

**THE BOARDMAN RIVER PLAN:  
A COMPREHENSIVE VISION FOR THE FUTURE OF TRAVERSE CITY'S RIVER**

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## ABSTRACT

Traverse City's development as an economic hub for northern Michigan was largely centered around the Boardman River. Historically, the river has served as an artery for the transportation of people, timber and other goods. The relative ease of movement through this area prompted steady settlement and development during the 19th and 20th centuries. Without the Boardman River, Traverse City would be a very different place.

Despite its role in defining the trajectory of much of Traverse City's past, the Boardman River's place within the fabric of Traverse City today is not well defined. Through much of the city's downtown core the river is heavily engineered and lined with parking lots, other paved areas, forgotten spaces behind buildings and informal camps. Along with a diminished community recognition of the Boardman as a valuable resource, the river faces a variety of environmental challenges, including stormwater flows carrying sediment and other pollutants, bank erosion, the degradation of aquatic habitat and the introduction of invasive species.

Although the city has recognized that the time has come to reintegrate the river into the city, there is a need for a comprehensive plan articulating how to accomplish this. Such a plan needs to approach the river's urban corridor as a coherent whole, creating a highly legible and connected riverfront that is well integrated into the city. A plan must respond to the changing aesthetic and character of the river banks as it flows through different neighborhoods, as well as current conditions and proposed future developments.

The Boardman River Plan does just this.

The Boardman River Plan strives to expose the river as a defining characteristic of the City of Traverse City, incorporating ecological and social recommendations for elevating it to its rightful place of prominence within the community and the city's physical makeup and improving habitat, water quality, and bank stability.

To accomplish this, the Plan begins at the full city scale to address widespread issues and provide general recommendations appropriate throughout the river's course. The Plan then zeros in on key areas, offering site-specific recommendations aimed at realizing opportunities and tackling problems discovered during an in-depth process of site analysis. Through these steps, the Boardman River Plan provides a conceptual framework that defines the river as an integral part of the city and supports individual riverfront development projects as part of an ambitious vision for the future of the Boardman River in Traverse City.

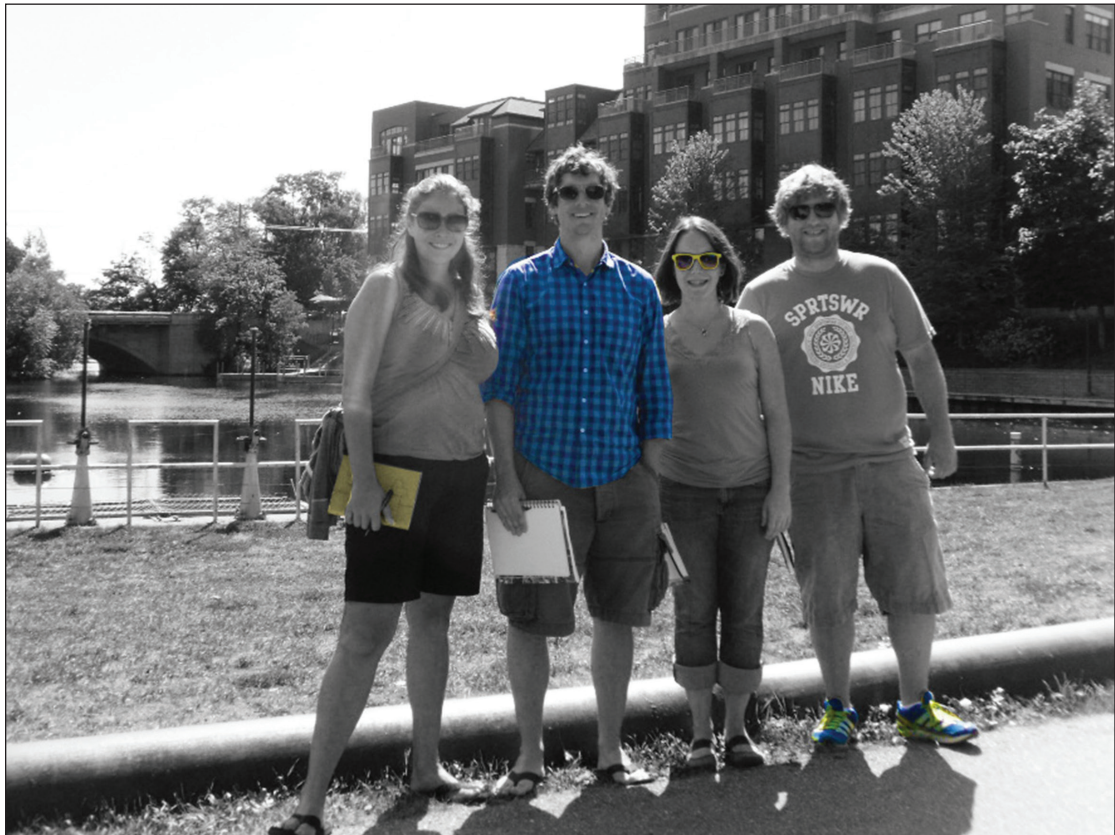
## ACKNOWLEDGEMENTS

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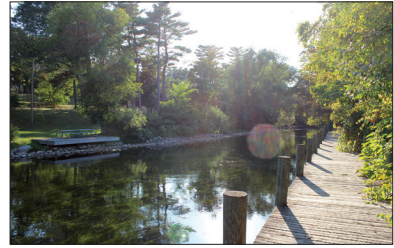
*The Boardman River Plan Project Group. Left to right: Christina Strasser, Aaron Fargo, Katie Dennis and Adam Fercho.*

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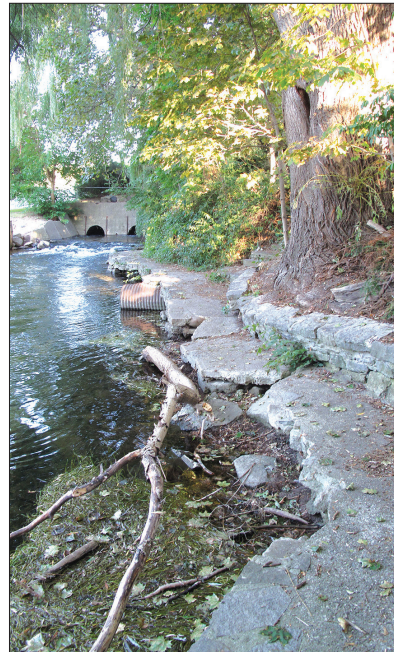
## INTRODUCTION

The Boardman River, which flows through the City of Traverse City before emptying into West Grand Traverse Bay, offers incredible potential for providing new social, cultural and environmental amenities. Currently, the river is relatively invisible within the fabric of the city; surrounded by parking lots and alleyways, the river faces or will likely face ecological issues having to do with erosion, invasive species management, and increased sedimentation and flow variation as a result of dam removal upstream (Allan, n.d.; Burroughs, 2009). This project proposes a new vision for the Boardman River – one that integrates the river into the city and encourages recreation and community building, bringing a dynamic outdoor space to Traverse City's core.



## PROBLEM STATEMENT

- Traverse City, Michigan has grown up on the banks of the Boardman River but has not adequately integrated the river into the city itself. This has created a downtown experience that is disconnected from the river corridor, and a river corridor that has been channelized, neglected, and largely hidden between alleyways and parking lots. Currently, the Boardman River is not realizing its potential as a unifying element for the downtown experience, and is facing ecological issues related to erosion, invasive species and sedimentation.
- This project will strive to create a Master Plan for the Boardman River that will provide the City of Traverse City with a comprehensive vision for the river's future. The plan will focus on enhancing the river's ecological health while creating new social and cultural spaces centered on the river and anchored in the historical and cultural context of Traverse City. By examining the river corridor at multiple scales, the resulting plan not only focuses down into specific neighborhood-based elements in the riverwalk, but also connects these proposed interventions into a cohesive whole.
- While offering opportunities for enhancing ecological health, the redesign of the riverfront also offers opportunities for the city to create social spaces, recreational areas and outdoor amenities in the heart of the downtown district. Reorienting Traverse City's streetscape and landscape toward the river is consistent with the city's history as a settlement founded on the banks of the Boardman. Providing the city with creative solutions for refocusing on the river will provide the tools necessary for approaching future development in a cohesive, comprehensive and innovative way.



## BACKGROUND

Traverse City has been a hub of commercial and transportation activity for hundreds of years. Even before the arrival of French missionaries in the late seventeenth century, Native Americans occupied the southern shore of West Grand Traverse Bay at what would become the site of Traverse City, using the site as a base for hunting, fishing and gathering fruit (Currents, 89; Leach, 5). Beginning at the picturesque shores of Boardman Lake, “The river... without driftwood or the unsightly obstruction of fallen trees, ran with a swift current through an open forest of pines, which occupied all the space between the lake and the bay” (Leach, 1884).



*Homes along Sixth Street in today's Central Neighborhood overlook Hannah Park and the Boardman River (Currents of the Boardman, 1982).*

This pine forest did not go unnoticed by the lumber barons of the 1800s. Intent on claiming some of the region's vast timber resources, Illinois farmer Captain Harry Boardman purchased land along the river in 1847 on which to build a sawmill. His son Horace was sent to live in what would become Traverse City, and tasked with managing and maintaining the family business (Leach, 1884). After a short three years of Horace's questionable management and a decline in the price of lumber, the Boardman mill ceased to be profitable and was sold to Perry Hannah, Albert Tracy Lay and James Morgan. Hannah Lay & Co. purchased the mill, its complementary buildings, and approximately 200 acres of land for a total of \$4,500 (Leach, 1884).

As the company expanded its business across the region, a larger permanent white population was attracted to the Traverse City area. The city was officially established in 1852, though it remained accessible only by water until 1864 (Traverse City Convention and Visitors Bureau, *Historical Sites*). Throughout the logging era, the Boardman River acted as a critical artery for the transportation of timber from inland forests to the city's mills and the bay beyond (Powers, 1912).

Over time, these logging activities had a detrimental impact on the health of the river. Channels became more incised, and in-stream structure and cover was eradicated by the removal of debris, eliminating habitat for fish and other riparian species (Ervin and Kalish, n.d.). The river corridor became the center of Traverse City's industrial core, attracting cigar manufacturers, candy producers and the Traverse City Iron Works to its banks (Watershed Center et. al., 2003).



*Camp dwellings near the Boardman River mouth circa 1870 (Currents of the Boardman, 1982).*

As the city modernized throughout the 20th century, the river continued to be viewed as an industrial resource rather than a social amenity. Over the years, the river has been channelized and straightened, the mouth has been relocated, and its banks have been increasingly hardened and engineered. Soil erosion is visible in several locations along city's riverbanks and habitat ratings are of some concern (Burroughs et.al., 2009). Development patterns have turned away from the river, which is in many areas now lined with parking lots, alleyways and forgotten spaces. These trends have resulted in a river that is relatively hidden and seemingly forgotten, but which is teeming with potential.

Traverse City today is a dynamic urban environment, and is home to over 14,000 rear-round residents. In addition, the beautiful landscape, unique city character, temperate climate, and recreational opportunities draw hundreds of thousands of visitors annually. Tourists and residents alike enjoy the beauty of Grand Traverse Bay, the city's proximity to natural areas, and the shops in the downtown core, but the Boardman

River presents a missed opportunity within the context of Traverse City today. This project seeks to realize the river's full potential by acknowledging its historical and ecological significance, while re-imagining the river corridor as the forefront of the City's civic landscape.

## SITE ANALYSIS

In order to offer appropriate recommendations for the Lower Boardman River, it is vital to understand the context in which the river flows. To do this, the river was examined across multiple scales – from a regional perspective to individual parcel analysis – and from a variety of angles – cultural and ecological. This process led to the creation of a long-term design vision and management plan that responds to the needs of the river and the greater Traverse City community.

### The Grand Traverse Region

Traverse City is located in Grand Traverse County in the northwest corner of Michigan's Lower Peninsula, situated 253 miles northwest of Detroit and 316 miles north of Chicago. The city is built on the shore of Lake Michigan's West Grand Traverse Bay; a bay that is divided into two arms by the Old Mission Peninsula. Located in the Boardman River Valley and surrounded by forested hills, cherry and apple orchards, vineyards, and numerous inland lakes, Traverse City is in close proximity to extensive state and national forests, lakes and rivers, as well as several small to medium sized cities. Regionally, Traverse City acts as a tourism and recreation hub for visitors to use as a home base for day trips to nearby destinations such as Sleeping Bear Dunes National Monument, Charlevoix and the Old Mission Peninsula. The region is served by US-31, M-37, M-72 and M-22, which allow highway access to Traverse City from any direction.

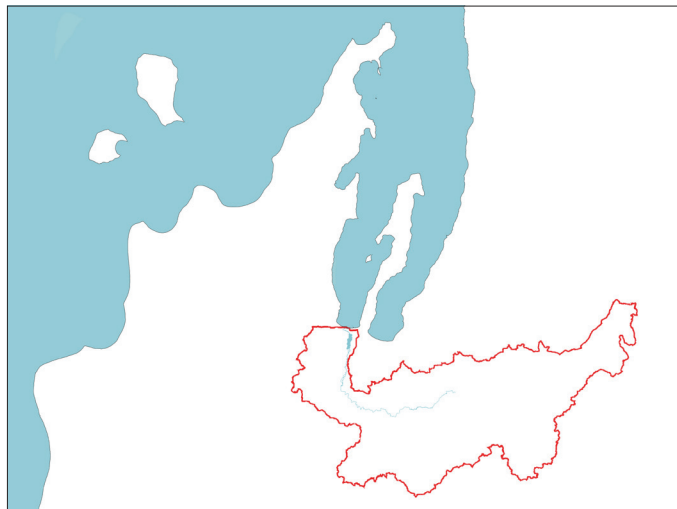
### Watershed

The Boardman River Watershed (Figure 2) drains 291 square miles of Northern Michigan through 179 miles of river and stream tributaries. A sub-watershed of one of Michigan's largest drainage areas

(The Grand Traverse Bay Watershed), the majority of the Boardman River's drainage area is forested, while only a small portion (about 7%) is classified as urban. In addition, the Boardman River Watershed is home to



*Figure 1: The Great Lakes Region. Traverse City is located in Michigan's northern lower peninsula, on the southern shores of Lake Michigan's Grand Traverse Bay.*



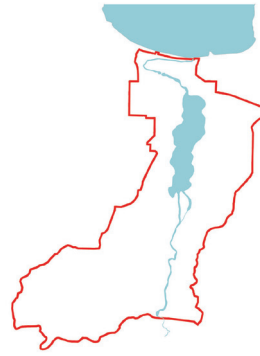
*Figure 2: The Boardman River Watershed. The Boardman River and its associated tributaries drain 291 square miles of Grand Traverse and Kalkaska Counties.*



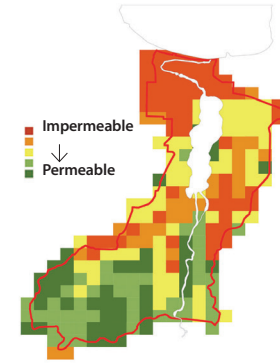
agricultural land, recreational areas, and twelve lakes. (Watershed Center, 2003: 12)

Most of the watershed's urban area is located in Traverse City, within the Boardman Lake sub-watershed (Figure 3). This sub-watershed can be characterized as urban and contains the entire extent of the project site. (Watershed Center, et. al., 2003: 9-10) Kristina Hill defines the project site's location in the watershed as "shoreline," since it is adjacent to a river at the bottom of its watershed. This means that the Boardman River as it flows through

Traverse City is connected to the full extent of the river's watershed, receiving flows of water and materials from all 291 square miles (Hill, 2009). Improvements made upstream, such as dam removal and mitigation of stormwater runoff, have a direct positive impact on water quality within the city. Simultaneously sediments and contaminants that enter the river within the study area are quickly discharged into Lake Michigan's fragile ecosystem.



*Figure 3: The Boardman Lake Sub-watershed. This sub-watershed includes the extent of the study area, including much of Traverse City's urban area.*



*Figure 4: Impermeable Surfaces. The amount of impermeable surface within the subwatershed increases as the river nears its outlet point. Adapted from Watershed Center, 2003*

### The Boardman River

The Boardman River begins in the Mahan swamp and flows 130 miles before it enters into Grand Traverse Bay at Traverse City. Upstream from Boardman Lake and the study area, the river has excellent water quality and provides habitat for waterfowl and insects, as well as spawning ground for trout and other fish species. Listed as a state-designated "Blue Ribbon" Trout Stream and Natural River, the Boardman Rivers and adjacent natural areas provide excellent outdoor recreational opportunities including fishing, boating, and hiking. (Watershed Center, 2003)

Downstream from Boardman Lake, the water quality diminishes as the landscape becomes more urbanized. This segment of the river carries a higher concentration of pollutants such as trace metals, road salts, excessive nutrients, and wastewater from drains (Watershed Center, 2003). Differences in stream morphology and water quality between the urban and natural areas are significant and can be mitigated through strategic interventions.

Stream flow in the Boardman River is fairly stable during low flow periods, but spring flows can raise the stage heights two to four feet in the upper and lower reaches. (Watershed Center, 2003). In addition, seasonal fluctuations in the level of Lake Michigan affect the water level in the Lower Boardman River, with lake levels increasing an average of one foot in the spring and summer months (US Army Corp of Engineers, 2013). Potential fluctuations in water level should be considered when proposing interventions in the study area in order to avoid future flooding hazards.

### Dam Removal + Modification

Between 1867 and 1921, four dams were constructed on the Boardman River in order to provide power to the growing City of Traverse City and its associated industry. In 2005, Traverse City Light and Power concluded that these dams were no longer economically feasible, and the process of decommissioning and removing or renovating the structures began. The Brown Bridge Dam has been removed, while the Sabin and Boardman dams (located upstream of Boardman Lake) are slated for removal. A renovation of the Union Street Dam is planned. (The Boardman, 2013)

In the fall of 2012, the Brown Bridge Dam was the first to be removed. Once the project is complete, significant ecological benefits will be realized. These benefits include the restoration of 1.5 miles of trout stream in addition to the surrounding 181 acres of wetland and upland habitats.

