Kingsley Condominiums site along the west edge, and exit back to the street at Kingsley Street and First Street. From there, the trail will turn onto private property (310 Miller), following the north and west edges of the property where the trail will ramp up to access a non-motorized bridge crossing over Miller Street.

- South of Miller Street, the trail will ramp back down to grade on private property, and then turn west to enter a proposed tunnel through the railroad berm.
- On the west side of the railroad berm, a secondary trail will connect through private property to a gateway point on Chapin Street and provide access to West Park via midblock street improvements.

Other Opportunities

- The Ann Arbor Downtown Development Authority (DDA) has identified Ashley and First Street as a future street design project, with the potential to restore this one-way street pair to two-way operations and/or improve bicycle infrastructure on these streets. The design of The Treeline should coordinate with DDA projects to achieve mutually beneficial design solutions.
- A near-term route alternative to the Miller Street Bridge would improve conditions along Miller from the existing railroad bridge to Chapin Street, and down Chapin Street to the HAWK Beacon crossing on Huron. Slowing cars and improving pedestrian crossing safety along Miller Street is a critical consideration for this near-term opportunity.

Zone 4 – Huron to William

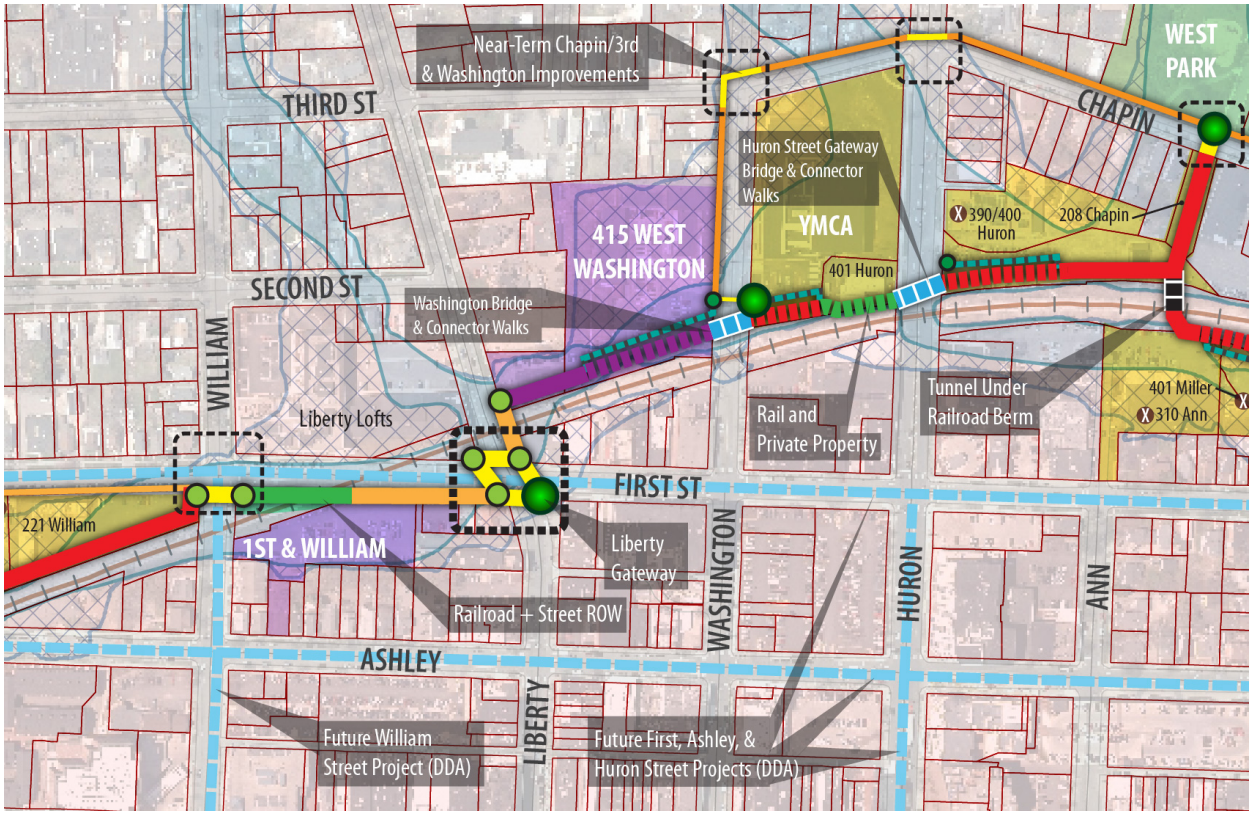


Figure 19 – Zone 4 Preferred Alignment Map

PRIMARY TRAIL TYPES

- On Public Land
- Elevated on Public Land
- On Private Land
- Elevated on Private Land
- On Railroad Land
- Elevated on Railroad Land
- Bridge Section
- Tunnel Section
- Within Street Right-of-Way
- Street Crossing

- Connector Path & Entry Node
- Other Trail Opportunities
- Coordinating Projects
- Street Intersection Enhancement
- Major Gateway
- Minor Gateway / Node
- Private Parcels
- Rail Parcels
- Public Parcels
- Floodway
- Floodplain

NOTE: Thinner lines for the primary trail types indicate possible near-term opportunities

1) Properties with (X) indicate property owners that have not been briefed on the urban trail alignment.
2) Unless otherwise noted, no easements or other access arrangements have been made along the trail route.

Primary Trail

- The primary trail will continue south towards Huron Street, ramping up to a gateway bridge that provides a non-motorized connection over Huron Street.
- South of Huron Street, the primary trail will continue in an elevated fashion parallel to the railroad berm to cross over Washington Street. The primary trail will return to grade as it moves south through the City-owned 415 W. Washington Street property towards Liberty Street.
- The trail will cross through the Liberty Street and First Street intersection, which will be enhanced as a gateway location providing access to downtown.
- The trail will continue south within the First Street right-of-way and run parallel to the railroad as the trail approaches William Street. The William Street and First Street intersection will be improved to accommodate trail users.

Other Opportunities

- The near-term opportunity along Chapin Street (from Miller Street, see Zone 3) can cross Huron and connect along Washington past the YMCA.
- First & Ashley Street DDA project (see Zone 3).
- The City-owned parcels at 415 West Washington, and First and William provide opportunities for future site development and/or open space creation. First and William has limited development potential as it is mostly within the floodway, but could become an important trailhead location with other open space amenities on-site.