Eventually, when all three planned removals have concluded, over 3.4 miles of trout water will be restored, reconnecting 160 miles of high-quality stream habitat. In addition, the project will restore 250 acres of wetlands and 57 acres of upland habitat (The Boardman, 2013). Dam removal in the context of the Boardman has many benefits, but also may present environmental problems, many of which can be anticipated. Decreased river temperature and increased sediment transport can have important ramifications for wildlife composition and the overall health of the river (Bednarek, 2001). In addition, the dam removal project will have a positive economic impact on the local community. It is estimated that the increase in river quality will bring in \$3 million from increased recreation, tourism and property values as well as an increase in entrepreneurial opportunities involving water-related activities such as fishing, kayaking and canoeing. (The Boardman, 2013)

The Union Street Dam will remain in place to maintain the level of Boardman Lake and act as a barrier to sea lamprey and other unwanted invasive species. The dam and weir system will be modified to allow fisheries managers to pass fish selectively, and possibly to provide research and educational opportunities. In addition, the City of Traverse City is exploring a modification to the Union Street dam that will allow the opportunity for whitewater recreation. (Soyring, 2012)

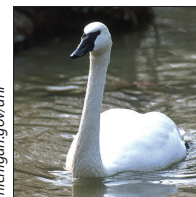
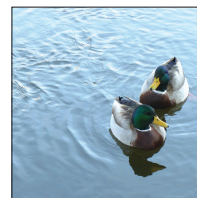
## Wildlife

The Boardman River Valley is home to an abundant variety of animal species, including whitetail deer, squirrels, cottontail rabbits, ruffed grouse, raccoons, beavers, otters, foxes, coyotes, bobcats and an occasional black bear. In addition, many species of waterfowl and shorebirds can be found in Grand Traverse Bay and Boardman Lake (DNR, 2008).

The river habitat hosts amphibian and reptile species as well as a variety of fish, including trout, steelhead, salmon, pike carp and walleye. (DNR, 2008) Cold water species such as trout prefer having access to cold, clear waters with a productive bottom and suitable escape cover (DNR, 2002). Small interventions may help the Lower Boardman create a higher quality habitat for these fish and the aquatic ecosystem as a whole.



Figure 5: The Boardman River's Dams. The Brown Bridge Dam was removed in summer / fall of 2012, while the other three are scheduled for removal or retrofit.



michiganfeeding.com

michigan.gov/dnr

## Invasive Species

Invasive species can disrupt populations of native species, threaten the ecology of the ecosystem and cause damage to local industry and commerce (Watershed Center, 2003). Since invasive species are difficult to contain once introduced, they must be managed and controlled within the Boardman River watershed. Animal species to be monitored within this area include sea lamprey, zebra mussels and rusty crayfish. Currently, the Union Street Dam is used as a barrier to prevent sea lamprey from moving upstream (Watershed Center, 2003). Any modifications to the dam should be designed within invasive species management in mind.

Invasive plant species establish themselves quickly and can impair water-based recreation, navigation and flood control systems, degrade water quality and fish and wildlife habitat and accelerated filling of lakes in the watershed (Watershed Center, 2003). These species in the Boardman River watershed include plants such as Eurasian water milfoil, purple loosestrife, and curly leaf pondweed. The removal of invasive species and re-establishment of native vegetation in disturbed habitat areas will help to combat the threat of these invasive species (Watershed Center, 2003).

## Climate

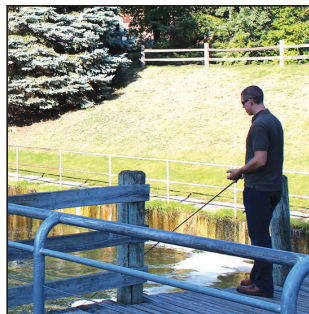
The moderating effects of nearby Lake Michigan and Grand Traverse Bay temper the climate of the region surrounding Traverse City. As a result, the area experiences relatively mild summers and less extreme winters than more inland areas. The lake effect also contributes to a higher annual snowfall in the region, which averages around 80 inches annually (Weatherbase, 2013; NOAA, 2013). Traverse City's four season climate encourages diverse outdoor recreation year round, but mild summers account for the bulk of tourism influx and seasonal population increase.

## Tourism + Recreation

The Grand Traverse Region offers a multitude of opportunities for outdoor recreation, drawing hundreds of thousands of visitors to the region annually. Popular tourist destinations include nearby beaches and waterways as well as other natural areas, and Traverse City's historic downtown.

The Boardman River provides a unique opportunity for urban outdoor recreation, including kayaking, canoing, tubing, paddle boarding and boating. Under the current plan, the elimination of the three dams upstream from Boardman Lake will allow for continuous travel along the Boardman River with only a single portage point at the Union Street Dam. (Watershed Center, 2003: 83-84, DNR, 2008: 9) To further improve the river's amenities,

the City of Traverse City has explored options for retrofitting the Union Street Dam to allow for a whitewater park for kayaking and tubing. In the future, this site could be utilized for kayak competitions, contributing to Traverse City's reputation as a recreation destination and bringing additional revenue to the city.



In addition to water sports, the Boardman River and West Grand Traverse Bay is known as a premier fishing destination. Considered one of the top-ten trout streams in Michigan, over 36 miles of the Boardman are designated as Blue Ribbon sections. (Watershed Center, 2003: 43-45).

Within the City of Traverse City, the Boardman River's character changes to that of an urban stream. Water quality decreases and habitat is compromised but fishing opportunities remain viable. Popular fishing spots include the base of the Union Street Dam and the mouth of the Boardman River at Grand Traverse Bay (Kraimer, 2012). Interventions to improve fish habitat and water quality can increase fish stock, while an increased emphasis on the creation of public spaces on the river banks can improve the experience for fishermen. The City of Traverse City has considered possibilities for the creation of a fishing pier at the river's mouth to begin to support urban fishing.

## The City of Traverse City

The final mile and a half of the Boardman River take it directly through downtown Traverse City. In order to offer appropriate recommendations for the future of the River, it is important to understand the city - the people who live there as well as those who visit, how they interact with their environment, and how the river influences its surroundings.

### Demographics + Population Seasonality

While a steady population of 14,674 residents remains in Traverse City year-round (US Census, 2010), significant population increases occur during the warm summer months, due to a combination of seasonal residents and tourists (Norton, 2012). This area of Northern Michigan is nationally recognized as a scenic summer destination and nearby Sleeping Bear Dunes National Lakeshore was named one of National Geographic's Best Summer Trips in 2012 (Norton, 2012).

In addition to beautiful scenery, Traverse City is known for a variety of festivals that draw visitors from all over the country. These include the National Cherry Festival, the Traverse City Film Festival, a Winter Comedy Arts Festival and the twice yearly Microbrew and Music Festival. The nearby Mission and Leelanau Peninsulas are home to numerous wineries and tasting rooms, while local farms have begun to grow hops for microbreweries in the area (Traverse City Convention and Visitors Bureau, *Festivals*) Today, tourism remains a key industry for the city, with a record year in 2012 posting 1.2 million overnight visitors and an additional 1.1 million "day-trippers" (Norton, 2012).

### Neighborhoods

Traverse City is home to a variety of unique areas that define distinct neighborhoods within the city fabric. The character of each of these areas gives them a life of their own, and should be celebrated and enhanced by future improvements.

#### *Warehouse District*

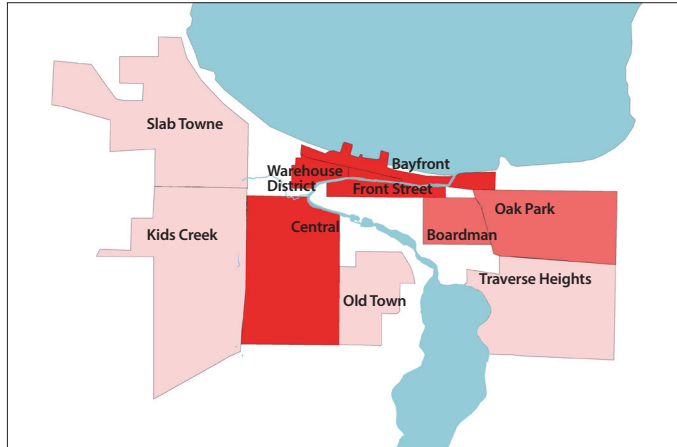
Immediately adjacent to downtown, the Warehouse District offers a unique experience within Traverse City. The existing buildings have an industrial feel, and speak to the river's history as an industrial corridor. This neighborhood is further differentiated from the downtown core by its slightly skewed street grid. An additional attraction within the neighborhood is the fish weir that crosses the Boardman within the Warehouse District and is used seasonally to harvest freshwater fish from the river. From downtown, existing pedestrian access is limited to Union Street and Hall Street. The Warehouse District's eclectic ambiance and central location put it in a prime position for successful future redevelopment.

*Front Street*

Front Street is a tourist hot spot. Historic brick buildings house shops, cafes, restaurants, and pubs, as well as the State Theatre, home of the annual Traverse City Film Festival. Functioning as the city’s downtown core, the Front Street area effectively ignores the presence of the Boardman River, which skirts the northern edge of the neighborhood. Hemmed in by retaining walls and parking lots, the Boardman is difficult for Front Street patrons to interact with and enjoy.

*Central Neighborhood*

The Central Neighborhood is home to some of the oldest residences in Traverse City. Perry Hannah, of Hannah, Lay, & Co., built his Victorian mansion on historic 6th Street, and the Central Neighborhood grew up around it, heavily influenced by its style. Present-day 6th Street looks much the way it did then, and is bordered on the north by Hannah Park, the History Center of Traverse City and the Boardman River.



*Figure 6: Neighborhoods in Traverse City. The neighborhoods are shaded according to their relative influence on this project.*

*Oak Park*

East of the downtown area but close to the waterfront is the Oak Park neighborhood. Homes here were constructed more recently, and are less influenced by historic character. Commercial establishments in this neighborhood are more heavily dominated by national chain stores and hotels, rather than the small local boutiques found in downtown Front Street.

*Boardman and Old Towne*

The Warehouse District, Front Street District, and Central Neighborhood were the most influential areas for this project, but Traverse City is home to other distinct neighborhoods as well. The Boardman and Old Towne neighborhoods are also of historic importance. Each was developed at a different time, but both boast homes of similar styles.



*The Warehouse District boasts a distinct aesthetic that highlights street art.*

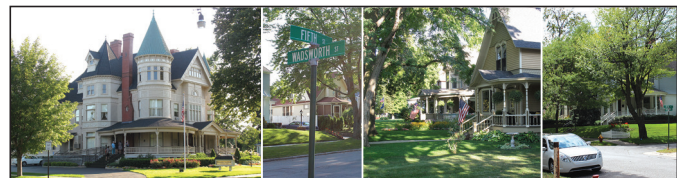
**Vehicular Circulation**

The City of Traverse City, like many other North American urban areas, was built with its streets laid out in a simple grid. One-way streets make navigation only slightly difficult at times, and main thoroughfares are easily found.



*Front Street is the center of Traverse City's downtown, with boutiques and the Farmer's Market.*

Grandview Parkway skirts the edge of Grand Traverse Bay, acting as one of Traverse



*The Central Neighborhood overlooks the Boardman River, and boasts Victorian character.*

City's main thoroughfares. The four lane boulevard provides a route for traffic to travel quickly through the city without entering the downtown area, but also acts a barrier between the city proper and the banks of the bay both physically and socially. Popular destinations on both sides of Grandview Parkway attract users from all walks of life, but with few pedestrian crossings, the two areas are functionally disconnected from one another. While two public crosswalks and an underground tunnel currently provide pedestrian circulation between the two sides of Grandview Parkway, fast-moving traffic and an awkward layout can make crossing an unpleasant experience.

Front Street is the main road through the downtown commercial core, and acts as a major vehicular entryway to the city for guests staying at nearby hotels. The stretch of Front Street to the west of Park Street is home to many boutiques and restaurants, and is the central destination for out-of-town visitors. Building frontages are oriented along Front Street, with alley access directly to the north and adjacent to the Boardman River. This pattern of development has had long-term consequences for the downtown area and its connection to the riverfront, since shoppers on Front Street have little indication that they are in close proximity to water. In addition, the Boardman River is hidden in the back alleys and parking lots behind Front Street businesses, where the opportunity for a riverfront gathering space has been sacrificed for convenient parking.

Within the existing street grid, Pine Street does not play an important role in downtown pedestrian circulation. A relatively short street, it mainly acts as a connector between Front Street and State Street. However, Pine Street has incredible potential to become a major connection between attractions in the city. Extending Pine Street's axis as a pedestrian route could provide a strong link between the Warehouse District, Central Neighborhood, and Hannah Park.

Cass Street represents the most complete North-South connection within the project's study area, stretching from Legion Park and the river at the top of the Union Street Dam north to the Farmer's Market and tunnel to Clinch Park.



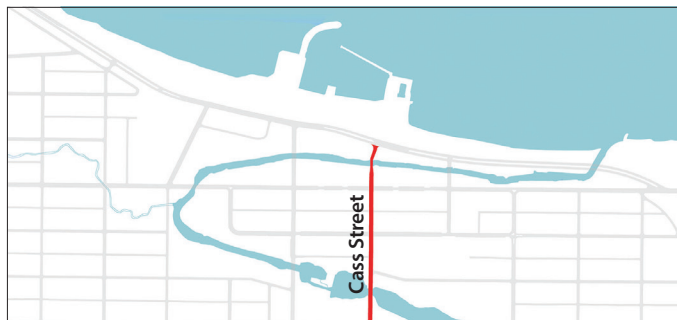
*Figure 7: Grandview Parkway. With four lanes of fast moving traffic, Grandview Parkway allows vehicles to easily bypass the slower moving in-town traffic, but it also acts as a physical and psychological barrier between Traverse City's downtown and the Bayfront.*



*Figure 8: Front Street. As Traverse City's main drag, Front Street bustles with activity. Tourists and locals visit the area's shops, restaurants and theaters. The street's eastern intersection with Grandview is a main entrance to the City, and should be treated with care.*



*Figure 9: Pine Street. This relatively short street offers the potential for a strong pedestrian connection between Hannah Park, the Warehouse District and the Bayfront beyond.*



*Figure 10: Cass Street. The most complete North - South connection within the study area, Cass Street links Union Street Dam all the way north to the Farmer's Market and pedestrian tunnel under Grandview.*

## Trail Systems

The Traverse Area Recreation and Transportation (TART) Trails system is comprised of an extensive network of multi-use trails in the Traverse City area. Formed when several smaller trail organizations joined forces in 1998, TART is a non-profit organization working to provide recreation and transportation opportunities in the Traverse City area by creating and maintaining more than 30 miles of trails in Leelanau and Grand Traverse Counties (TART Trails, *About TART Trails*). Two of these trails cross through downtown Traverse City (TART Trails, *Trails*) and enter this project's study area: the TART and TART in Town Cross-Town Routes. The TART trail is a 10.5 mile paved route running east to west along the north side of Grandview Parkway, parallel to Clinch Park. The TART trail won the "Trail of the Month" designation from the Rails-to-Trails Conservancy in September of 2005 (Rails to Trails Conservancy, *Trail of The Month: Traverse Area Recreation Trail*). The TART in Town Cross-Town Bike Route takes advantage of the existing road network, providing navigation to key city landmarks.

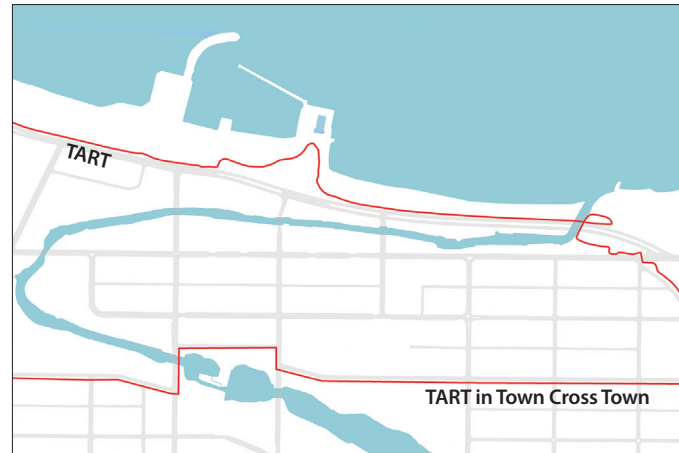
Twelve years after its founding, the TART Trails group adopted a strategic plan to set and meet future goals (TART Trails, *Strategic Plan*). The TART Trails vision of the future includes an extension of the network to include up to 60 miles, as well as expanded funding sources, increased awareness of the project, and updated maintenance standards (TART Trails, *TART Trails, Inc. 3-5 Year Plan*).

## Parking

Traverse City's status as a tourist destination demands a strategic approach to parking. Parking lots should be easily accessible and highly visible so that out-of-town visitors can reach their destinations without confusion. Currently, parking options are dominated by surface lots, many of which are placed on valuable real estate adjacent to the river. By relocating parking options to parking decks or lots further from the river, social, economic, and environmental functions can be restored to the river corridor.

Siting parking lots directly adjacent to the river has disrupted a variety of systems within the social and environmental context of the city. Lots are situated along potentially beautiful riverfront space that could be used for future development of socially and economically valuable places. Additionally, rainwater runoff polluted with sediment and toxins flows directly from the pavement into the river, eroding banks and disrupting habitat. Space that

**Figure 11: The TART and TART in Town Cross Town Trails.** Easily accessible in town recreation is available through the area's extensive network of multi-use trails, two of which pass through the study area.



**Figure 12: Parking Within the Study Area.** Traverse City's parking is dominated by surface lots, many of which are situated directly on the banks of the river. Relocating parking could open up options for economically and socially beneficial riverfront development. Parking lots directly affected by the Boardman River Plan are indicated by dark red.

is currently being used for parking can be redeveloped in a way that reconnects these systems, providing social spaces, encouraging interaction with the river and improving its ecological health.

## Parks

Traverse City has a well-developed system of parks offering recreational options to residents and visitors. However, there are gaps in this network where opportunities exist to improve connectivity. While a cluster of public parks exist along the southern stretch of the Boardman within the study area, these parks are not connected to one another or to the parks located along the Bayfront.

### *American Legion Park*

Originally established to honor the nation's veterans, American Legion Park sits on the banks of the Boardman River but does not realize its full potential when it comes to river engagement. Consisting of a small grassy area surrounded by tall trees, the park offers playspace for children as well as an area for picnicking, while relatively tall vegetation obstructs any direct connection to the river.



### *Lay Park and Union Street Dam Park*

Situated directly adjacent to one another, these two parks function as one. Together, they provide some of the most direct access to the river within the urban core of Traverse City, offering opportunities for fishing, picnicking and relaxing. The Union Street Dam and fish ladder provide a unique river experience, allowing visitors to cross the river by foot and get extremely close to the rushing water. Deteriorating paths and stairways detract from what could be an excellent experience, severely limiting access.



Figure 13: Traverse City's Existing Parks. An opportunity exists to create a network of green-space that connects Hannah and American Legion Parks in the south to Clinch Park and the bayfront in the north.