Zone 5 – Jefferson to Hill

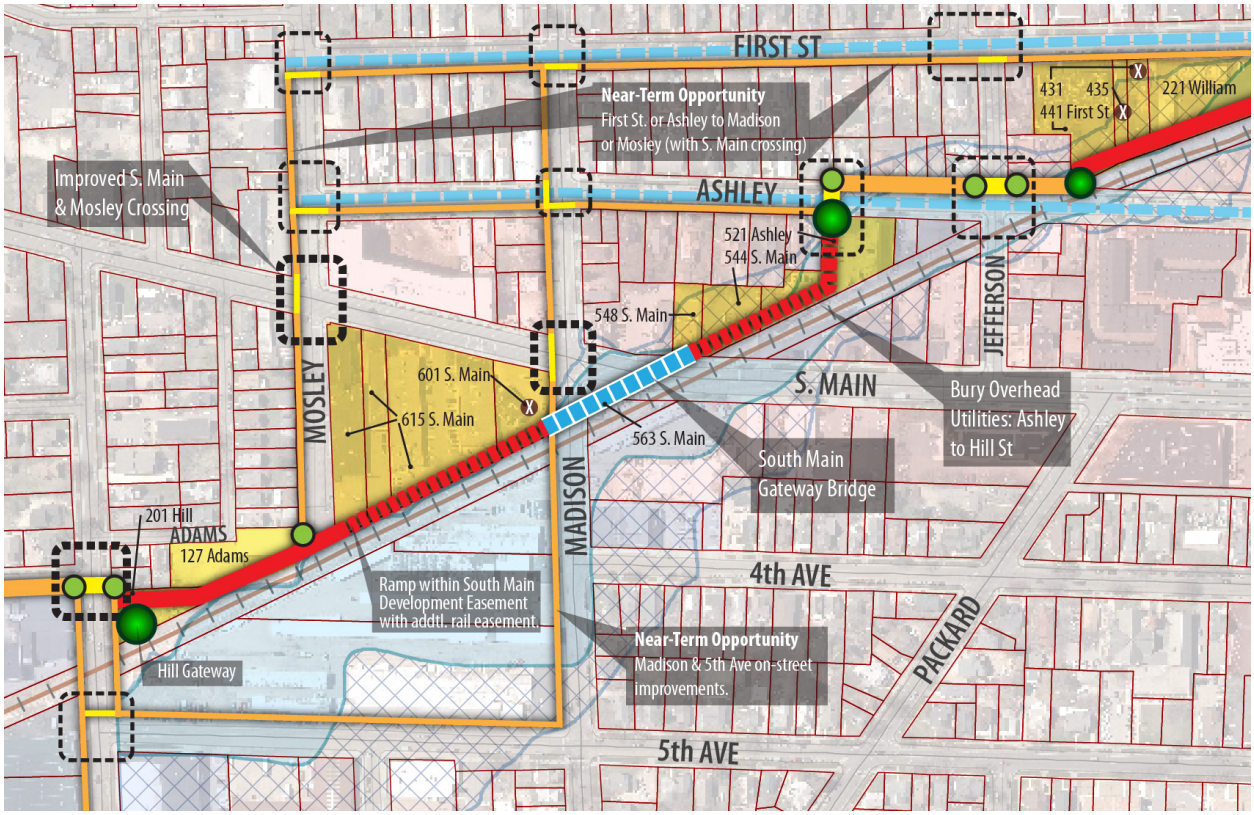


Figure 20 – Zone 5 Preferred Alignment Map

PRIMARY TRAIL TYPES

- On Public Land
- Elevated on Public Land
- On Private Land
- Elevated on Private Land
- On Railroad Land
- Elevated on Railroad Land
- Bridge Section
- Tunnel Section
- Within Street Right-of-Way
- Street Crossing

- Connector Path & Entry Node
- Other Trail Opportunities
- Coordinating Projects
- Street Intersection Enhancement
- Major Gateway
- Minor Gateway / Node

- Private Parcels
- Rail Parcels
- Public Parcels
- Floodway
- Floodplain

NOTE: Thinner lines for the primary trail types indicate possible near-term opportunities

1) Properties with (X) indicate property owners that have not been briefed on the urban trail alignment.
2) Unless otherwise noted, no easements or other access arrangements have been made along the trail route.

Primary Trail

- South of William Street, the trail passes through private property parallel to the railroad. It will return back to the street near an improved Ashley Street and Jefferson Street intersection.
- The trail runs along the Ashley Street right-of-way for part of a block before crossing at a new midblock crossing. The trail will then travel through private properties and ramp up to an elevated section. This elevated section will connect to a gateway bridge crossing over South Main Street and Madison Street and running parallel to the railroad on the west side of the tracks.
- South of Madison Street, the elevated trail section will ramp down to grade at Mosley Street, using a 15-foot wide easement secured as part of the 615 South Main Street

redevelopment project and may include an additional easement along the railroad corridor.

- The primary trail will continue south on private property to an improved street crossing at Greene Street and Hill Street.

Other Opportunities

- First Street and Ashley Street are potential near-term connection opportunities, especially in consideration of potential street improvements as part of the DDA's street design effort (see Zone 3). Near-term improvements on these streets would utilize either Madison Street and Fifth Ave, or use Mosely Street with a new signalized intersection at South Main Street to connect to the primary trail.
- If other private properties become available, in part or in whole, on the east side of the railroad corridor, an alternative alignment for the non-motorized bridge and associated connections should be explored.

Zone 6 – Hill to Hoover

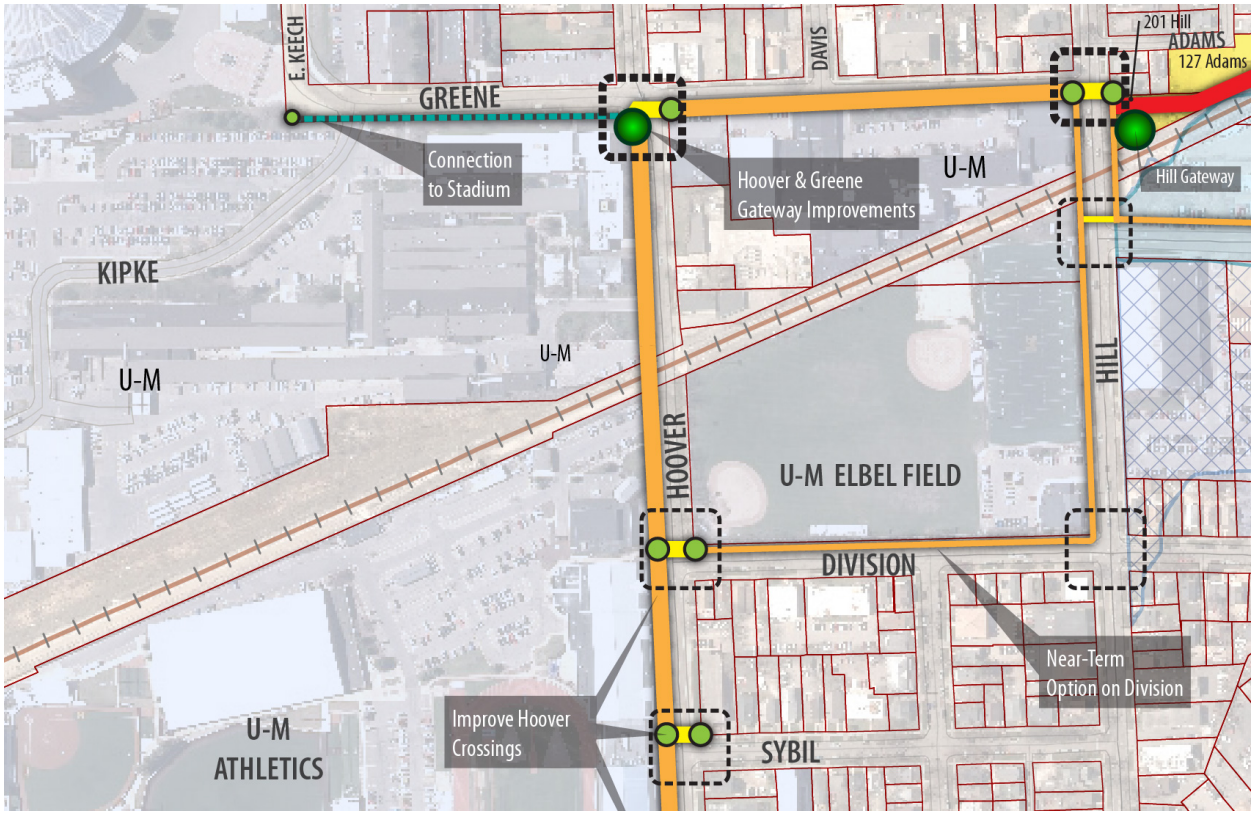


Figure 21 – Zone 6 Preferred Alignment Map

PRIMARY TRAIL TYPES

- On Public Land
- Elevated on Public Land
- On Private Land
- Elevated on Private Land
- On Railroad Land
- Elevated on Railroad Land
- Bridge Section
- Tunnel Section
- Within Street Right-of-Way
- Street Crossing

- Connector Path & Entry Node
- Other Trail Opportunities
- Coordinating Projects
- Street Intersection Enhancement
- Major Gateway
- Minor Gateway / Node
- Private Parcels
- Rail Parcels
- Public Parcels
- Floodway
- Floodplain

NOTE: Thinner lines for the primary trail types indicate possible near-term opportunities

1) Properties with (X) indicate property owners that have not been briefed on the urban trail alignment.
2) Unless otherwise noted, no easements or other access arrangements have been made along the trail route.

Primary Trail

- South of Hill Street, the trail will follow Greene Street to Hoover Street at an improved intersection crossing.
- From Greene Street, the trail will continue east on Hoover Street to South State Street. Intersections with cross streets (Division, Sybil, and Mary) will be improved to facilitate access to and from the trail.
- A connector walk will continue along Greene Street towards the U-M Stadium entrance.

Other Opportunities

- Hill Street to Division Street is a potential near-term option that can utilize the wider existing sidewalks to provide a connection to Hoover Street.

Zone 7 – Hoover to Dewey

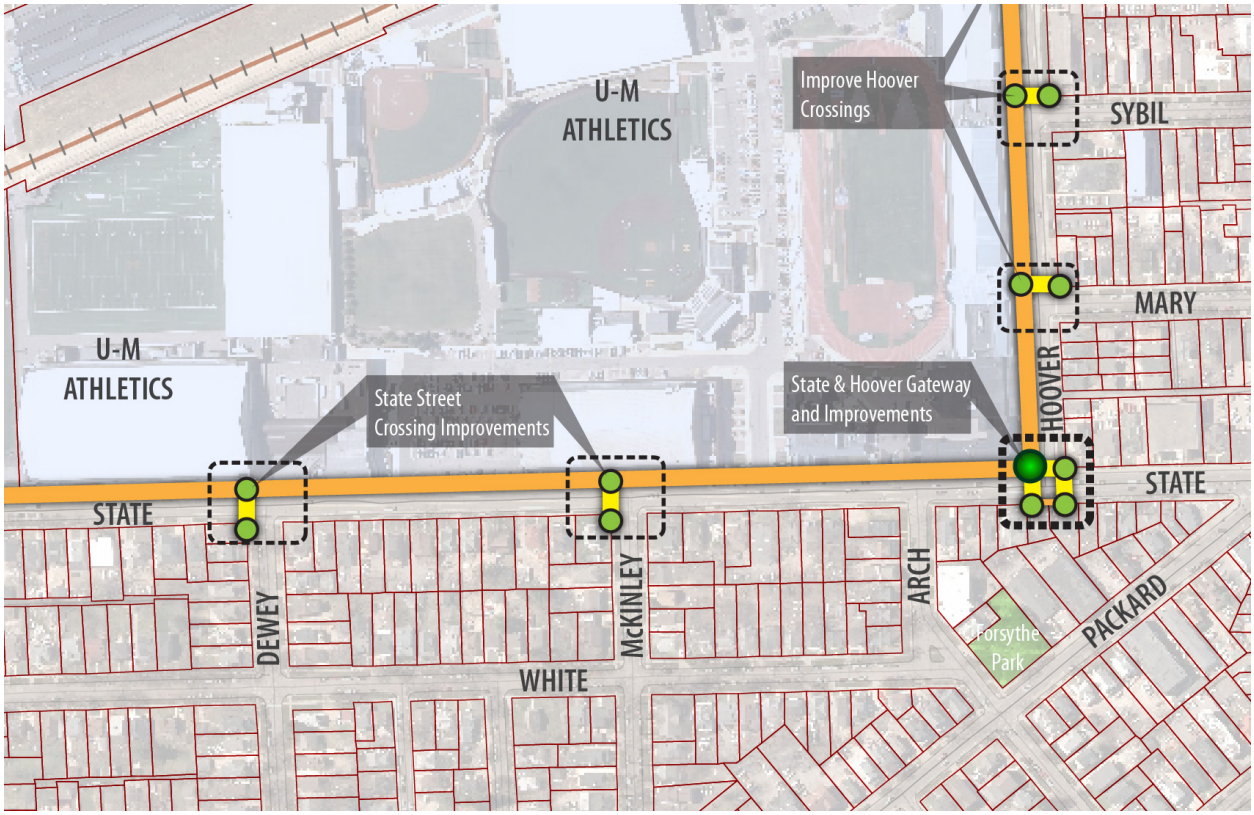


Figure 22 – Zone 7 Preferred Alignment Map

PRIMARY TRAIL TYPES

- On Public Land
- Elevated on Public Land
- On Private Land
- Elevated on Private Land
- On Railroad Land
- Elevated on Railroad Land
- Bridge Section
- Tunnel Section
- Within Street Right-of-Way
- Street Crossing