### *Hannah Park*

Hannah Park is deeply connected to Traverse City's heritage as a logging community. Originally a rail yard associated with Hannah Lay & Co.'s timber operation, the park sits in an idyllic location along the Boardman River, directly adjacent to the Perry Hannah house and the History Center of Traverse City. Its location means that Hannah Park has strong connections to the Central Neighborhood, and its pastoral ambiance responds to the same Victorian character.

### *Clinch Park*

Well-known for its beautiful white sand beach, Clinch Park runs along the southern shore of West Grand Traverse Bay, drawing tourists and locals alike to the Bayfront. Incorporating a marina, boat rentals, and a concession stand, this park is one of Traverse City's main summer attractions. Separated from the downtown area by the Boardman River and Grandview Parkway, Clinch Park can feel disconnected from the downtown district. Pedestrian and bike linkages exist but could be enhanced in order to create a stronger and more visible connection.



## River Access

Access points to the Boardman River are currently poorly integrated into the city's pedestrian system.

As a result, the riverfront is experienced as a series of disjointed locations rather than a cohesive whole. Within the network of existing access points, quality and safety varies, ranging from informal and occasionally unsafe to formalized and easily accessible.

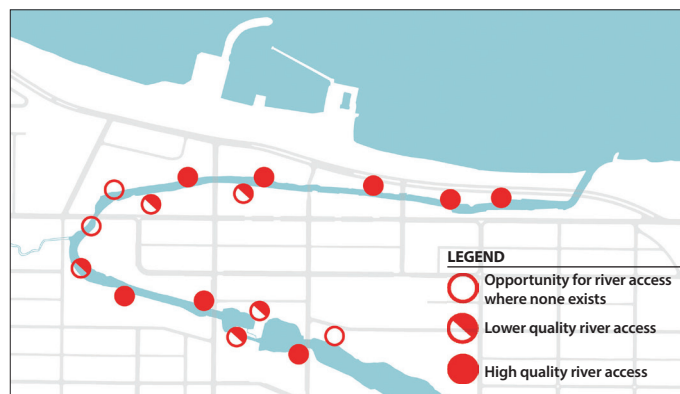


## River Banks

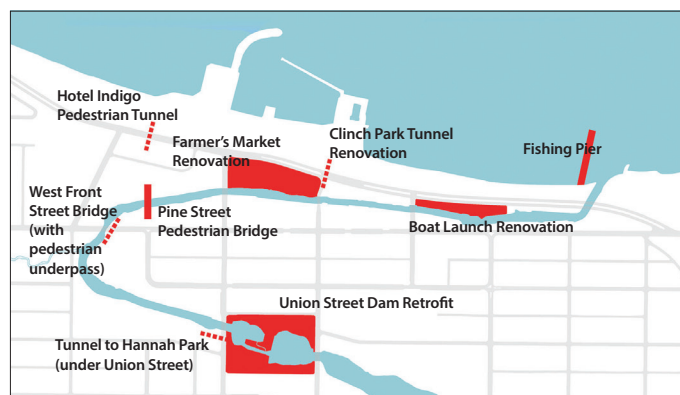
The banks of the Lower Boardman vary greatly in their character along the river's 1.25 mile route through Traverse City. Concrete retaining walls and stepped gabion edges line the bank in some areas, while naturalized vegetation dominates the banks in other areas. Often, severe erosion is visible in especially steep areas. Some areas may require remediation and restoration in order to increase the health of the river and solve erosion, accessibility or aesthetic issues.

## Planned Developments

The City of Traverse City Planning and Engineering Departments have a number of projects in various stages of planning and construction that lie within this project's geographic scope. These projects have influenced the Lower Boardman River Plan in many different ways. For example, even though recommendations for additional tunnel improvements supplement the current plan, an existing tunnel renovation project was incorporated into the overall plan because the City is relatively far along in the planning and design process. Other projects such as a kayak park and fishing pier are projects that have been under consideration by the city and thus have also been included, fleshed out in more detail and given character. These and other ideas from the Traverse City Planning Department have influenced the direction of the Boardman River Plan, which creates a cohesive and legible plan for the entire Lower Boardman River.



*Figure 14: River Access. Throughout the study area, access to the river ranges from high quality to informal and / or potentially unsafe. It will be important to take advantage of opportunities to increase the quality and frequency of river access.*



*Figure 15: Planned Developments. City improvements in progress, in planning or under consideration during the formulation of this plan have been taken into consideration and integrated into a larger framework.*

## Pedestrian Connectivity

Existing conditions along the Lower Boardman River do not allow for a cohesive pedestrian experience along the banks. Within the study area there is no riverfront pedestrian route that does not include parking lots, dead ends or

some level of navigational confusion. The Lower Boardman River Plan seeks to create a continuous experience along the river. In addition to improved circulation, this plan identifies opportunities for the creation of new public spaces, transforming invisible places into outdoor amenities.



## URBAN RIVERS

Traverse City is not alone in its proximity to a major river corridor. American industrial cities were often founded on the banks of rivers because of the easy transportation that they provided, both for goods and for people. In the post-industrial era, the co-location of rivers with bustling downtowns has been leveraged by some cities to enhance the downtown experience and connect to local history. Major midwestern cities such as Pittsburgh, Pennsylvania and Milwaukee, Wisconsin and smaller towns such as St. Joseph, Michigan



Figure 16: Pedestrian Connectivity. Pedestrian routes along the length of the Boardman River are disjointed and at times confusing. An effort to increase connectivity of pedestrian travel along the river would increase the appeal of the space and its legibility as a complete network.

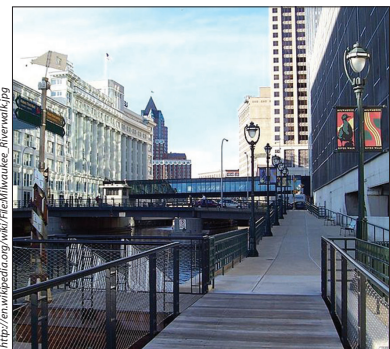
have successfully taken advantage of their riverfront heritage. These precedents demonstrate the benefits of an engaging urban river, and make the case that Traverse City should invest in positive riverfront change.

Milwaukee's RiverWalk is a shining example of a successful river corridor revitalization. Initiated in 1988 in an attempt to improve public river access and outdoor life in the downtown area, the project has now grown to be three miles long, running through three distinct neighborhoods and serving as a major focal point of Milwaukee's downtown. Today, the RiverWalk includes public art, water taxi landings and eateries, and is Milwaukee's most prominent downtown development area (The City of Milwaukee). The project has been largely successful in turning the city's vibrant downtown toward the river, highlighting it as a central attraction.



<http://www.flickr.com/photos/cphofedember/586362855/>

Although Traverse City is much smaller than Milwaukee, this strategy can bring similar benefits to the downtown area. The Boardman River Plan – while focusing on social, cultural and ecological enhancements – will open up possibilities for economic growth in Traverse City. Opportunities abound for businesses to take advantage of newly created spaces along the length of the river, and an increase in places to linger outdoors may entice visitors to spend more time in the city, and to spend more money at local establishments. In addition, an increase in easily accessible urban recreational and social amenities will encourage visitors and locals to spend more time engaging in activities such as boating, fishing, walking and jogging. Discretionary income spent on these pleasure activities will provide a bump for the local economy (City of St. Joseph, 2010). Traverse City's Lower Boardman River is an asset that should be embraced for all of its possibility, in much the same way that Milwaukee embraced its river.



[http://en.wikipedia.org/wiki/File:Milwaukee\\_Riverwalk.jpg](http://en.wikipedia.org/wiki/File:Milwaukee_Riverwalk.jpg)

# MASTER PLAN

The Boardman River Plan (Illustration 1) brings the Boardman River back into the forefront of Traverse City's social and cultural life. With the intention of turning the city around to face the river, the Boardman River Plan creates new recreational and gathering spaces, connecting the city to the river, and to the banks of Grand Traverse Bay. With the establishment of this vibrant and welcoming amenity, Traverse City visitors and residents will be drawn to the River as it becomes the city's front yard.



## SOCIAL AND CULTURAL INTERVENTIONS

### Connectivity

This Boardman River Plan reintegrates the river into the fabric of the city, fostering connections with the neighborhoods it runs through while increasing its prominence within the urban environment. The Boardman River Plan strives to encourage public engagement with the river, increase opportunities for businesses to benefit from their proximity to the river, and enhance the already incredible attractions that exist within Traverse City. Focusing on these areas will, in turn, create public awareness of and fondness for an amenity that is largely invisible within the current city fabric.

The Boardman River Plan aims to create a more exposed and accessible riverfront in a highly visible urban public space, incorporating elements that will draw visitors to its banks. This plan creates linkages between the downtown core upstream to the Union Street Dam and downstream to the waterfront at Grand Traverse Bay.

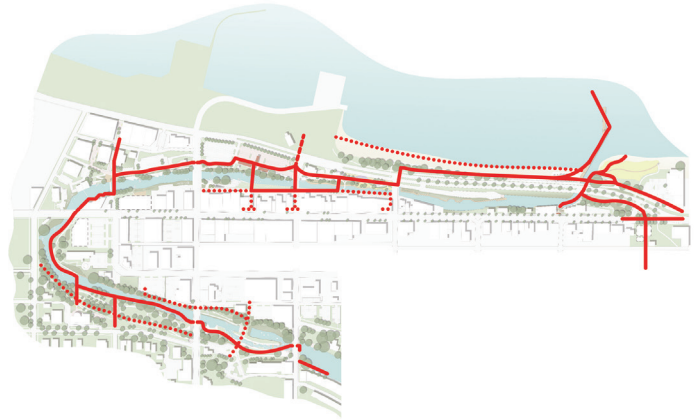
### Legibility

The Boardman River Plan creates a route through the city that centers around a riverfront experience and functions as a coherent whole. In locations where pedestrian circulation had previously been truncated or confusing, this plan seeks to choreograph paths of movement and lead users between key destinations. While the specific character of the riverwalk responds to the neighborhoods it moves through, consistent elements and furnishings tie the experience together and guide users through the full extent of the site.

Throughout the Boardman River corridor, opportunities have been seized to improve pedestrian connections in order to create a continual and easily understandable riverfront experience. These improvements enhance the perception of the river as a linear feature that runs through the entire city, rather than a series of discrete spaces that are unconnected and illegible as a larger whole. The main pedestrian route is a consistent 10' wide whenever possible, in order to provide a comfortable experience for a wide variety of user groups. The path and other designed elements incorporate principles of universal accessibility, fostering a welcoming and socially just environment. The path follows the river as close as is practical, skirting steep banks and private land when necessary.

Throughout the project site, consistent elements make clear the fact that the river experience is a connected element. Geometric terraces bring an urban feel to the often naturalistic river corridor, creating opportunities for users to have a more intimate encounter with the Boardman River. Repeated trellis and seating elements respond to the specific character of the neighborhood in their aesthetic, and act as wayfinding devices and resting spaces at key locations (Illustrations 2-4).

The Boardman River Plan enhances and connects the length of the river corridor as it runs through Traverse City. An easily legible route



**Figure 17: Proposed Pedestrian Circulation.** The Boardman River Plan takes advantage of opportunities to connect the existing pedestrian routes along the river, creating a continuous corridor from the Fishing Pier to the Whitewater Park.



Illustration 2: Trellis at Chamber of Commerce Garden.



Illustration 3: Trellis at Fishing Pier.



Illustration 4: Trellis at Hannah Park

**Illustrations 2-4:** Repeated trellis and seating elements respond to the specific character of their surroundings, while providing consistency throughout the river corridor and acting as wayfinding tools.

integrates consistent elements while responding to the changing surroundings, creating an enjoyable, easily understood and highly accessible path.

### *Recreation and Gathering Spaces*

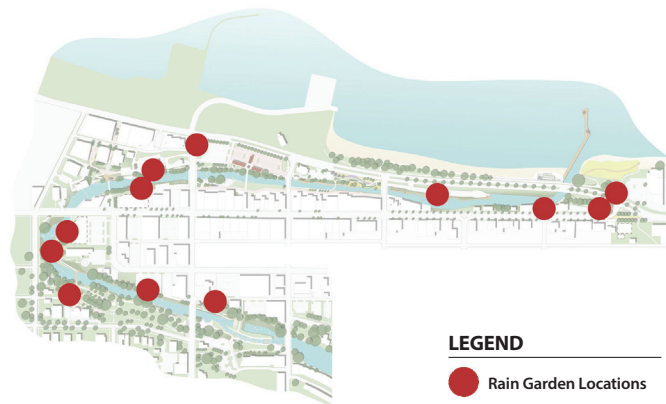
In addition to creating a highly connected river corridor, the Boardman River Plan proposes iconic stand alone elements that will become new outdoor destinations within Traverse City. These elements include a wide variety of dynamic outdoor spaces that offer opportunities for recreation and social gathering. A fishing pier located near the mouth of the river provides a new amenity and attraction for local and regional fishermen, while those interested in getting into the river itself can kayak through the rapids upstream at the Traverse City Whitewater Park. In between, flexible plaza space in the Warehouse District provides space for outdoor dining and local events, and a system of ramps and terraces bring visitors right down to the river's edge behind downtown Front Street. These iconic elements anchor the Boardman River Plan and will become new destinations within the city.

## **ECOLOGICAL INTERVENTIONS**

### *Stormwater*

River corridors that flow through densely developed urban areas are often afflicted with what Walsh, et. al. (2005) call "Urban Stream Syndrome." This "syndrome" occurs because modern stormwater systems were built with the primary objective of moving stormwater away from streets and other paved areas as quickly as possible. To do this, rainwater that is shed from urban surfaces is directed into drains and piped into nearby rivers and streams. This water is often untreated, and leads to increased levels of toxicants and nutrients in rivers. The unnaturally fast movement of water into river systems also leads to temperature fluctuations, alterations in channel morphology, and changes in species composition, as well as a river that is more prone to higher, faster flows after storm events. Although measures have been taken within the scope of the Boardman River Plan to address these challenges, it should be noted that water quality management throughout the watershed will affect the river's quality in this shoreline project site (Hill, 2009).

Due to the large amount of building, roadway, and parking lot development located in close proximity to the Boardman River, rainwater falling onto impervious surfaces often runs directly into the river without interruption or treatment. This runoff erodes soil from riverbanks and carries with it sediment, garbage and pollutants which end up in Grand Traverse Bay. The Boardman River Plan calls for the implementation of rain gardens and the use of permeable pavers to reduce rainwater runoff and instead promote infiltration, helping to reduce erosion and the other effects of urban stream syndrome.



*Figure 18: Rain Gardens. Slightly depressed gardens are placed to capture, detain and treat rainwater running off impermeable surfaces before it enters the river.*

### *Bank Stabilization*

In various locations throughout downtown Traverse City, the banks of the Boardman show signs of severe erosion over time. Exposed tree roots and bare-soil slopes are indicators of areas suffering from erosive forces, which can increase the amount of silt entering the aquatic ecosystem. The Lower Boardman River Plan recommends combining

multiple approaches to combat bank erosion in order to achieve the greatest benefits.

First, the placement of rain gardens will help capture stormwater before it reaches steep river banks. Rain gardens are designed to catch and hold rainwater from impervious surfaces, allowing it to infiltrate rather than rush over slopes, carrying away soil to riverways as silt.

Second, an emphasis on re-vegetating eroding banks is vital for their stabilization. The root systems of plant communities play an important role in stabilizing stream banks, and healthy riparian vegetation has the added benefit of keeping river water temperatures cooler, which has a positive effect on the health of many the aquatic organisms that flourish in cold-water streams such as the Boardman (Lutz, 2007: 4). In addition, larger shrubs and trees slow flood waters during high flow periods (Lutz, 2007: 4) reducing the scouring and eroding impact of floodwaters on banks.

### *Habitat Improvement*

Parts of the Boardman River upstream of the Boardman Lake are designated a Blue Ribbon Trout Stream (Watershed Center, 2003). However, habitat and water quality degrade significantly once the river reaches Traverse City (Watershed Center, 2003). The Boardman River Plan takes advantage of opportunities to make small adjustments and interventions that increase the quality of aquatic habitat within the city. Along with a more stable ecosystem, this will lead to improved fishing conditions.

One of the easiest habitat improvement mechanism is the simple placement of boulders. Much of the Lower Boardman offers little cover for fish. Boulders provide that cover, and if placed strategically can create an aquatic travel corridor. Boulders should be chosen with size in mind; they should be large enough to resist being dislodged during high-flow periods, and can be placed randomly, or in a triangular or diamond pattern in the middle half of the channel (Figure 20). Boulder placement is discouraged in the outer third of the river, as flow will be deflected toward the banks, increasing erosive forces. (Lutz, 2007) Throughout Traverse City, there are locations where the simple placement of boulders could create a more dynamic and welcoming aquatic habitat.

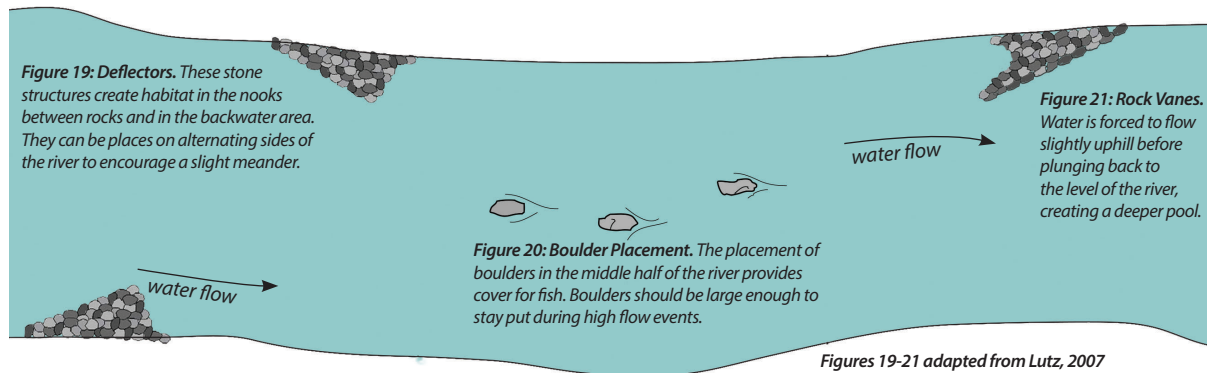
In addition to boulder placement, the Boardman River Plan recommends that woody debris not be removed from the Boardman River except in cases where it poses a threat to property or public health and safety. Woody debris, although often not aesthetically pleasing, is vital for a healthy riparian environment. A policy requiring woody debris to remain in the river except in exceptional cases will aid in the creation of a dynamic ecosystem. Woody debris provides a food source for many aquatic invertebrates that, in turn, are food for fish. In addition, it helps form and shape the stream channel, encouraging a higher level of variability in habitat types (crucial for a healthy stream) (Lutz, 2007).