- Connector Path & Entry Node
- Other Trail Opportunities
- Coordinating Projects
- Street Intersection Enhancement
- Major Gateway
- Minor Gateway / Node
- Private Parcels
- Rail Parcels
- Public Parcels
- Floodway
- Floodplain

NOTE: Thinner lines for the primary trail types indicate possible near-term opportunities

1) Properties with (X) indicate property owners that have not been briefed on the urban trail alignment.
2) Unless otherwise noted, no easements or other access arrangements have been made along the trail route.

Primary Trail

- The trail will continue east on Hoover Street to the State Street intersection, which will be improved with enhanced crossings.
- Cross-street intersections along Hoover Street (Sybil Street and Mary Street) will be improved.
- From Hoover Street, the trail will continue on State Street south towards Stadium Boulevard and Stimson Street.
- Along State Street, cross-street intersections (McKinley Street and Dewey Street) will be improved to provide safer access to The Treeline from adjacent neighborhoods and districts.

Zone 8 –Dewey to Stimson

Figure 23 – Zone 8 Preferred Alignment Map

PRIMARY TRAIL TYPES

- On Public Land
- Elevated on Public Land
- On Private Land
- Elevated on Private Land
- On Railroad Land
- Elevated on Railroad Land
- Bridge Section
- Tunnel Section
- Within Street Right-of-Way
- Street Crossing

- Connector Path & Entry Node
- Other Trail Opportunities
- Coordinating Projects
- Street Intersection Enhancement
- Major Gateway
- Minor Gateway / Node
- Private Parcels
- Rail Parcels
- Public Parcels
- Floodway
- Floodplain

NOTE: Thinner lines for the primary trail types indicate possible near-term opportunities

1) Properties with (X) indicate property owners that have not been briefed on the urban trail alignment.
2) Unless otherwise noted, no easements or other access arrangements have been made along the trail route.

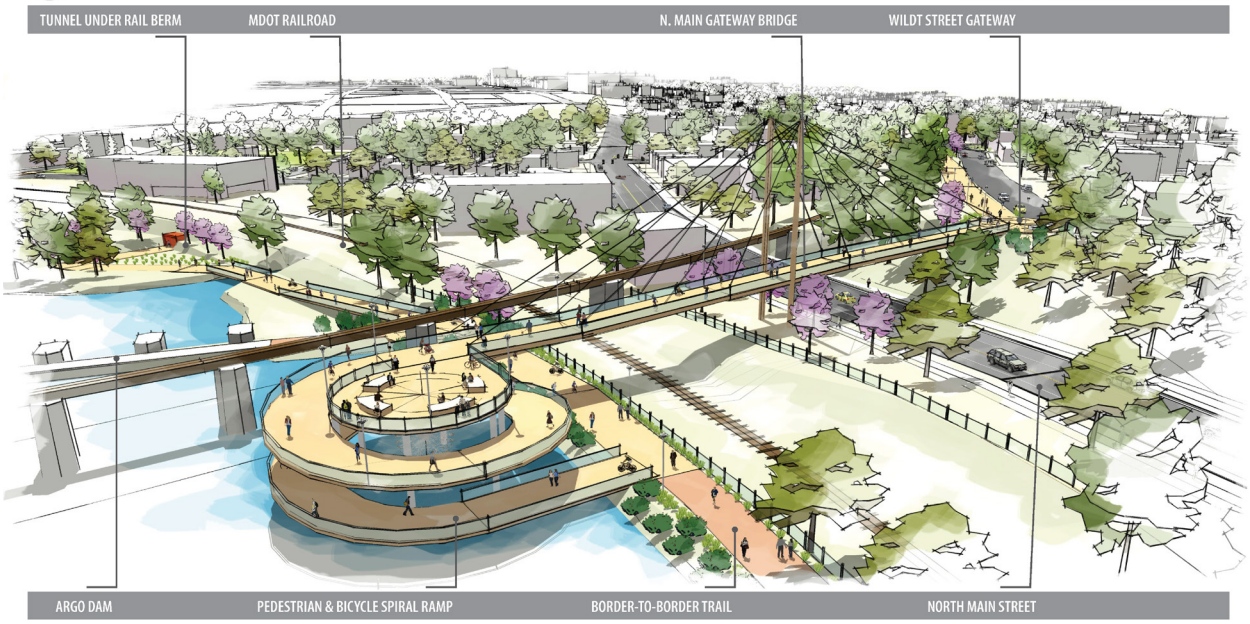
Primary Trail

- The trail will continue on South State Street to the current project endpoint at Stimson Street.
- The cross-street intersection at Grander Street will be improved, as will the mid-block crossing north of the Stadium Boulevard Bridge.
- An existing connector path from South State Street to Rose White Park will be designated and/or further enhanced as part of The Treeline to provide a clear connection to the primary trail on South State Street.
- The existing pedestrian crossing over the railroad at Stimson will be improved as part of enhancements to the overall intersection and street crossings.

Illustrative Views

The following pages show illustrative views of what The Treeline could look like at important locations along the corridor.