Perhaps the most complex of the Boardman River Plan's recommendations, rock vanes and deflectors are triangular rock structures of varying dimensions that provide both habitat improvements and bank stability. Rock vanes (Figure 21) create 'plunge pools', where water is forced to flow slightly uphill before plunging vertically onto the stream bed, scouring out a pool (Bisson, et.al., 2011; Lutz, 2007). Deflectors (Figure 19) narrow the channel and encourage the river to meander slightly. They also create habitat in the nooks between rocks and in the backwater area (Lutz, 2007: 8-9).

A combination of strategically placed boulders, deflectors and rock vanes throughout the Lower Boardman and a policy of encouraging woody debris to stay in the river system will go a long way toward creating varied habitat for fish and other aquatic species. Habitat improvement is complex, and rivers are dynamic

systems that change over time, so it is vital that as these changes are implemented they are monitored and adjusted as necessary to ensure the highest quality habitat possible and the safety of the people of Traverse City and their property.

The placement of the boulders, deflectors, and rock vanes depicted in this plan are for illustration purposes only. At such time as the City is able to undertake these improvements, a qualified expert in river flow dynamics should be engaged to ensure that unanticipated channel scouring and river bank erosion does not become a problem.

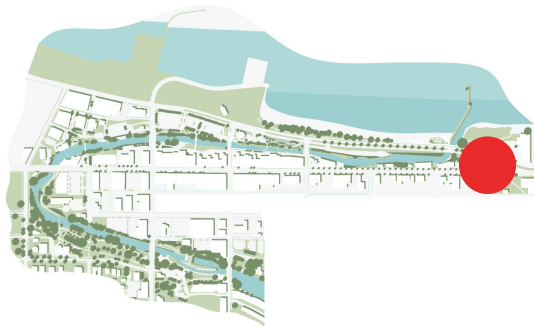


### *Invasive Species Management*

In the Great Lakes, sea lamprey are among the most harmful of invasive species, altering ecosystems and contributing to declines in native fish populations (Watershed Center, 2013). Along the Boardman River, the Union Street Dam has been used as a barrier to contain sea lamprey. With any modification to the dam, this barrier must remain to prevent the passage the lamprey, while allowing other desirable fish to pass. The barrier will block the lamprey from upstream spawning habitat and eliminate the need for a lampricide treatment.

Two types of appropriate barriers to sea lamprey travel are the low-head barrier and the velocity barrier. A low-head barrier utilizes an 18-24" drop and 3" lip, while a velocity barrier exploits the lamprey's poor swimming ability by creating areas of fast moving water that prevent passage (Great Lakes Fishery Commission, 2000). The Boardman River Plan employs a combination of the low-head and velocity barriers, capitalizing on the recreation opportunities at the whitewater park to create a kayak drop that also functions as a sea lamprey barrier.

## FRONT STREET



*Front Street is the gateway to the heart of Traverse City. The intersection of Front Street and Grandview Parkway is an important entry point for visitors heading to the downtown core of the city. As vehicles turn onto Front Street, downtown is visible in the distance, drawing them into the activity of the commercial center. The city has been considering an alteration to the current traffic pattern at this intersection to create a more pedestrian-friendly environment (City of Traverse City: Corridors Master Plan). Due to its status as a critical entry point to the downtown area, any proposed modifications to this intersection should be sensitive to the area's character.*

### ANALYSIS

The existing configuration of the intersection of Front Street and Grandview Parkway, two heavily-used roadways, makes pedestrian crossing difficult and uncomfortable. In an attempt to remedy this problem and re-envision this entry point, the City of Traverse City has commissioned a study to explore alternative options (City of Traverse City: *Corridors Master Plan*). The study recommended a new layout that would turn Front Street north to meet Grandview at a 90 degree angle. Although this would create an intersection that is more easily navigable by pedestrians, it would remove emphasis from Front Street and its direct route to the city's center. It will be important to maintain this intersection's visual connection to downtown so that people do not inadvertently bypass this important commercial corridor.

Within the downtown district of Traverse City, Front Street appears to have two different characters. West of Boardman Avenue, Front Street has storefronts, seating areas, and street trees that soften the hard edge and prioritize the pedestrian experience. East of Boardman, the sidewalks have very few street trees and welcoming outdoor spaces. The pedestrian experience in this area is not as pleasant and may discourage foot traffic. What little public space exists in this area is not universally accessible. A small pocket park provides river access but requires that users descend a series of stairs. Providing accessible river access has been identified as an important inclusion for any comprehensive plan for the Boardman.



Access to this area is greatly improved by the presence of the TART Trail. This paved, multi-use trail is heavily used by both bikers and pedestrians, and thus must be wide enough to provide comfort for all users. The current configuration includes a narrow path beneath the Grandview Parkway bridge, causing safety concerns due to the high speed of cyclists. An alternative route allowing for a wider right-of-way would create a safer and more comfortable experience.

As in many areas of Traverse City, a large amount of paved surfaces exist in close proximity to the river. These impermeable surfaces increase issues related to stormwater, which are often invisible to the public eye. As long as ecological issues remain unseen, it can be difficult to raise public awareness and thus garner support for affecting change. The pocket park mentioned above offers a unique opportunity to highlight stormwater flows because of an existing pipe that runs under the park, directing stormwater directly into the river.

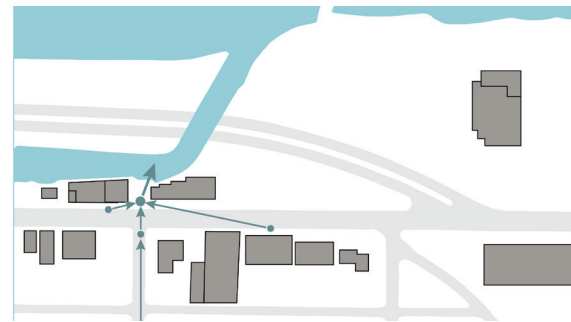
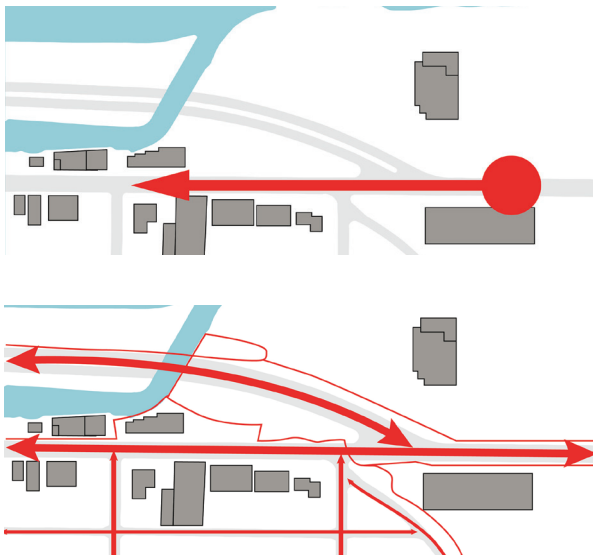


Figure 22 (below): *Front Street View*. Visitors coming into the city can see downtown from Front Street. With the proposed intersection change, this view is going to be even more important to maintain.

Figure 23 (bottom): *Circulation*. Vehicular circulation is high along Front Street and Grandview Parkway. Arterial roads bring traffic up from the neighborhoods. The TART Trail connects users from the south, up towards the Grand Traverse Bay. Currently all TART Trail users are funneled onto a narrow path underneath of the Grandview parkway Bridge to cross the busy roads.

Figure 24: *Stormwater Flow*. Stormwater collected from neighborhood streets and along Front Street at these locations are piped underground to the existing public plaza. It is then taken under the decking and piped directly into the Boardman River.



PHOTOS: *Grandview Front Street Intersection (far left)*. This intersection is currently hard to cross for pedestrians. The City of Traverse City has looked at improving this area with a realignment of Front Street. *Underbridge (middle left)*. View of narrow path underneath of bridge. *Plaque (middle right)* Plaque dedicated to Dr. James Hall, who fought for public open spaces. *Accessibility (far right)* Inaccessible steps at the entrance of the plaza

## DESIGN GOALS

- Create a visual connection to Downtown Front Street for vehicles traveling on Grandview Parkway
- Showcase Traverse City's commitment to ecologically sensitive practices at the gateway of the city.

## SOLUTION

Preserving and celebrating the view down Front Street to the commercial district is paramount in the redesign of this intersection. This goal was fundamental in decision-making for this area. To frame the view from Grandview, rows of trees extend the line of Front Street east and are reminiscent of the previous road alignment. Vegetation between the parallel rows is kept low to the ground, preserving the line-of-sight down the street. In addition, a large sign is placed on the same axis, welcoming visitors to Traverse City and directing them onto Front Street. Grandview Parkway turns north right before the traffic signal, causing a momentary slowing of traffic and providing an opportunity for drivers to choose to turn left into the downtown.

The realignment of this intersection requires that the intersection of Front Street and Franklin be closed off and creates an opportunity for future development on this site. This "new" real estate will be a valuable asset for the city, strengthening the Front Street corridor over the long term, and acting as an anchor for the commercial district. Development on this site should respond to Front Street's character, encouraging similar development on nearby lots and extending the downtown feel.

Pedestrians using the eastern segment of Front Street will benefit from an increase in street trees, which provide shade and create continuity of experience in an area that currently lacks a unifying element. Stormwater planters bring additional vegetation to the streetscape, and also manage stormwater runoff from the roadway. Situated at the city's main entry point and in collaboration with nearby raingardens, these stormwater planters showcase Traverse City's commitment to tackling ecological issues.

Another key opportunity to highlight Traverse City's interest in sustainable stormwater management practices exists in the small pocket park on Front Street. A re-imagined park highlights the stormwater that flows beneath it, daylighting the water in a series of rain gardens. Stepping down to the river in tiered planting beds, these gardens promote stormwater infiltration, retain sediment, and reduce the water's velocity. A series of ramps running over the tiered gardens allows pedestrians to experience the journey of a single raindrop and highlights innovative solutions to environmental problems.

The renovation of this park also speaks to the importance of public open space in an urban environment. Dr. James Whitney Hall is recognized for his commitment to the fight for increased open space in the Traverse City region. His life is celebrated in this park but in its current configuration the space is not accessible to all. A re-imagined park is accessed via ramps, which connect the site to the TART system and allow all potential users to experience the rain gardens and the river beyond.



Illustration 6: **FRONT STREET SITE PLAN**  
NOT TO SCALE



**FRONT STREET SITE PLAN**

**A. RECONFIGURED INTERSECTION**

The City of Traverse City has recently looked into the reconfiguration of the intersection between Front Street and Grandview Parkway in order to create a more pedestrian friendly crossing. This change has created many challenges and opportunities for Traverse City.

**B. MAINTAINING VIEWS TO DOWNTOWN**

A visual connection to the downtown must be maintained so that visitors know both where to go and how to get there. Two rows of trees planted in line with the edges of Front Street frame the view downtown. Brightly colored and low lying vegetation between the trees help attract the eye of visitors. A large structure spanning Front Street to the west creates a gateway to the downtown.

**C. RAINGARDEN**

A large garden placed near the entrance of downtown will immediately showcase Traverse City's commitment to sustainable practices to visitors.

**D. DEVELOPMENT OPPORTUNITY**

New available land can be used for future development, which can strengthen the gateway to downtown.

**E. STORMWATER PARK**

A small park along Front Street with tiered rain gardens help slow the flow of stormwater before it reaches the Boardman River. A ramp system allows for accessibility to this space where visitors can enjoy views of the river.

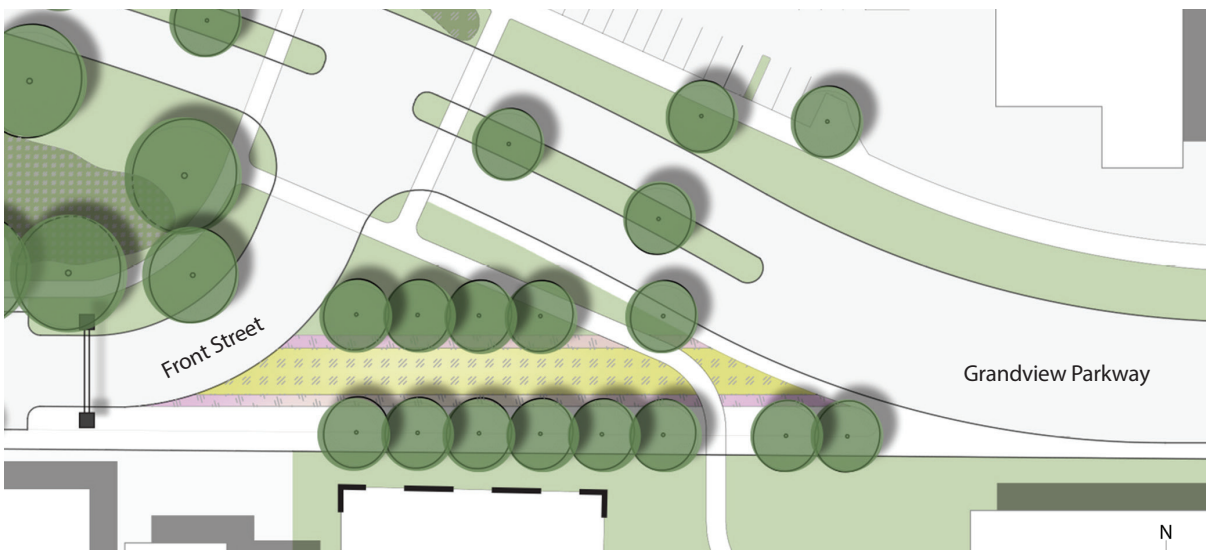
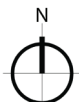


Illustration 7: **FRONT STREET INTERSECTION SITE PLAN**  
NOT TO SCALE



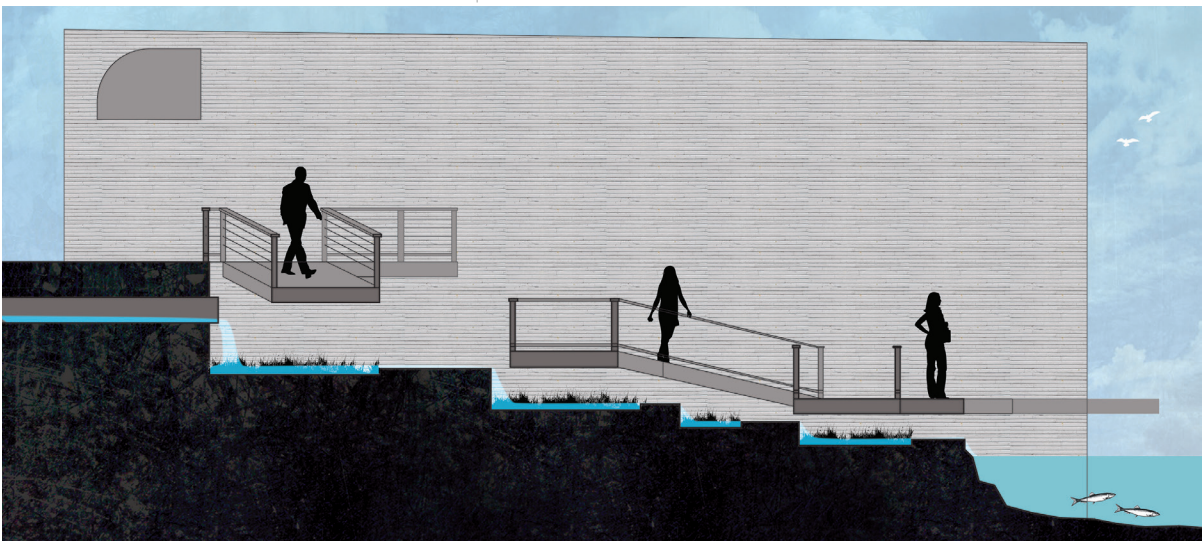


**Illustration 8: Stormwater Park (top).** This park functions both as a gathering space and a place for stormwater management. There are opportunities to learn about stormwater issues while enjoying views of the Boardman River.

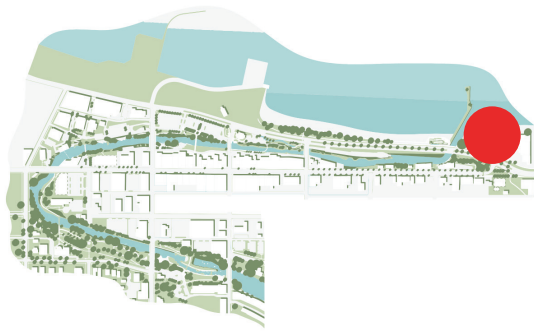


**Illustration 9 (middle):** Accessibility is important especially when looking at a public outdoor space that is meant for everyone to enjoy. A low sloping ramp has been designed to get people from the sidewalk along Front Street down to the trail system that follows the Boardman River.

**Illustration 10 (bottom): Stormwater Park Terraces.** To slow stormwater entering the Boardman River, a series of terraced rain gardens have been designed. Stormwater steps down from one terrace to the other, depositing sediment as it goes, eventually entering the river at a slower speed.



## COASTAL PARK



*An ecosystem uncommon to Traverse City is situated just east of the Boardman River and north of Grandview Parkway. The coastal sand dunes in this area have been trampled by a system of informal paths, but should be protected and celebrated. Re-imagining the circulation and design of this area can improve its visibility within the community and introduce visitors to the dynamics of a changing landscape.*

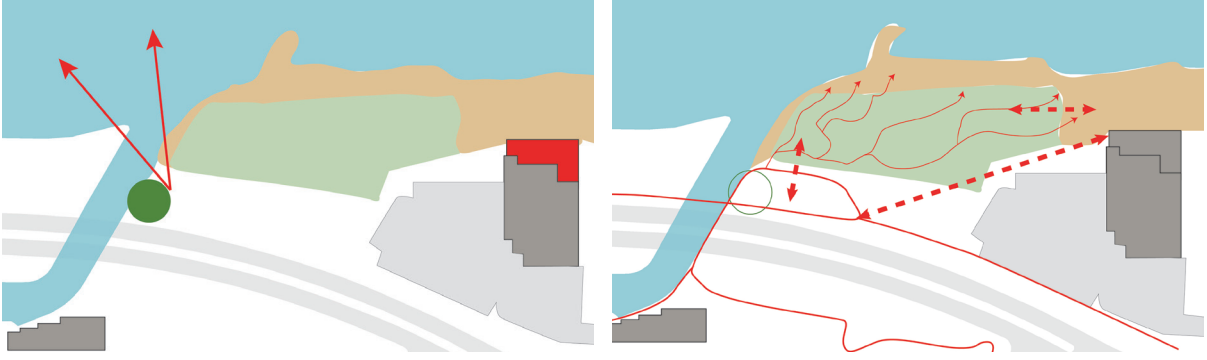
### **ANALYSIS**

The most visually striking element in this area is a large Cottonwood tree. This tree could serve as a landmark for this space, but the surrounding conditions are not optimal for its long-term survival. The TART trail runs around the tree, and its pavement and associated hardscape are constraining the root system. The tree's roots have broken apart the planter box constructed around its base, exposing them and creating a safety concern. A re-design of this space should consider the tree's health, providing more root space for growth while highlighting the character of the tree.

Across the trail from the Cottonwood is a small coastal Lake Michigan sand dune ecosystem, an environment not found elsewhere in the city. This patch of vegetation is relatively new, recently reclaimed from Lake Michigan. Successional processes will be evident here, as fast growing early colonizers give way to slower growing, long term vegetation. This interesting process offers an opportunity for environmental education, as visitors return time and again to see the changing species composition.

While visitors are interested in exploring this ecosystem, as evidenced by trampled paths criss-crossing the space, there is no formal system for access. A formalized boardwalk or path system would allow curious visitors to enter the space without harming the fragile ecosystem.

Visitors currently pass through this pocket of green space, but have little reason or opportunity to stop and appreciate the scenery. One bench beneath the Cottonwood tree provides a space for resting, but is not well-used. A re-imagined space could provide enhanced opportunities for exploration, resting and the appreciation of views out over the bay.



**Figure 25 (right): Areas of Concern.** Highlighted below are the large Cottonwood tree (dark green), small patch of Coastal Sand Dune (light green), Sunset Park Beach (tan), and the hotel's outdoor patio. Great views to the bay are also shown below.

**Figure 26 (left): Circulation.** The current circulation of this area revolves around the TART Trail, as it loops from under the bridge upwards toward Grandview Parkway. Curious people explore the coastal ecosystem by bushwhacking through it. Potential connections (dashed) are shown linking the hotel beach and patio to other elements.



**Coastal Sand Dune (left).** Man made paths found throughout the ecosystem. **Exposed Roots (below).** Exposed roots will affect the health of the Cottonwood Tree. **Circulation (bottom).** The heavy focus on circulation in this area leaves little room to sit and enjoy the shade while looking out over the Bay.



**DESIGN GOALS**

- Re-envision this area as a destination
- Preserve and protect the small sand dune ecosystem
- Educate visitors about the unique ecosystem and the process of ecological succession
- Increase the visibility and viability of the iconic Cottonwood tree

**SOLUTION**

The redesigned area surrounding the Cottonwood tree protects the long-term health of the tree itself while maintaining the TART trail's current route and providing new seating opportunities. To do this, the ground plane is raised slightly and enclosed by a retaining wall that doubles as the edge of the trail. Adding soil to the area near the base of the tree will provide both protection for the root system and structural stability for the roots to take stronger hold. Removing the current hardscape and replacing it with grass will provide a space for bikers, joggers and other visitors to rest and relax, overlooking the adjacent sand dune ecosystem.

In order to encourage pedestrian access to the coastal sand dune without harming the ecosystem, the Boardman River Plan calls for the construction of a boardwalk traversing the sand dune and connecting to the beach beyond. This will benefit the area in the long term, decreasing disturbance and allowing formalized passage through the space. In addition to protecting this ecosystem, the boardwalk provides opportunities for community education, promoting an understanding of the coastal sand dune and the threats it faces.



Illustration 11: **COASTAL PARK SITE PLAN**  
NOT TO SCALE



## COASTAL SAND DUNE PARK SITE PLAN

### **A. RAISED PLANTING BED**

A retaining wall here will hold back the newly added soil, while providing seating opportunities to users of the TART trail. This new area will be a comfortable place to sit back and enjoy views of Grand Traverse Bay.

### **B. WOOD BOARDWALK**

This boardwalk will allow people to explore the unique ecosystem, all the while keeping them from harming it. The boardwalk connects the TART trail with the beach.

### **C. TRELIS ENTRANCE**

The trellis located at the entrance of the boardwalk at the beach will give the boardwalk an identity. It will attract the attention of beachgoers, prompting them to explore the new attraction.

### **D. CONNECTION TO FRONT STREET**

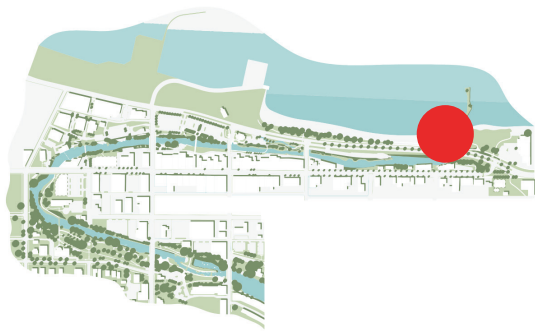
A separate path has been added that will bring people from the TART trail to the beach by way of crossing Grandview Parkway. This link will create a connection from the Front Street commercial corridor to the beach.

### **E. RAIN GARDENS**

Rain gardens constructed along Grandview Parkway will help mitigate stormwater runoff issues. These rain gardens will also add interest to an area where turf grass currently exists along the busy roadway.



# EAST CLINCH PARK



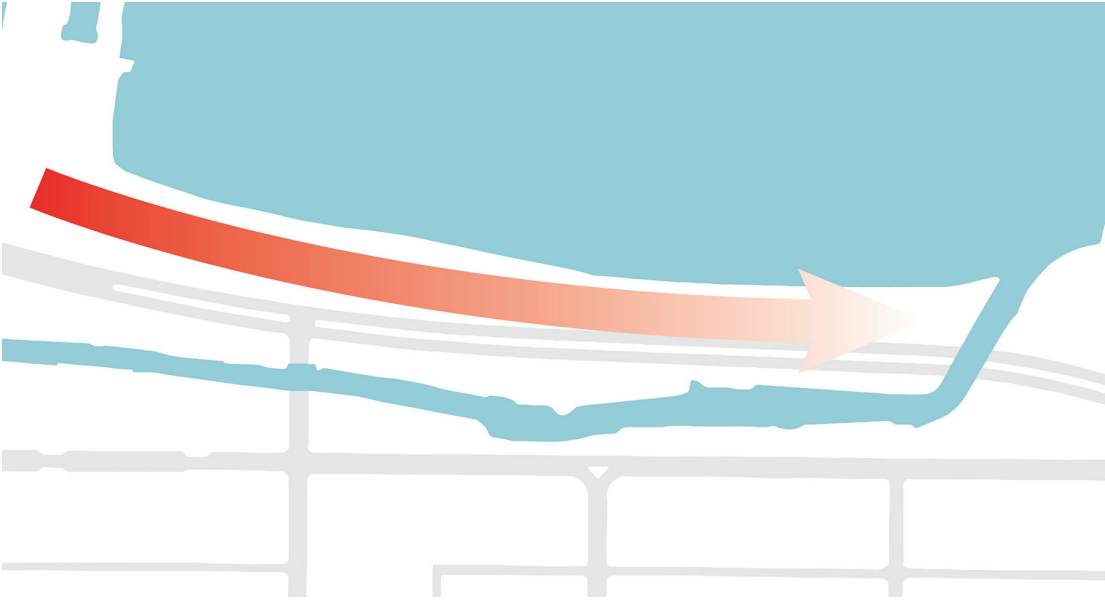
*East Clinch Park's beautiful white sand beaches and abundant fishing opportunities create the potential for a new attraction in Traverse City. Currently this area is underutilized, with little access and few visitors. Bounded to the south by busy Grandview Parkway and to the east by the Boardman River, this proposal seeks to enhance access to the area and recreational opportunities.*

## ANALYSIS

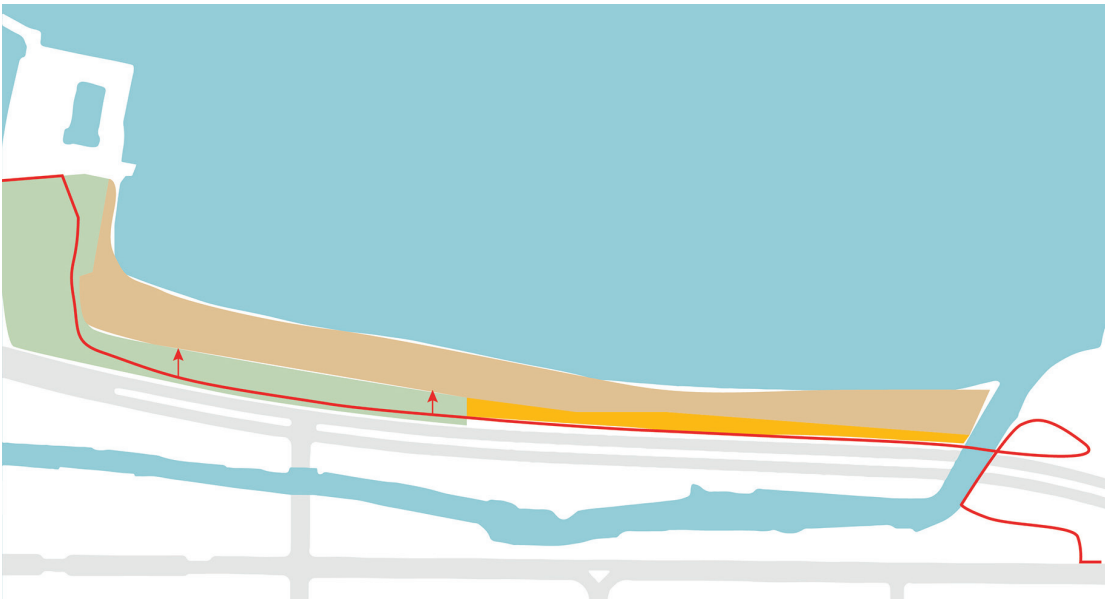
Clinch Park, north of Grandview Parkway, includes a popular beach that is heavily used throughout the summer season. The beach's western edge is a hub of activity, with concessions, canoe and kayak rentals, picnic tables and a shaded lawn. In contrast, the eastern end of Clinch Park has fewer attractions and is much more difficult to access. In this area the Boardman River outlets into Grand Traverse Bay but is visually hidden and separated from the beach by a metal breakwall. An opportunity exists to extend the activity of Western Clinch Park east to the river's mouth, both through the development of new attractions and through improved accessibility.



*Beach Wall. The beach wall along the eastern edge of the beach is unattractive. This is the location of the proposed fishing pier.*



**Figure 27: Activity (above).** The west end of Clinch Park is a hub of activity. As you move east, there is less activity and population during the summer months.  
**Figure 28: Access (below).** Due to steep slopes along the southern edge of the beach, there is no access. While access to the beach is available to the west, there is none to the east, where the proposed fishing pier will be located.



**Steep Slope (left).** Steep slopes with sharp rocks and vegetation do not permit access to the TART Trail up on the high ground along Grandview Parkway.

### DESIGN GOALS

- Bring activity and recreation to the eastern portion of the Clinch Park Beach
- Provide access to the beach from the TART Trail
- Enhance the visual presence of the Boardman River as it enters Grand Traverse Bay.

## **SOLUTION**

In an effort to increase activity and excitement at Clinch Park's western edge, the City of Traverse City has proposed the construction of a fishing pier at the Boardman River's outlet point (Soyring, 2012). This area is well-suited for this kind of intervention, as it is currently under appreciated and not well-used despite its unique location at the confluence of the Boardman and Grand Traverse Bay. A new development of this type will provide an anchor point for this end of the park, mirroring the highly-active western zone, highlighting the Boardman River and increasing pedestrian traffic through the entirety of the park. A new fishing pier will have the added effect of bringing the identity of the Boardman River out to Clinch Park, fostering stronger connections between the riverfront and the city.

The construction of a fishing pier at this location will be a particular boon for area anglers, as the structure would allow them access to the deeper waters of the Bay. In an effort to provide the best fishing opportunities possible, the Traverse City Bayfront Plan included a study to determine the optimal size and location for a fishing pier (2010). These recommendations were taken into account in the Boardman River Plan's fishing pier design.

A new attraction for this part of Clinch Park will require improved access to support increased pedestrian traffic to this area, and should meet ADA requirements for universal accessibility. As part of the Boardman River Plan, connections are created from both the TART trail and the western portion of Clinch Park. A system of ramps allows for access from the TART trail, which runs parallel to Grandview Parkway, while a boardwalk runs the length of the park. These access points increase the area's accessibility for users of all abilities. The ramp system includes terraced seating opportunities that overlook the bay and highlight beautiful views, and both paths terminate at a plaza at beach level.

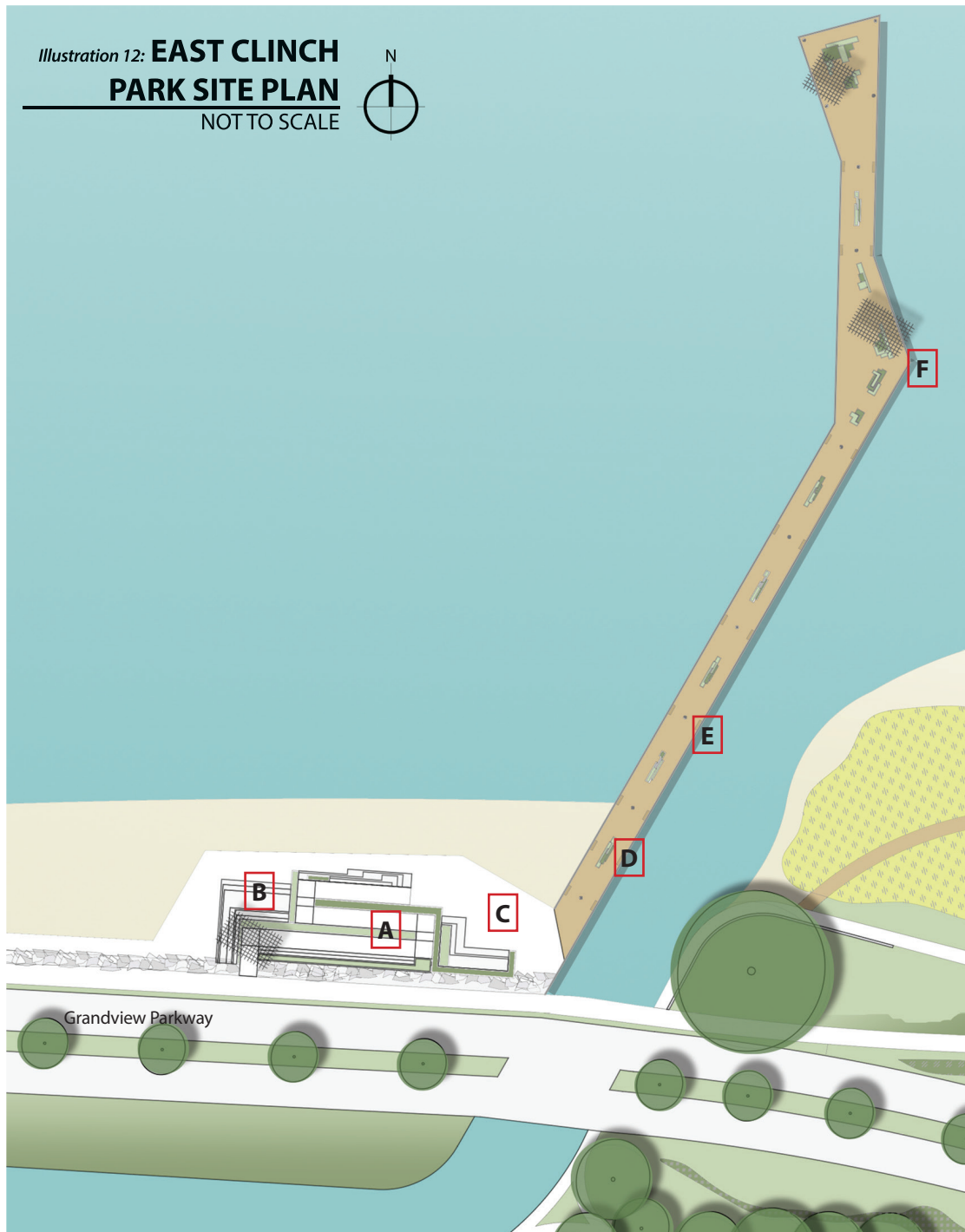
This plaza provides an opportunity for visitors to participate in the beach experience even if they cannot or do not want to get out into the sand. Ensuring accessible public access at both ends of the beach allows all visitors to experience the whole bayfront landscape, and makes it easier for visitors to use all of the available space. In addition, the plaza acts as an entryway to the fishing pier, unifying the experience of Eastern Clinch Park.

The anchor of the Eastern Clinch Park experience is the proposed fishing pier. An iconic attraction, this structure will draw both visitors and locals out into the bay for fishing and general enjoyment of the unique space. This pier has been designed to maximize successful fishing opportunities while leaving enough room for non-anglers to use the space. In two locations, the pier widens to create larger usable spaces.

Throughout the length of the pier, seating opportunities are integrated into the design. Benches offer places for visitors to relax, and are accompanied by planting beds of various heights. These planting beds effectively divide the pier into two sides and provide a variety of seating options that create a diversity of spaces and increase visual interest. Planters incorporate a variety of native grasses and perennials into the pier, making it a pleasant place for all users.

The proposed boardwalk connects Eastern Clinch Park to the larger riverwalk system, running along the southernmost edge of the beach. The path is anchored by the small seating area near Park Street's crosswalk and the fishing pier and plaza, enhancing connections between downtown Traverse City and the new beachfront attractions. The boardwalk is shaded by trellis structures in areas where visitors will be inclined to linger, offering pleasant shade and visually connecting to similar elements throughout the extent of the riverwalk system.

In keeping with the overall ecological goals of the Boardman River Plan, the enhancement of aquatic habitat near the fishing pier has been incorporated into this proposal. In order to do this, the Plan recommends the addition of a substrate to the lake bed in this area. Rubble, such as boulders, is considered the most useful substrate, providing space for cover and surface areas to which nutrient sources can attach (Wesche, 1985: 107). The addition of submerged vegetation will provide protection and food sources as well. A variety of vegetation is proposed to attract different species of fish (Wesche, 1985: 111), increasing the overall quality of fish habitat, benefiting recreational opportunities, and contributing to the appeal of the fishing pier as a destination.