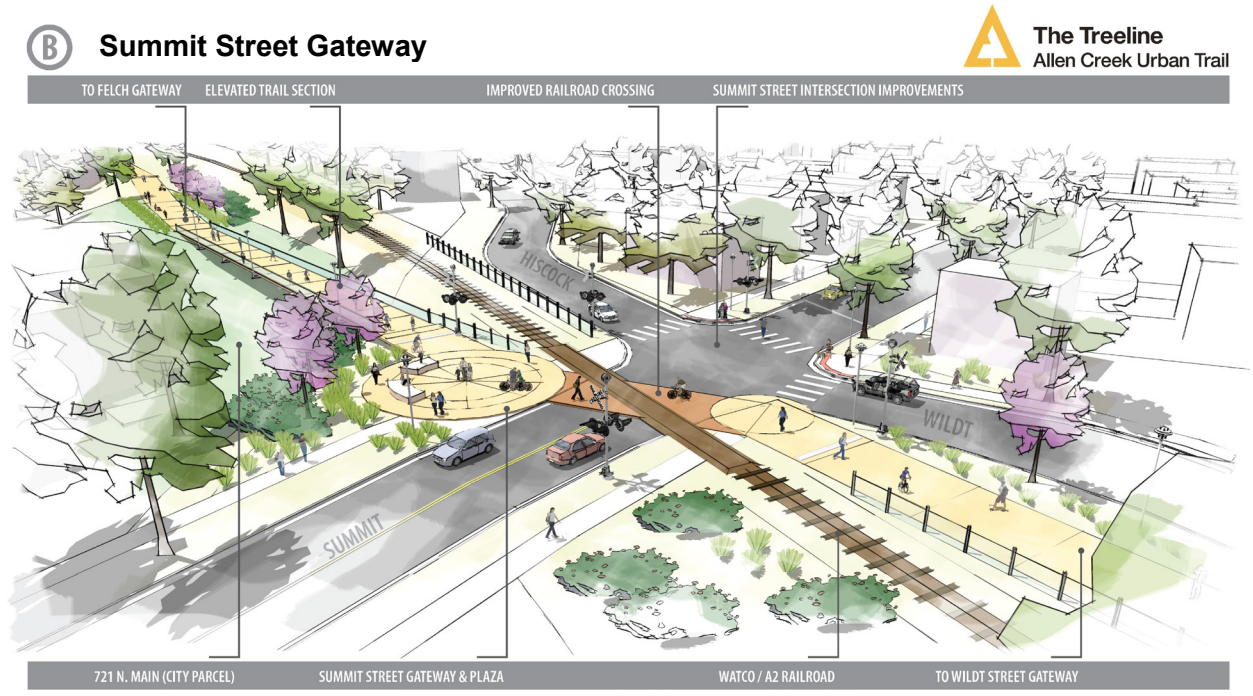
A North Main Street Gateway Bridge & Spiral Ramp