## EAST CLINCH PARK SITE PLAN

### **A. RAMP**

*Proposed ramp provides universal access to the Fishing Pier and Clinch Park Beach from the TART Trail.*

### **B. TIERED SEATING**

*Tiered seating provides great views out to the Grand Traverse Bay. Vegetated planters soften the hard concrete edges.*

### **C. BEACH PLAZA**

*A hardscaped plaza at the beach level allows everyone to experience the east edge of the park. This also acts as the entrance to the fishing pier.*

### **D. PLANTER BEDS**

*Planter Beds on the Fishing Pier provide an interesting aesthetic. The beds can be used as seat walls, creating different gathering spaces out on the pier.*

### **E. LIGHTING**

*Light fixtures on the pier will provide light for people on the pier, as well as for those on shore looking out into the bay. It will be an exciting element out in the bay at night.*

### **F. TRELLISES**

*Trellises located on the pier will provide shade during the sunny days. Combined with the vegetated planter beds, there will be many comfortable spots to sit and enjoy views out to the water.*

*Illustration 14: Top of Ramp. Vegetated planters along the ramp act as guard rails, and provide opportunities for great views out to the water.*





**Illustration 13: Ramp Section (top).** A shallow sloped ramp allows for universal access to the Beach Plaza and Fishing Pier. Terraced seating allows for people to sit and view the bay.

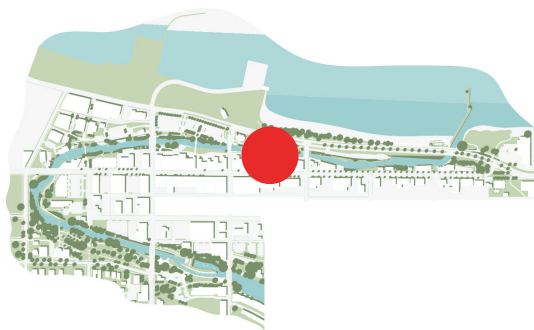


**Illustration 16: View to Beach Terraces (above).** Terraced steps and planter beds allow for people to relax and enjoy the beach area either individually or as a group.

**Illustration 15: Fishing Pier (below).** The fishing pier will have vegetated planter beds on it to provide for seating and gathering spaces. The Pier will function as an attraction for the eastern edge of Clinch Park.



## 200 BLOCK of FRONT STREET



*The stretch of river flowing between Union Street and Park Street is hemmed in between the Chamber of Commerce's parking lot and the alleyway behind the 200 Block of Front Street. This narrow stretch of land is something of a no man's land, with pedestrians and vehicles quickly passing through to get to their destination. This space offers incredible potential to improve the city's connection to the bayfront, while creating spaces that people want to linger in rather than just move through.*

### **SITE ANALYSIS**

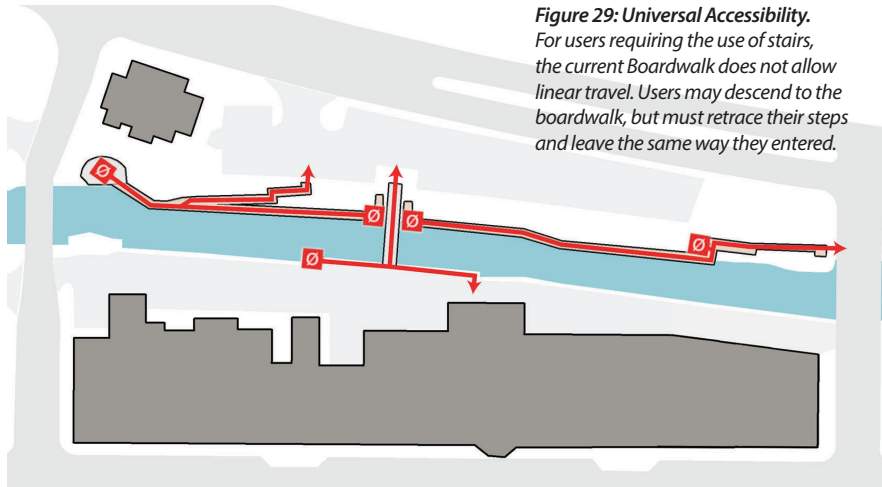
On the northern banks of the Boardman, a wooden boardwalk occupies the narrow space between the river and the Chamber of Commerce parking lot, but appears to be rarely used. Accessibility is an issue, as ramps require that the user descend and ascend in the same location, going nowhere except down to the river before returning to where they began. Use may be limited because the destination is unclear, and the travel route along the river is short and broken up into two unconnected segments.

This boardwalk sits directly south of a parking lot that offers 69 spaces (Downtown Traverse City, *Parking*). One of many parking lots lining the Boardman River as it flows through the downtown area, this lot provides parking for the Chamber of Commerce as well as easy access to Front Street businesses via a mid-block pedestrian bridge.

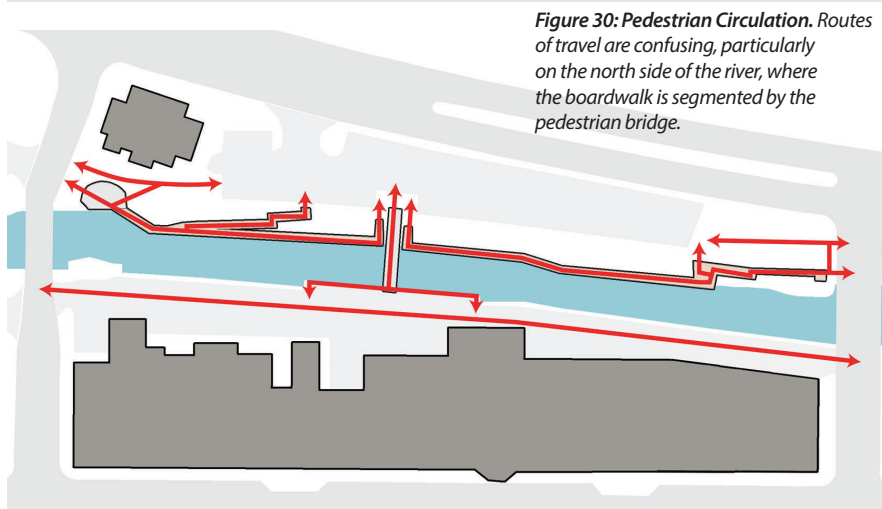
This area contains one of the most beautiful spaces along the downtown riverbanks: the plaza in front of the Chamber of Commerce. The personality and beauty of this area should be highlighted, and expanded to provide stronger connections to the waterfront and a more defined and alluring space.

The backs of Front Street businesses closely abut the river's southern banks. Although the space currently serves only as a service alley and parking lot, many businesses could benefit economically from increased activity along the river and access to the water.

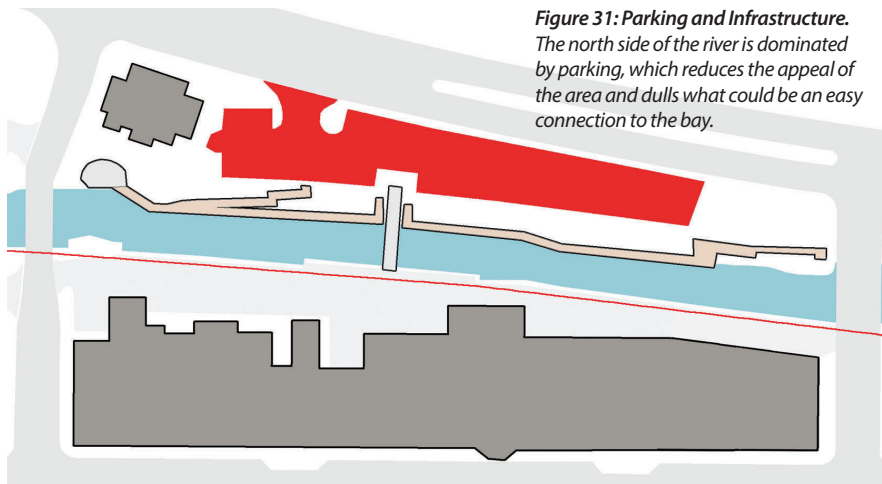
The tall retaining wall must remain in place because of the sanitary sewer running directly behind it, but this somewhat sparse space could be enhanced as an inviting pedestrian corridor.



**Figure 29: Universal Accessibility.** For users requiring the use of stairs, the current Boardwalk does not allow linear travel. Users may descend to the boardwalk, but must retrace their steps and leave the same way they entered.



**Figure 30: Pedestrian Circulation.** Routes of travel are confusing, particularly on the north side of the river, where the boardwalk is segmented by the pedestrian bridge.



**Figure 31: Parking and Infrastructure.** The north side of the river is dominated by parking, which reduces the appeal of the area and dulls what could be an easy connection to the bay.



**Boardwalk Bench.** A raised seating area situated on the north side of the Boardman in this area.



CHAMBER OF COMMERCE



**DESIGN GOALS**

- Enhance the pedestrian connection between Front Street and Grand Traverse Bay
- Maintain channel navigability upstream until Cass Street
- Improve the accessibility and legibility of area circulation
- Expand on the beautiful aesthetic of the Chamber of Commerce

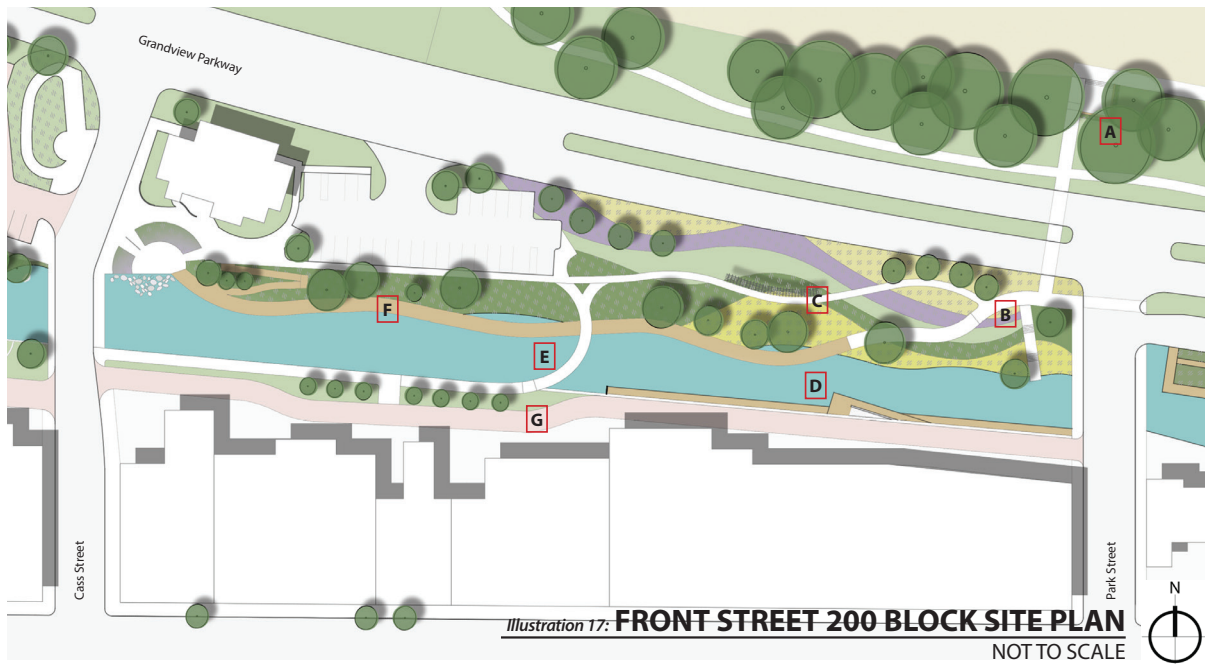
**SOLUTION**

In order to enhance the character and usability of this area, it is redefined with a strong connection to the nearby waterfront. An iconic pedestrian bridge moves people from the Front Street area through a beautiful garden imbued with character similar to the Chamber of Commerce Plaza, and across Grandview to a small shaded resting place and beach overlook. Access to the river is enhanced on both sides, and the redesigned boardwalk on the northern banks becomes continuous for all users.

The Chamber of Commerce parking lot is reduced in size, creating a strong Front Street to waterfront connection, and allowing pedestrians to travel through a beautiful garden setting between the pedestrian bridge and Grandview Parkway. The crosswalk at this location is enhanced to create a stronger connection across the busy road. The garden utilizes recently planted trees, relocating them to provide a buffer between the garden and the road, and showcases plant species native to Northern Michigan. Similar plants are used in the shaded resting area across Grandview, tying the two spaces together. These beautiful spaces provide areas for passive outdoor enjoyment, and improve the pedestrian experience for those moving from the Fishing Pier into the City or the City to the waterfront.

An iconic pedestrian bridge completes the pedestrian connection by tying the north and south sides of the river together. The curve and arc of the bridge allow for a smooth transition between the higher northern shores and the lower southern banks, while maintaining universal accessibility.

The addition of vegetation on the southern banks softens the experience of the alley, and a change in pavement indicates that this is a space that prioritizes pedestrians over vehicles. A staircase and dock provide access to the river from the top of the retaining wall, and allow boats to dock here as well. Eventually, this space could host a variety of activities associated with the adjacent businesses. Outdoor seating for the restaurants and cafes that back up to the river, movie nights against the State Theater's back wall, and on-site kayak and paddleboard testing with Backcountry Outfitters are only some of the many opportunities presented for business owners to enhance their customers' experiences by embracing the river in their backyard.



## FRONT STREET 200 BLOCK SITE PLAN

### **A. SHADED BEACH PLAZA**

A small seating area under the trees on the north side of Grandview Parkway creates a stronger connection to the bayfront and indicates to pedestrians that they should cross Grandview and continue toward the fishing pier.

### **B. CHAMBER OF COMMERCE GARDEN**

A garden featuring native plants alongside mowed grass areas mimics the aesthetic of the Chamber of Commerce Plaza, enhancing the pedestrian experience between Front Street and the bayfront.

### **C. GARDEN TRELLIS**

A linear trellis structure provides shade and seating within the garden area, encouraging users to pause before continuing on to their destination.

### **D. SMALL DOCK**

A small dock running along the south side of the river, at the foot of the retaining wall, allows boaters access to the Front Street businesses. A small staircase extends from the refurbished retaining wall, allowing users to descend from the alleyway above.

### **E. ICONIC PEDESTRIAN BRIDGE**

The deteriorating pedestrian bridge is replaced with an iconic curved, arcing structure that gracefully deals with the change in grade between the two slopes while allowing for universal accessibility.

### **F. CONTINUOUS BOARDWALK**

The segmented boardwalk running along the north side of the river is replaced with a continuous route. Ramps at both ends allow for users of all abilities to travel from end to end without needing to retrace their steps. Docking areas for small boats are maintained.

### **G. PERMEABLE PAVERS**

The alleyway paving on the south side of the river is replaced with pavers to indicate a more pedestrian friendly space. Street trees soften the space, and make it more inviting.



**Illustration 19: 200 Block River Section.** While vehicle access still dominates the south side of the Boardman, river access is introduced, giving boaters a place to tie up and visit Front Street. The banks on the right side boast a natural edge, and the 10' wide riverwalk allows access for a variety of users, while vegetation dampens vehicle noise from Grandview and creates a welcoming space.



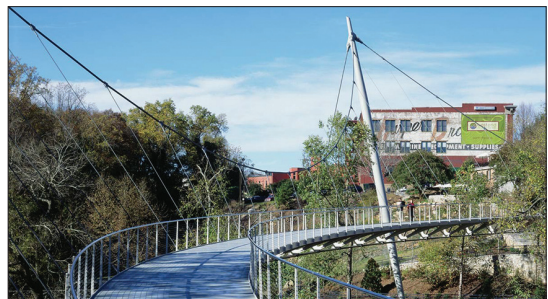
**Illustration 18.** A trellis structure in the Chamber of Commerce garden provides seating and encourages users to linger and enjoy the space.



Curved pedestrian bridge in **Castleford, West Yorkshire England**. Designed by Architects **McDowell+Benedetti**, this is an excellent example of the type of innovative design that could define the 200 Block's pedestrian bridge over the Boardman River. (Photo by Tim Soar.)

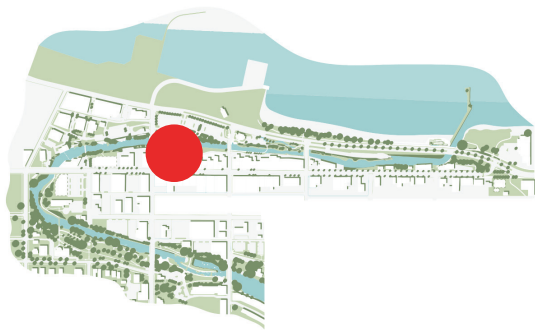
<http://www.dezeen.com/2008/07/17/castleford-bridge-by-mcdowellbenedetti/>

**Greenville, South Carolina's** curving pedestrian bridge, known as the Liberty Bridge at Falls Park on the Reedy, is listed as a landmark attraction by [cityprofile.com](http://cityprofile.com). Designed by **schlaich bergemann und partner**, the bridge showcases the potential of a unique bridge to draw attention to this area of Traverse City.



[http://www.sbp.de/en/build/show/1139-Liberty\\_Bridge\\_Greenville](http://www.sbp.de/en/build/show/1139-Liberty_Bridge_Greenville)

## DOWNTOWN TERRACES



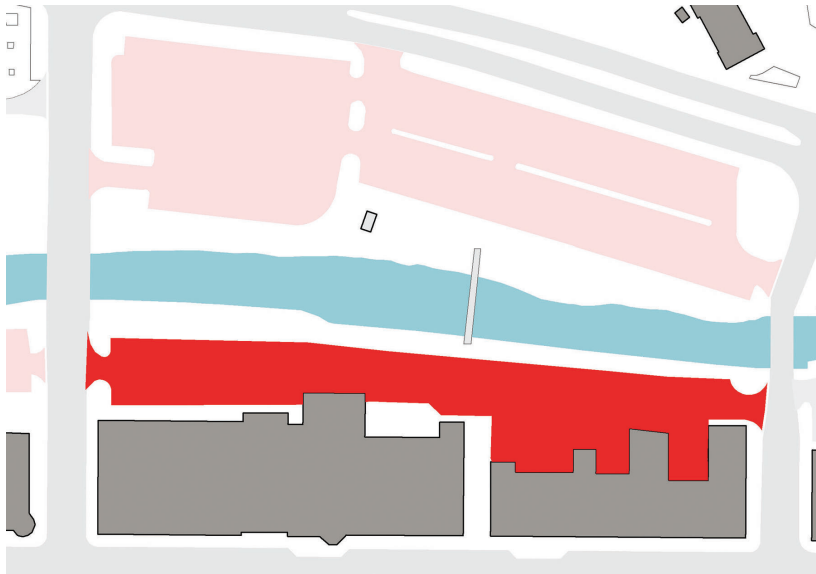
*The banks of the Boardman River as it flows through the city's downtown shopping district represent a missed opportunity for outdoor public space. Fully paved and heavily engineered, the river's edge prevents engagement with, and visual and physical access to, the water. The Boardman River Plan seizes the opportunity to create a space here that interacts with and responds to both the river and the highly urban context. Breaking down the barrier between the city and the river will enhance the overall downtown experience, providing a location for outdoor events, restaurant seating and other amenities.*

### **SITE ANALYSIS**

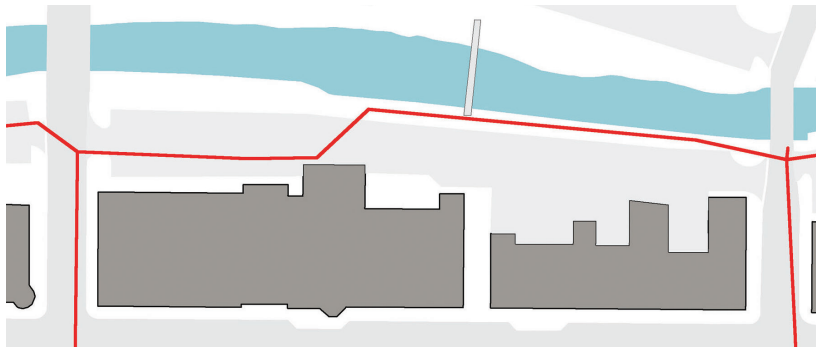
As it flows behind Traverse City's Front Street shopping district, the southern bank of the Boardman River is heavily engineered. A deteriorating concrete retaining wall holds back large expanses of pavement – parking lots and delivery access for the businesses along Front Street. Pedestrians move through the space quickly, with a few individuals and young families stopping to observe the river for a few moments before moving on.

This area currently houses one of the most well used parking lots for the downtown area. Lot "A" has 87 parking spaces that provide easy access to the Front Street businesses (Downtown Traverse City, Parking). In addition, informal spaces reserved for owners and employees provide convenient, safe movement between work and vehicles for individuals leaving after stores have closed.

Much of the retaining wall lining the south bank of the river must remain in place because of the sanitary sewer line running directly behind it. According to Gourdie-Fraser’s 2010 analysis of existing infrastructure in the 200 Block Alley, the retaining wall has recently “exhibited signs of distress” (5). After a portion of the retaining wall collapsed in the 1980s, a report commissioned by the city recommended that the wall be enhanced, and the sanitary sewer replaced (Gourdie-Fraser, 2010). If the sanitary sewer and retaining wall are replaced, it would be an excellent opportunity to improve the entire area, both in terms of user experience and in terms of overall safety and aesthetics.



**Figure 32: Parking.** The banks of the river here are almost exclusively defined by parking lots. Opportunities exist to relocate this parking and create a vibrant riverfront area in the heart of the city.



**Figure 33: Sanitary sewer.** A large sanitary sewer line runs parallel to the retaining wall for most of this block and should be protected. The city should take advantage of the opportunity to break down the wall where the sewer line turns south and eliminates the necessity of the wall for a stretch.



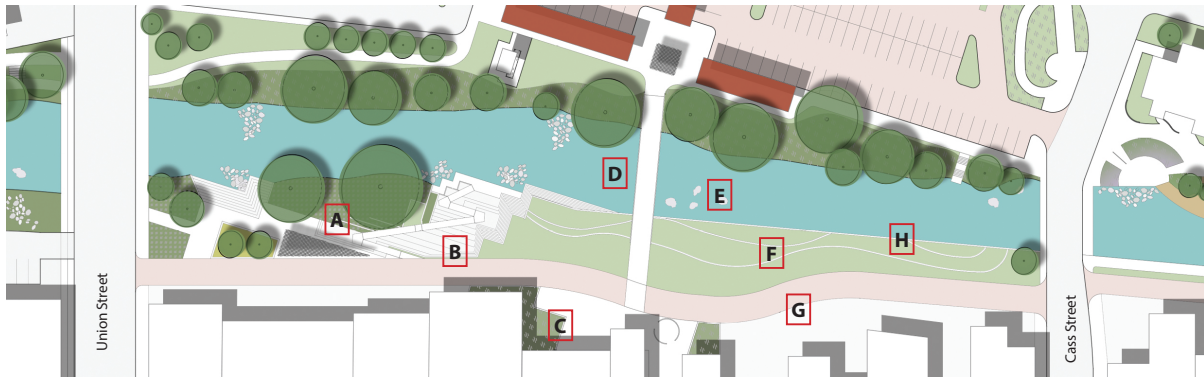
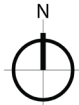


Illustration 20: **DOWNTOWN TERRACES SITE PLAN**

NOT TO SCALE



## DOWNTOWN TERRACES SITE PLAN

### **A. EXISTING TREES**

Where possible, existing trees on the riverbank are maintained to provide shade and simultaneously help stabilize the river bank with well established root systems. In addition, newly planted trees make the area more inviting.

### **B. TERRACES WITH RAMP**

A series of terraces and stairs provides access to the water's edge. Integrated with a ramp system, the area allows universal access at the eastern access point. Planting beds are integrated into the tiered system wherever possible to soften the space's hard edges.

### **C. PLANTING BEDS**

Planting beds are introduced on the south side of the road where possible, increasing the overall appeal of the alleyway.

### **D. PEDESTRIAN BRIDGE**

A wider pedestrian bridge strengthens the connection between the parking and farmer's market to the north and Front Street to the south, easing congestion on busy market days.

### **E. BOULDER PLACEMENT**

Boulders are placed within the river to enhance habitat and increase the visual and auditory appeal of the river.

### **F. LOW TERRACES**

In areas where the sanitary sewer remains a concern, small terraces step down without endangering the pipe. This small adjustment provides grassy seating areas and open up visual access to the river.

### **G. RE-ROUTED ALLEYWAY**

A slight meander to the vehicular route slows traffic and provides more space for people to relax close to the river. Vehicular access is minimized but still allowed.

### **H. REFURBISHED RETAINING WALL**

The existing retaining wall is rebuilt with emphasis on both safety and aesthetics.

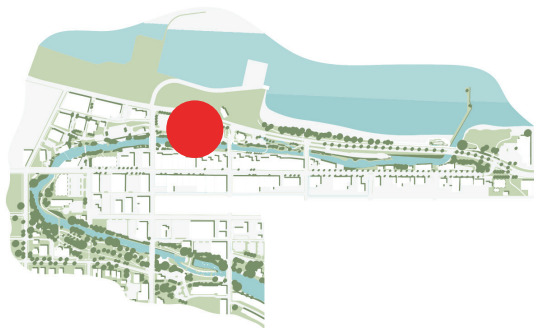


*Illustration 21: Terraces River Section. Breaking down the retaining wall on the south side of the river allows for physical and visual access to the river in the heart of downtown Traverse City.*



*Illustration 22: Downtown Terraces. The downtown terraces provide access to the river directly behind Front Street. This space can be used by a variety of group sizes, could host concerts or other gatherings in the evening, and offers an easily accessed place for relaxing outdoors.*

## FARMER'S MARKET



*The City of Traverse City's Farmer's Market is held in a parking lots located Grandview Parkway and the Boardman River. During bi-weekly summer market days, this usually quiet space bustles with fresh produce, customers, and friendly conversations. On other days of the week, the two combined lots provide convenient parking for 282 cars, 143 of which are in a permit lot (Downtown Traverse City, Parking). Many of the people using these lots are out-of-town visitors or downtown business employees and patrons, who take advantage of easy connections to Front Street and the Waterfront. The site's dual functions could be better accommodated with a simple renovation of the existing layout.*



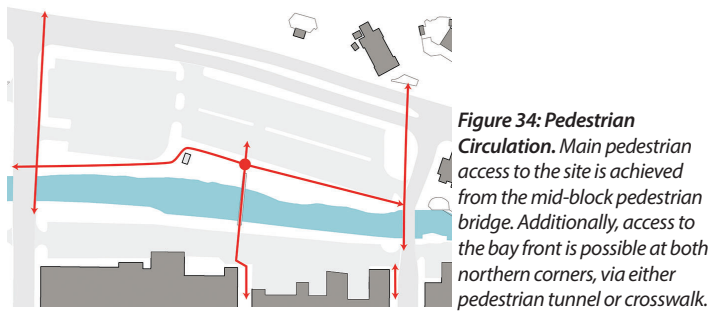
### SITE ANALYSIS

The functionality of the Farmer’s Market is somewhat impaired by its subservience to the parking lot layout. Farmer’s Market awnings draw the eye to the area, making it clear that parking is not the only thing this lot is used for. However, they are not highly functional as space defining structures or cover for pedestrians and vendors. Despite the existing covers, many vendors set up their own tents to provide shade and shelter. Rather than perusing vendors on both sides of a walkway, patrons sometimes find themselves walking with vendors on one side and a row of trucks on the other.

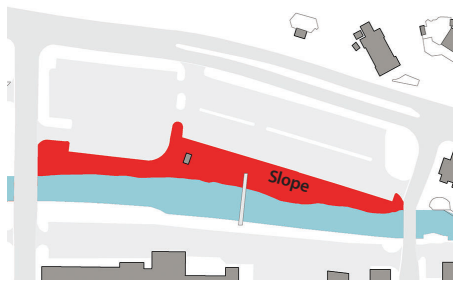
Pedestrian traffic alternates between easily navigable and completely jammed. In areas with wide paths, where vendors are only on one side of the path, movement is easy. Movement becomes more difficult where a narrow path serves vendors on both sides, and is particularly jammed in the location where people crossing the bridge from the south side of the river try to merge into the flow of market patrons. In addition, the bridge itself is too narrow to accommodate the volume of traffic during this busy time.

Visual access to the river is hindered by tall, unmanaged vegetation along the riverbank, but existing stone access points are well-used during market day and at other times of the week. These access points should be maintained and highlighted.

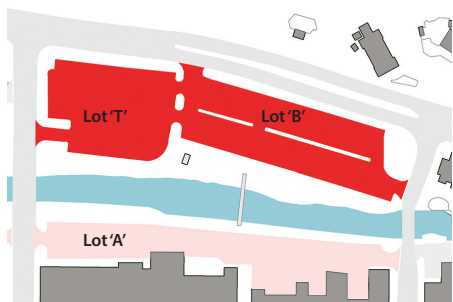
In addition to less than ideal spatial identity, the large expanse of paved surfaces are situated directly on the banks of the river, creating a potential problem related to stormwater runoff. Water coming off the parking lot carries contaminants and sediment that run into the river without treatment, decreasing water quality and harming already deteriorating habitat. Creative solutions for runoff management – including permeable pavers and rain gardens – can mitigate this environmental issue.



**Figure 34: Pedestrian Circulation.** Main pedestrian access to the site is achieved from the mid-block pedestrian bridge. Additionally, access to the bay front is possible at both northern corners, via either pedestrian tunnel or crosswalk.



**Figure 35: Slopes.** The banks of the river here are relatively steeply sloped. Vegetation should be maintained to help stabilize the bank, and stormwater should not be allowed to run freely down the slope.



**Figure 36: Parking.** This site is defined by its parking lots. Where possible, they should be reduced or reconfigured for efficiency and a sense of place.

*Existing conditions necessitate vendors facing vehicle fronts (below) and sometimes vending from parking lot islands (bottom).*



## DESIGN GOALS

- Improve the overall functionality of the Farmer's Market without drastically reducing parking options
- Enhance visual access to the river
- Incorporate interventions to improve on-site stormwater management

## SOLUTION

A renovation of the Traverse City Farmer's Market will create a more distinct destination, defining the space as something other than a parking lot. At the same time, the redesign retains ample spaces for visitors and patrons to park, both during the market and on non-market days. Pedestrian circulation is improved, gathering spaces are created, and visual access to the river is accentuated. In addition, stormwater running off the parking lot is mitigated through the strategic use of permeable pavers and rain gardens.

Rather than force the functionality of a Farmer's Market into the parking lot layout, a redesign offers an opportunity to allow the two uses to coexist on equal footing. A highly functional parking lot is laid out around the Farmer's Market structures, which shelter and shade patrons and vendors. The three structures come together to create a plaza at the northern end of the pedestrian bridge, solving circulation problems while providing a place to meet up with friends and neighbors, chat with community members and rest on a busy day.

Although this Market redesign eliminates 27 parking spaces, the number of parking spaces within walking distance remains adequate. In particular, Lot "Z," situated across Union Street, offers 72 parking spaces that allow easy access to the Market along the river. (Downtown Traverse City, Parking ) The number of parking spaces nearby means that Farmer's Market users will continue to have a number of excellent and convenient options for parking.

Existing access points are retained, and visual access to the river is improved by simple vegetation management emphasizing lower growing riparian species under a broad canopy of trees. This strategy will allow smaller trees to grow to take the place of dying trees in years to come.

The river is further protected by the installation of permeable pavers on the eastern lot, and a re-grading of the western lot to direct stormwater to a rain garden. Permeable pavers in the eastern lot will not only handle rainfall on the surface, but will also mark the area as a separate place, defining the site of the Farmer's Market as distinct from the western lot, which is used only for parking, seven days a week.

### *The Clinch Park Tunnel*

A pedestrian tunnel connecting Downtown Traverse City and Clinch Park is located in the northeast corner of the Farmer's Market lot. This tunnel is a vital artery for pedestrians looking to cross busy Grandview Parkway, and its southern entrance is scheduled for renovation in the near future. The current tunnel is a narrow corridor with a low ceiling and beige walls, and the entrance layout limits the distance approaching pedestrians can see into the tunnel.

Although the redesign addresses aesthetic and functional upgrades of the southern tunnel entrance, the Boardman River Plan recommends replacing the tunnel itself to make it more open, airy, and inviting. A wider and taller tunnel would make crossing beneath Grandview a much more pleasant experience, and improved lighting could also benefit the overall ambiance of the tunnel. Most importantly, the perceived level of safety would be greatly improved if, upon approaching the tunnel, pedestrians had visual access further into the space. Reorienting either the tunnel itself or the entrance stairs would allow pedestrians entering the space to better see what lies ahead of them.



Illustration 23: **FARMERS MARKET SITE PLAN**

## FARMER'S MARKET SITE PLAN

### **A. WELCOMING RAIN GARDEN**

Runoff from the western lot is directed to this raingarden, where it is detained so it can infiltrate. In the case of extreme storm events, overflow is directed to the river.

### **B. RAMP UP TO UNION STREET**

A newly installed ramp provides universal access to Union Street from the main pedestrian route along the river.

### **C. PEDESTRIAN UNDERPASS**

The existing pedestrian underpass is maintained and enhanced by the placement of boulders on the bare dirt slope under the bridge. The possibility of a mural or other art piece under the bridge should be considered.

### **D. ENHANCED RIPARIAN EDGE**

Vegetation along the river's edge is managed to allow for windows to the river and the Front Street alley.

### **E. EXISTING ACCESS POINTS REMAIN**

The existing stone access points on the northern bank are well used and should be maintained.

### **F. PERMEABLE PAVERS**

The eastern lot is resurfaced with permeable pavers in order to reduce runoff and define the area as a destination instead of simply a parking lot.

### **G. FARMER'S MARKET SHELTERS**

Three structures provide shelter for Farmer's Market patrons. With enough room for vendors on both sides and a substantial walkway between, these structures define the space and encourage easier movement through the market. Parking spaces back right up to the structures, so vendors do not need to provide their own tents.

### **H. CENTRAL PLAZA + MEETING SPACE**

The three shelters define a central area where they come together, creating a central social space for the market. A trellis structure within the plaza provides shade and seating options, and the flow of people crossing the bridge can enter the space without hindrance.

### **I. ADDITIONAL RIVER ACCESS**

An additional set of stairs allows river access at the eastern edge of the site, mimicking the aesthetic of the terraces across the river and to the west.

### **J. RENOVATED TUNNEL ENTRANCE**

The tunnel entrance is enhanced according to the in-progress plan. If the opportunity presents itself, the tunnel should be widened, the lighting improved, and the angle of entrance adjusted to allow a line of sight into the tunnel when entering.

**Illustration 24: Farmer's Market River Section.** A natural, relatively steep slope on the north side of the river should remain vegetated, while the small terraces to the south provide a space for users to relax and observe the river.



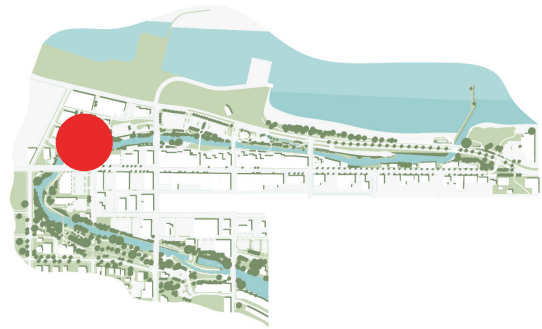
**Illustration 25: Farmer's Market Central Gathering Space.** A central plaza area eases flows of movement across the pedestrian bridge while creating a central gathering space for Farmer's Market patrons. Structures such as the ones shown above, designed by Locus Architecture for John Henry Beck Park, enhance the space.



## WAREHOUSE DISTRICT



*The Warehouse District lends a unique industrial, artistic character to the City of Traverse City. It is strategically located at a transition point between the downtown area and neighborhoods to the west, with a strong historical heritage linking back to early Traverse City logging. Today, colorful graffiti infuses the Warehouse District's aesthetic, visually distinguishing it from other parts of Traverse City. Also distinctive is the Fish Weir, which is managed by Michigan's Department of Natural Resources and is the site of an annual harvest of Chinook and Coho salmon (Kraimer, 2012). The Warehouse District has been identified by the City of Traverse City as a site for future infill development aimed at improving connections with key nodes of activity in town.*



### **ANALYSIS**

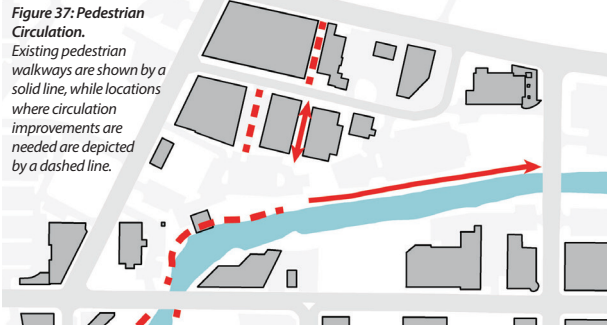
While the Warehouse District has all of the building blocks to become a vital economic and social hub for Traverse City, it currently lacks direct pedestrian access from other key parts of the city. Elements in this area that could be major points of interest, such as the fish weir and the Hotel Indigo, currently under construction, are not well-integrated into existing pedestrian circulation. These destinations, as well as features in adjacent neighborhoods, should be considered in the development of a renovated pedestrian circulation system.