VIEW LOOKING SOUTH OVER ARGO POND

CONCEPTUAL ILLUSTRATION

B Summit Street Gateway

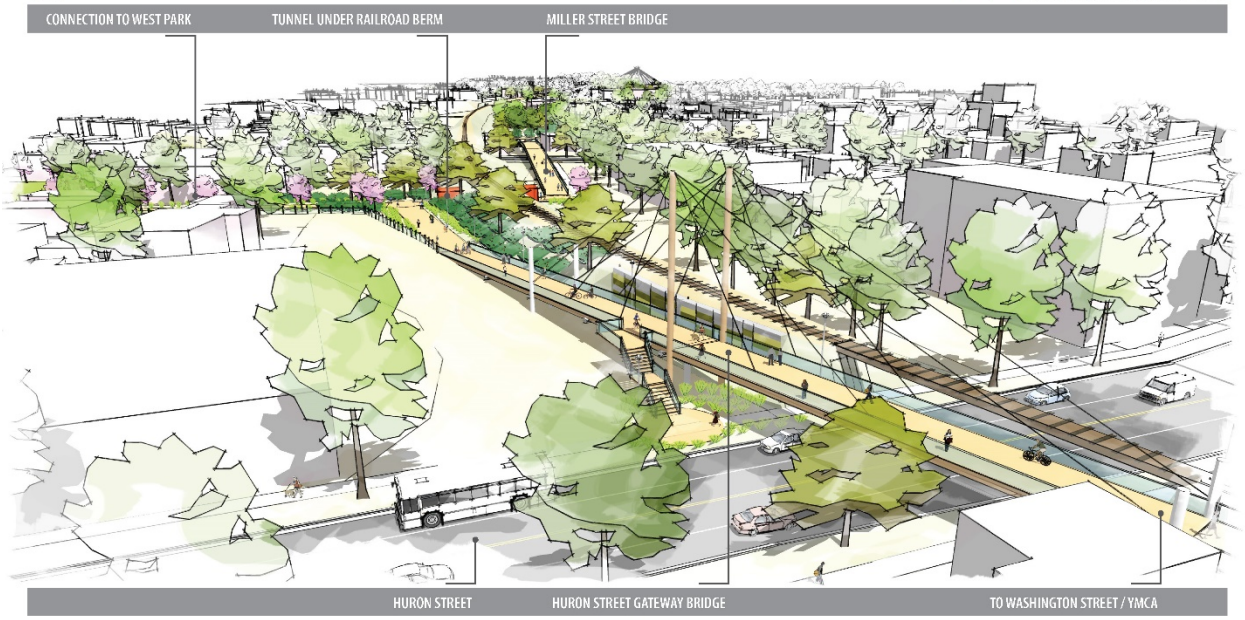


VIEW LOOKING SOUTH AT SUMMIT & HISCOCK/WILDT STREET

CONCEPTUAL ILLUSTRATION

Ⓒ Huron Street Gateway Bridge

The Treeline
Allen Creek Urban Trail

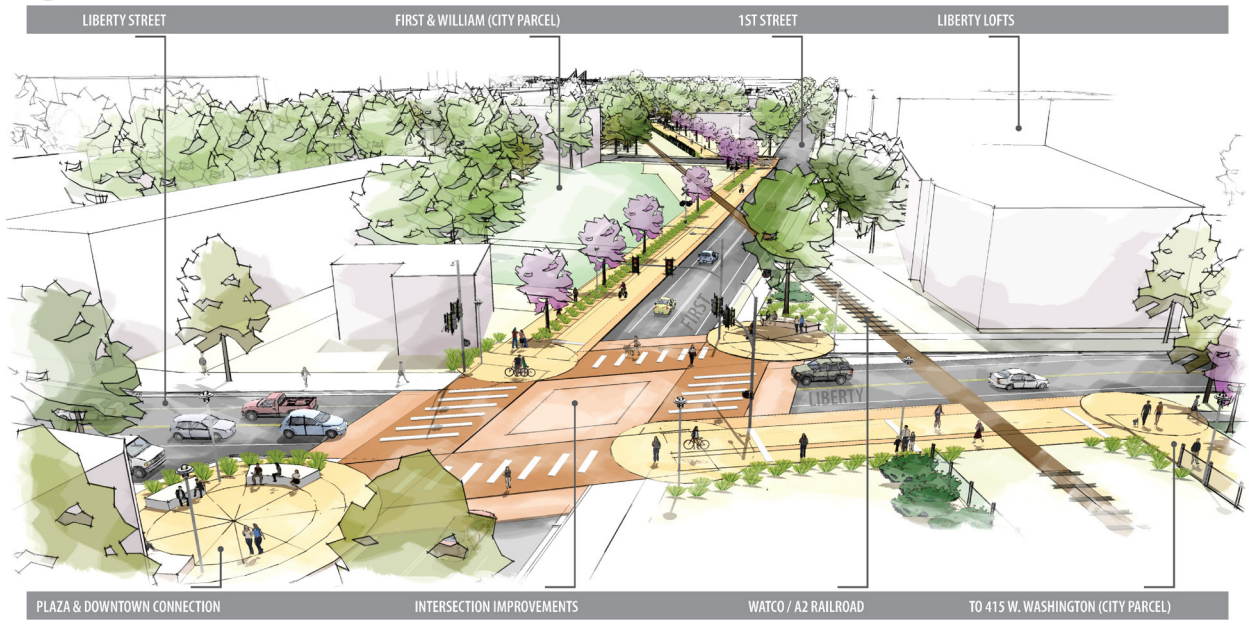


VIEW LOOKING NORTH AT HURON (YMCA AREA)

CONCEPTUAL ILLUSTRATION

Ⓓ Liberty Street Gateway

The Treeline
Allen Creek Urban Trail

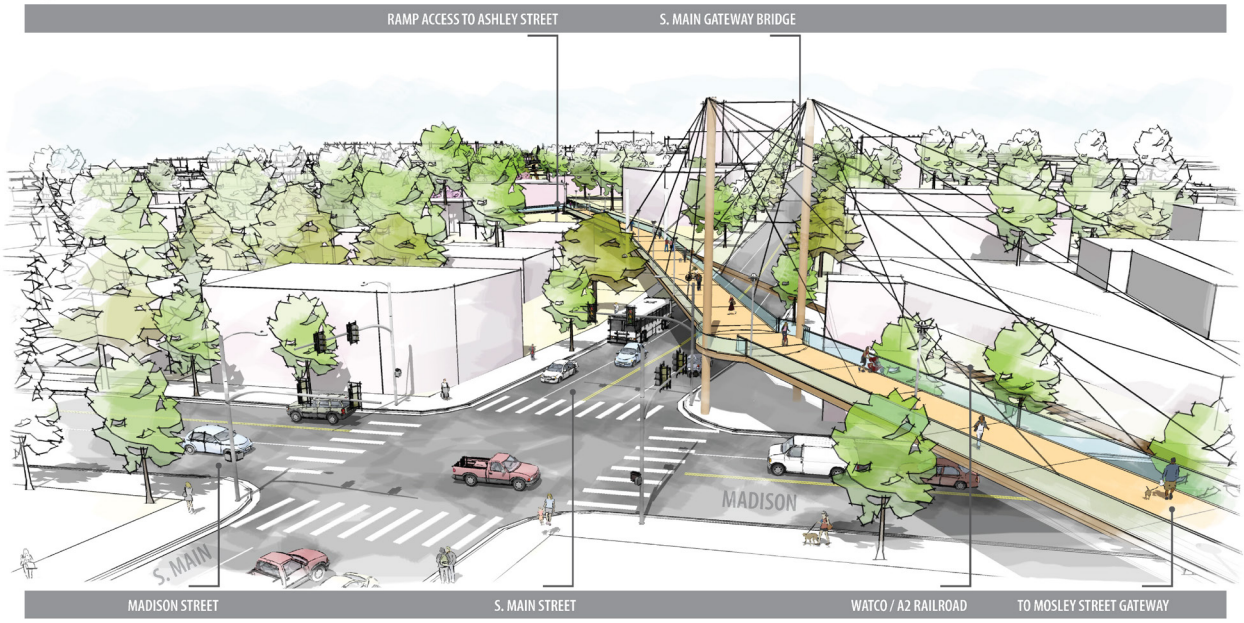


VIEW LOOKING SOUTH DOWN FIRST STREET

CONCEPTUAL ILLUSTRATION

E South Main Street Gateway Bridge

The Treeline
Allen Creek Urban Trail



VIEW LOOKING NORTH DOWN S. MAIN STREET

CONCEPTUAL ILLUSTRATION

Chapter 4: Implementation

Implementing The Treeline will be a complex and long-term effort that will require partnerships and coordination between City staff, technical experts, The Treeline Conservancy, project sponsors, and the public at-large. For a project of this magnitude, understanding the implementation challenges, long-term operational needs, and strategies for realizing the vision is critically important.

Phasing Strategy

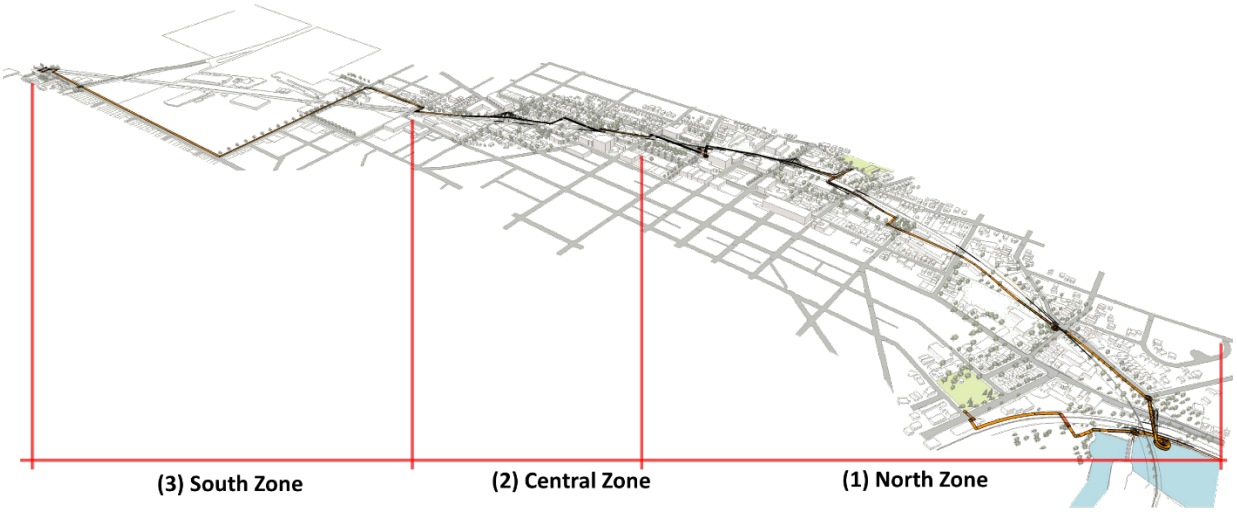
The Treeline urban trail (approximately 3 miles) is not likely to be constructed all at one time as a single project. The trail will most likely be implemented through a series of coordinated phases. Advantages of a phased approach include the following:

- Initial phases can (and should) connect directly to other significant trail assets and non-motorized facilities to begin building a more robust network immediately.
- Success of initial phases demonstrates a commitment to the process and can build momentum and additional support for the overall vision.
- Project phases can be sequenced around funding cycles, especially for granting agencies or other institutions that may be needed partners on the project.
- Phasing can capitalize on near-term opportunities or “low hanging fruit” improvements while negotiations and agreements with other property owners are resolved.

Anticipated Phasing Sequence

The diagram below indicates an anticipated phasing sequence over three zones.

Figure 24 – Overall Phasing Approach



- **(1) North Zone: Border-to-Border Trail (B2B Trail) to First & William Property** (see detailed enlargement below)

  - » This zone provides the critical linkage to the B2B Trail near Argo Dam and provides a way to cross over major barriers – North Main Street and the MDOT rail corridor – in order to access the riverfront.
  - » Improvements in this zone can build on the progress currently underway in constructing the non-motorized tunnel under the MDOT railroad line (Allen Creek Berm project).
  - » This zone contains all three of the significant City-owned parcels within the project corridor. Use of City-owned parcels in combination with near-term opportunities and negotiations with Watco Companies, could result in the implementation of a significant and critical section of The Treeline.

- **(2) Central Zone: First & William Property to Hill Street**
  - » This challenging trail section requires coordination and cooperation between many private property owners.
  - » This is the most physically constrained zone, with a narrow railroad right-of-way and limited public property outside of the street rights-of-way.

- **(3) South Zone: Hill Street to South State and Stimson Street Intersection**
  - » For the primary route alignment, this section proposes use of public street rights-of-way for the trail.

North Zone – Enlargement

Figure 25 – North Zone Phasing Detail

The diagram above identifies six specific project areas (A, B, C, D, E, and F) within the North Zone to consider from a phasing and cost evaluation perspective.

- **Project Area A** creates a critical connection to the B2B Trail and an alternative route for pedestrians and cyclists that use the North Main Street corridor. In conjunction with the proposed gateway bridge and spiral ramp, this section represents a highly visible signature element of The Treeline.
- **Project Area B** includes The Allen Creek Berm project (currently in a design and engineering phase) and is partially funded.

- **Project Area C** includes a combination of City-owned land, railroad property, and private property. In this area, private property access easements have already been secured (e.g., Kingsley Condominiums).
- **Project Area D** can be advanced in stages, either as near-term on-street improvements to Miller Street and crossing onto Chapin Street, or with the bridge over Miller Street and a tunnel through the railroad berm.
- **Project Area E** includes improvements and/or revenue generation opportunities on the City-owned 415 W. Washington property. Near-term connections may make use of the HAWK Beacon at the Huron Street and Chapin Street intersection while the elevated trail and bridge sections are advanced for implementation.
- **Project Area F** is mostly within the public rights-of-way, with a minimal encroachment on the railroad property near the First and William Street property.

Funding & Implementation

Funding Mechanisms

The Treeline reflects a significant, long-term public infrastructure investment. While the project will be expensive in comparison to other trail projects completed by the city in the past – it is important to consider the transformative potential of The Treeline. Like the success of the Argo Cascades in reinvigorating the riverfront and drawing people and activity into the city, The Treeline has the potential to become a magnet for the community and improve the quality of life for residents for generations.

Funding The Treeline will require partnership and collaboration with The Treeline Conservancy and intends to seek a broad range of funding support for the project – including a high reliance on funding sources not typically used for public projects in the City of Ann Arbor. It is also important to consider the capital cost needs to fund construction, as well as the needed on-going costs to support sustainable maintenance and operations of the trail facility.

Sources of Funding

The broad range of benefits and community impacts associated with the urban trail correlates with a broad range of potential funding sources. While a generic “trail” project may only qualify for transportation funding, a trail that also responds to stormwater/floodplain concerns, community health, recreational needs, safety, education, and environmental restoration can pursue a wider range of grant opportunities or other funding sources.

- Public agency grants in transportation, health, educational, & environmental fields.
  For example:
  - *Non-motorized transportation grants*
  - *Pedestrian safety grants*
  - *Healthy/livable community grants*
  - *Safe routes to schools program*
  - *FEMA floodplain relief grants*
  - *Water quality and watershed related grants*
  - *Federal TIGER transportation grants*
  - *MDOT trail related grants*
  - *Economic development grants*
  - *Brownfield funding*

- Support from local, regional, and national organizations, agencies, and foundations.
  For example:
  - » *Ann Arbor Area Community Foundation*
  - » *ERB*
  - » *Community Foundation for Southeast Michigan*
  - » *Rails-to-Trails*
  - » *U-M Outdoor Adventures (at Elbel Field)*
  - » *Sierra Club*
  - » *Residential neighborhood groups*
  - » *U-M Office of Sustainability*
  - » *YMCA*
  - » *Ford Foundation*
  - » *Huron River Watershed Council*
  - » *Chamber of Commerce*
  - » *Ann Arbor Public Schools*
  - » *Legacy Land Conservancy*

- Private and/or corporate sponsorship
  For example: Naming rights for key elements, tech industry sponsors

- Direct funding mechanisms:
  For example:
  - » *Tax increment financing (TIF) related to property redevelopment near the Treeline corridor.*
  - » *Business Improvement District (BID) or similar mechanisms.*
  - » *Dedicated local millages*
  - » *City and/or County funds*
  - » *Revenue from sale of property*
  - » *Crowdfunding campaigns (e.g., Kickstarter, Go Fund Me, etc.)*

- Revenue generation methods
  For example:
  - » *Sales related to concessionaire fees*
  - » *Equipment rentals (e.g., bicycle rentals)*
  - » *Sale of* The Treeline *branded merchandise*

- In-kind donation of services
  For example:
  - » *Adopt-a-trail programs*
  - » *Volunteer programs for maintenance tasks*
  - » *Trail ambassador program*
  - » *Ann Arbor Bicycle & Touring Society*
  - » *Washtenaw Bicycling & Walking Coalition (WBWC)*

Project Construction Conceptual Cost Opinion

Through the master plan process, a conceptual cost estimate for the Treeline has been developed. This cost estimate pertains only to the design, engineering, and construction cost of the physical infrastructure. Other transactional costs (e.g., property acquisition) or uncertain costs (e.g., environmental remediation) are not reflected in this estimate. The following outline lists items included and not included in the estimate:

Trail Amenities & Features Included:

- All primary trail alignment features and connector paths, including bridges and elevated ramp sections.
- Trees and landscaping along the trail
- Benches and other site furnishings
- Stormwater management for trail area
- Pedestrian-scale lighting and security (call boxes)
- Ornamental security fencing (as needed)
- Grading, retaining walls, and utility modification (as needed)

Cost Opinion ALSO Includes:

- Design and engineering fees
- Permitting, survey, and geotechnical related fees
- Design, estimate, and construction contingencies
- Project management and construction administration

Cost Opinion Does NOT Include:

- Any property acquisition and/or easement costs, as well as any other specific physical property modifications that may be required as part of securing access
- Major utility modifications or enhancements
- Environmental remediation
- Flood mitigation and/or floodplain enhancements
- Projection of on-going maintenance and operational costs
- “Other Opportunities” referenced in the framework plan

Construction Cost Opinion

- **Preliminary opinion of construction costs: $53 to $57 million**.
  - » This estimate is based on 2017 dollars with no adjustment for inflation into future years.
  - » The overall project timeline and phasing will impact this cost estimate as costs are adjusted for inflation.
- At approximately 2.75 miles in length, the Treeline is $3,800 per linear foot of trail.

Benchmarks

The construction cost of The Treeline is within, or below, the cost range of other similar urban trail projects (see Appendix D for trail case studies).

- 606/Bloomingdale in Chicago (mostly elevated)
  - » $95 million for 2.7 miles ($6,650 per linear foot)
- Indianapolis Cultural Trail (mostly on-street)
  - » $63 million for 8 miles ($1,500 per linear foot)
- Chicago Navy Pier Flyover (mostly elevated)
  - » $60 million for 0.6 miles ($19,000 per linear foot)

Operational & Maintenance Needs

Urban trail maintenance is important for user safety and longevity of the trail system to make wise use of initial investments. Well-maintained facilities minimize hazards and promote continued use. Ensuring that maintenance needs are addressed and resources are made available to support maintenance is critical for trails on-street and off-street.

The items below reflect general types of maintenance activities that should be addressed in the operational plan for The Treeline.

Inspections: Routine inspections are integral to all maintenance operations. Inspections should occur on a regularly scheduled basis. Frequency of trail inspections will depend on the amount of trail use, location and age. Items to consider in trail inspections include: scheduling and documentation of inspections; the condition of railings, bridges, and trail surfaces; proper and adequate signage; removal of debris; and, coordination with other agencies associated with trail maintenance.

Trail surface maintenance

- Snow clearing to the full width of trail facilities
- Sweeping/washing
- Pavement marking maintenance
- Pavement repair

Furnishing & Amenity Maintenance

- Cleaning and repair of seating areas, benches, etc.
- Waste collection (trash and recycling)
- Signage repair/maintenance
- Light pole operations and repair/maintenance
- Security call box maintenance and 911 fees

Landscape Maintenance

- Stormwater (inlet & trap cleaning)
- Perennial beds
- Tree and shrub trimming/pruning – ensuring that trail areas are free and clear of any obstructions and that the 2-foot clear zones adjacent to bicycle areas are maintained.
- Lawn mowing
- Fence repair

Other Maintenance Needs

- Signal timing and adjustments
- Railroad crossing materials/surface maintenance
- Elevated trail and bridge inspections
- Utility inspections and maintenance

Operational & Programming Needs

Beyond physical maintenance, operating a successful urban trail may also require investment in programming to build support and utilization of the trail facility. These programming needs may be conducted with volunteer labor, but are often a responsibility of the trail operating entity and hence may have a cost associated with providing these programs. Typical programs include:

- Creation and rotation of interpretive signage
- Art installation/rotation and selection oversight
- Trail ambassadors (trail "rangers") program coordination
- Special event coordination
- Project implementation coordination with other projects in the area
- Safety patrols and/or emergency fees
- Wayfinding and branding programs

Business Plan

The Treeline Conservancy is working with the City of Ann Arbor to develop a "Business Plan" that will advance implementation of the Treeline Project. This plan is comprised of three critical sections as follows:

- Governance Structure
- Financial Structure
- Implementation Strategy

Governance Structure

The sustained management of urban trails and greenways is a complex enterprise and requires that one or more organizations be responsible for overseeing construction and on-going operations. There are a variety of governance models and partnership structures that are used across the country, ranging from single-agency public management to multiple partnership or entirely privately operated.

The business plan under development by The Treeline Conservancy aims to establish a public-private partnership between the Treeline Conservancy and the City of Ann Arbor. The partnership arrangement could include an agreement to empower the Treeline Conservancy as the managing partner for The Treeline. Through such an agreement, The Treeline Conservancy would be responsible for the day-to-day operations and maintenance of the urban trail. The City of Ann Arbor, via City Council or staff actions, would help coordinate the implementation of capital improvements.

Partnerships

In addition to The Treeline Conservancy structure, forming partnerships with other organizations, City units, and entities that can help support The Treeline will be important to successfully achieving the vision of this plan.

Financial Structure

The financial needs of implementing the trail include capital costs and operating costs. The overarching funding goal is to generate the necessary capital to fund implementation while also building a sustainable source of funding for ongoing maintenance and operations. The Funding Mechanisms section identified many potential sources of funding, but it is important to

acknowledge that certain types of funding are better suited to capital expenses and others for operating expenses.

Funding sources for capital costs for design and construction

- City resources (funds and properties)
- Grants
- Donations and sponsorships
- Debt financing

Funding sources for operating expenses:

- Funding from operations of facilities
- Programming of spaces
- Sponsorships
- Limited City funding envisioned

Implementation Strategy

The final component of the business plan relates to the implementation strategy. Critical tasks to advance implementation in the near-term include:

- Project phasing (see Chapter 4: *Phasing Strategy*) and pursuit of future phases (e.g., connections south of the State and Stimson Street intersection).
- Continued outreach with property owners, University of Michigan, and Watco Companies.
- Detailed design, planning, and legal groundwork
    - Acquisition of easements and/or properties
    - Conceptual design approval and detailed cost estimates
- Project design – including survey, geotechnical, engineering, permitting and approvals
- Project implementation – construction and construction administration.

These strategies and approaches will be further refined as The Treeline business plan is finalized.

Photo taken by: John Sullivan; Images provided by: Treeline Conservancy

Appendices