Vehicle access to this area is somewhat lacking as well, and as it stands today it is very difficult to “happen upon” this area due to its location northwest of most well-known destinations in town. This area lies beyond the point where many tourists drive into the city when entering from the east, which may discourage visitors.

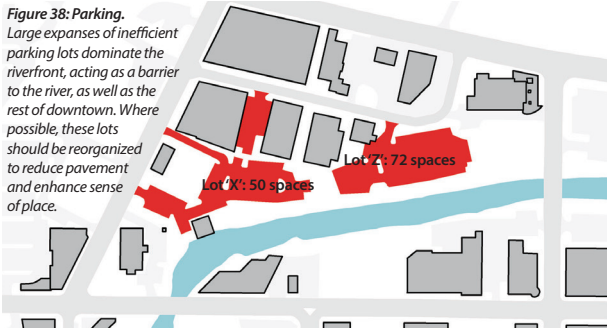
In its current layout, parking works to divide the commercial businesses from the riverfront and the other shopping destinations in the area. The placement of this parking, along with thick vegetation, blocks views of the Warehouse District from Front Street and acts as a divider of these two key areas. On an average day, these parking lots are often less than half full, indicating that an opportunity may exist to re-imagine some of the space for other purposes while condensing the parking lots themselves.

The unique character, while present, is not yet fully realized in the Warehouse District. Although the area does look and feel set apart from other areas, the artistic, industrial aesthetic and fish weir attraction could be strategically promoted and emphasized to more fully identify this district. The immense historic value and intriguing, curious elements found in the Warehouse District make it a promising site to promote public space amenities and direct access to the Boardman River.

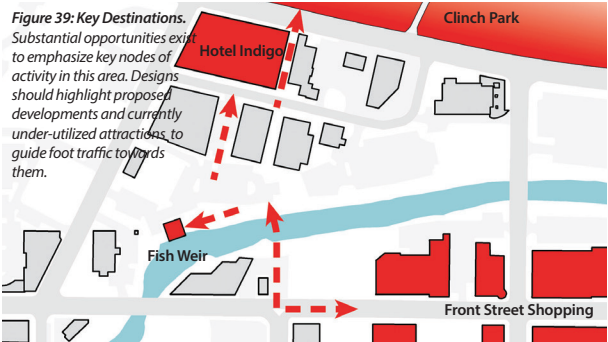
To begin to address some of these issues, the City of Traverse City has proposed a few major developments for the Warehouse District in the coming years. A planned pedestrian bridge, hotel development, and tunnel under Grandview Parkway will raise the prominence of this area in the context of the city, but a comprehensive design for the district is needed to integrate these elements and effectively connect them to the larger urban area.



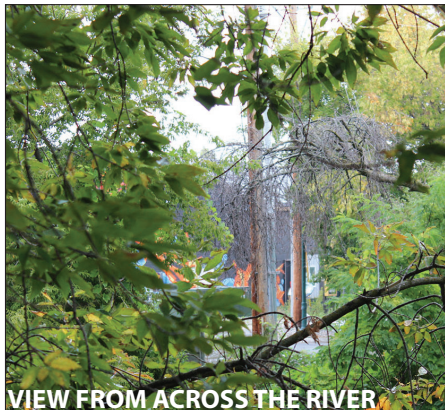
**Figure 37: Pedestrian Circulation.** Existing pedestrian walkways are shown by a solid line, while locations where circulation improvements are needed are depicted by a dashed line.



**Figure 38: Parking.** Large expanses of inefficient parking lots dominate the riverfront, acting as a barrier to the river, as well as the rest of downtown. Where possible, these lots should be reorganized to reduce pavement and enhance sense of place.



**Figure 39: Key Destinations.** Substantial opportunities exist to emphasize key nodes of activity in this area. Designs should highlight proposed developments and currently under-utilized attractions to guide foot traffic towards them.



**Existing Conditions.** Large expanses of parking dominate the riverfront, much of which appears under-used. Views into this space from bustling Front Street are obstructed, discouraging flow between the areas.

## DESIGN GOALS

- Foster neighborhood identity through further development of area's unique character
- Generate connections between the Warehouse District and other nearby destinations
- Enhance the physical connection between the neighborhood's structures and the Boardman River
- Create a pedestrian-centric experience through creative re-interpretation of existing parking.

## SOLUTION

As pedestrians cross over the proposed Pine Street bridge, the path will lead them into an open, flexible plaza space with seating options, vegetation, and an overhead trellis offering shade. This plaza is situated to maximize views out and over the Boardman River, as well as to connect pedestrians to the Warehouse District's commercial buildings. Intended to be adaptable based on seasonal needs, the plaza also acts as a stage for performances with grassy and paved spaces for audience seating.

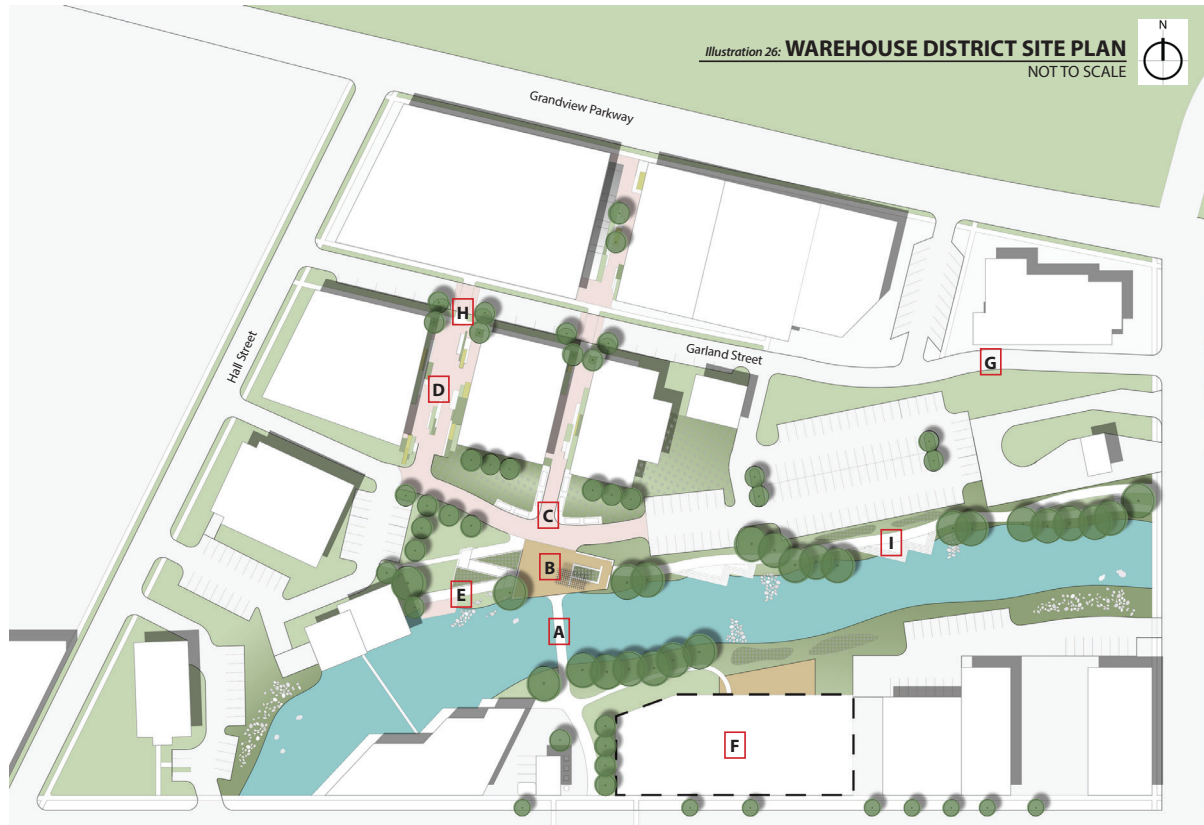
Vehicle access through this space, while permitted, is intended to be sporadic and closed during events to provide an expansive, safe seating and walking area. This plaza is intended as a people oriented place, but vehicle access through is maintained for service needs and occasional car passage. Lot X, which had previously contained 50 parking spaces (Downtown Traverse City, *Parking*), has been reworked and reoriented to reduce pavement size and create new spaces for pedestrian movement and gathering. Under the proposed design, this lot now contains 35 spaces in two locations. Lot Z has been reorganized as well, allowing for the addition of 35 parking spaces and the inclusion of landscaped islands to increase the lot's aesthetic appeal and offer shade. Land previously occupied by parking spaces is converted to pedestrian-centric plaza space as well as vegetation and lawn to allow for relaxing and lingering in the Warehouse District.

Situated between the proposed plaza and the existing fish weir building, a series of ramps creates an accessible connection from the Warehouse District down to the Boardman River's edge. This ramp system switchbacks through planting beds, providing bench seating along the way, and terminates in a deck at water level. This element functions as a place to launch small boats, fish, observe the fish weir in action, and generally enjoy the water. Interpretive signage is located within this system as well, to explain to visitors the recreation and environmental functions of the nearby fish weir.

To fully integrate the Warehouse District into the existing fabric of Traverse City, an entrance from this area under Grandview Parkway and out to Clinch Park is currently under development. This new element has been designed by engineering firm Beckett-Raeder and will be critical to circulation between these nodes of activity. To accompany this element, a series of wide plaza-walkways are proposed between the existing large buildings to emphasize the new connection and provide vegetation and outdoor seating opportunities for users. The size of these walkways plays off of the large scale, industrial structures. Within each walkway varied seating elements are located to provide flexible seating options. Seating walls are integrated into vegetated planters, creating partially screened areas in which to have a quiet lunch and more public areas with centralized seating spaces for groups. These walkways are situated on the same axis as the Warehouse District's street grid, which is slightly askew relative to the rest of the city. The placement and orientation of these elements emphasize the views out towards Clinch Park and encourage pedestrians to venture out in that direction.

Garland Street is the main existing vehicle access route through the Warehouse District, but its current path is awkward and routes drivers directly back to Grandview Parkway, leading them out of town. In

this proposal, Garland is rerouted to flow from Hall Street all the way through to Union, which retains the vehicles in-town and encourages further exploration. Cars beginning in town could also more easily access the Warehouse District from this direction, improving connectivity and enticing visitors that may not have sought out the area otherwise. This proposal will require coordination with the Traverse City Convention & Visitors Bureau, who currently have a driveway in this location. This modification in vehicle circulation will significantly improve the integration of the Warehouse District into the city at-large.



## WAREHOUSE DISTRICT SITE PLAN

### **A. PLANNED PEDESTRIAN BRIDGE**

The City of Traverse City has proposed a pedestrian bridge in this location to connect the Front Street downtown area to the Warehouse District. This new feature will substantially improve access and foot traffic in this area, which is currently somewhat isolated.

### **B. GATEWAY PLAZA**

At the terminus of the bridge, this plaza acts as an entrance to the Warehouse District and will be easily visible by shoppers on the river's southern side. This space offers a stunning overlook opportunity, as well as space for food carts.

### **C. PEDESTRIAN-CENTERED DESIGN**

Previously occupied by a large parking lot, this area has been re-organized to privilege non-motorized users. A through-way remains vehicle-accessible, but asphalt is replaced with concrete pavers to visually communicate that this area has been transformed into a "people place."

### **D. LINEAR PLAZAS**

Spaces between buildings have been transformed into expansive walkways with varied seating options and planters that feature native vegetation. These spaces connect pedestrians to destinations.



**E. RIVERFRONT ACCESS POINT**

A series of universally accessible ramps lead visitors right down to the water's edge, creating a new boat launch and overlook. The location of this element, adjacent to the fish weir, makes it an ideal spot to place educational signage about the weir and the Boardman River as a whole.

**F. DEVELOPMENT OPPORTUNITY**

This currently vacant lot holds potential for strategic development to strengthen the downtown commercial district and accommodate private and public outdoor spaces along the river in the future. The City of Traverse City should work with private developers to create a mutually beneficial design for the property.

**G. REROUTED GARLAND STREET**

To facilitate vehicle access to this neighborhood Garland Street is rerouted to extend directly from Hall Street to Union Street. This route improves legibility of the area and may increase the number of visitors.

**H. STREETScape IMPROVEMENTS**

Speed tables and street trees are integrated into the Garland Street streetscape, where space allows.

**I. IMPROVED PATH**

Existing path is widened and formalized and terraces provide additional spaces to access the river.



**Illustration 27: Pine Street Pedestrian Bridge Section.**

The proposed bridge acts as a gateway into the Warehouse District, connecting the bustling downtown with this up-and-coming part of town. The bridge has been designed to be 12 feet wide, to accommodate free flow of foot traffic and allow fishing.



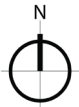
**Illustration 28: Warehouse District Gateway Plaza.**

The proposed Pine Street pedestrian bridge ends in a central plaza which offers an experience of entry to the area and provides flexible space for events and concerts.



**Illustration 29: WAREHOUSE DISTRICT DETAIL PLAN**

NOT TO SCALE



*The pedestrian experience is the focus of these redesigned outdoor spaces in the Warehouse District. A large plaza provides a gateway into the area, and leads into flexible hardscape that can be converted to event space or a concert venue.*



**Illustration 30: River Access Point, and Boat Launch.** *wA system of ramps with seatwalls and native vegetation lead people down to the river's edge, ending in an accessible boat launch and Fish Weir observation deck.*



*Illustration 31: Warehouse District Riverfront Section. Ramps from the proposed plaza down to the river create an accessible boat launch and an opportunity to directly access the river.*



**Illustration 32: WAREHOUSE DISTRICT DETAIL PLAN**  
NOT TO SCALE

*Enhancing the pedestrian experience remains the priority in this part of the Warehouse District. Wide linear plazas guide circulation and provide seating spaces intermixed with native vegetation planters. Destinations include the new Hotel Indigo and the proposed tunnel to Clinch Park.*



*The proposed seating within the linear plaza spaces is modeled after seatwalls designed for New York City's Highline. Future Green Studio, located in Brooklyn, New York, has designed plantings that inform the desired aesthetic for this site.*

## DEVELOPMENT STANDARDS



*Two lots along the Boardman River's downtown frontage currently sit vacant. As Traverse City continues to grow and these lots are developed, strategies to maintain and enhance the aesthetic beauty and ecological quality of the river adjacent to them will ensure that they become part of the riverfront experience.*

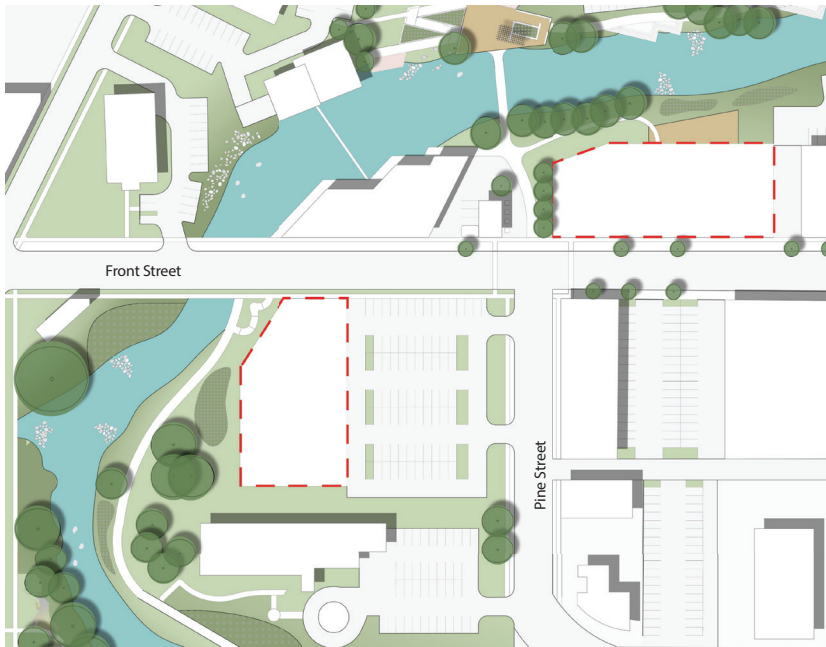


Both of these vacant lots (Illustration 33) are located immediately adjacent to Front Street, backing up to the Boardman River corridor. They are located towards the west end of the downtown's commercial district, with neighboring buildings two stories or taller. Currently, the western lot south of Front Street has substantial high-quality vegetation along the riverbank.

### **DESIGN PRINCIPLES**

- Maintain or improve vegetation and habitat quality along the riparian corridor
- Capitalize on the riverfront as a potential "people place"
- Minimize/capture polluted stormwater runoff from impervious surfaces associated with development
- Include a mix of uses to support diversity in the downtown

Illustration 33: **VACANT PARCELS**  
NOT TO SCALE



## DESIGN STANDARDS

### 1. Public Access

- Preserve land and/or the right of way to accommodate a continuous public riverwalk and related parks and open spaces.

### 2. Riverwalk Guidelines

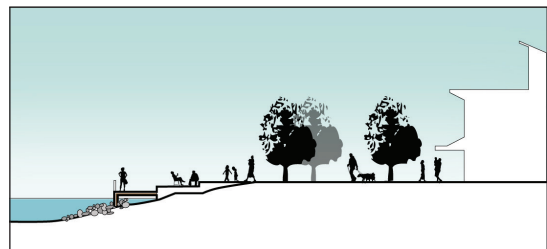
- Stabilize the riverbank with native vegetation including low-growing grasses and groundcovers.
- Construct the walkway 10 feet in width whenever possible.
- The riverwalk path should be constructed of concrete or a wooden boardwalk in areas where circumstances require it.
- A vegetative buffer should exist between the riverwalk and proposed private development.

### 2. Site Planning and Building Orientation

- Locate and orient new structures to define public spaces along the riverfront and include indoor views as well as outdoor dining and display areas, as possible (Figure 40).
- Locate service areas to minimize impact on views from streets and riverwalk. Screen parking and service areas with vegetation or decorative fencing.
- Avoid fences or visual barriers between new construction and the river.
- Reduce the visual and ecological impact of parking by locating vehicle access and storage a minimum of 100 feet away from the riverbank to minimize polluted runoff, creating a buffer sufficiently wide enough to trap most erosion and sediment flow (Wenger and Fowler, 2000).

### 3. Ecological Viability

- Land within 100 feet of the Boardman River corridor must contain a minimum of 50 percent landscaping, providing opportunities for stormwater management.



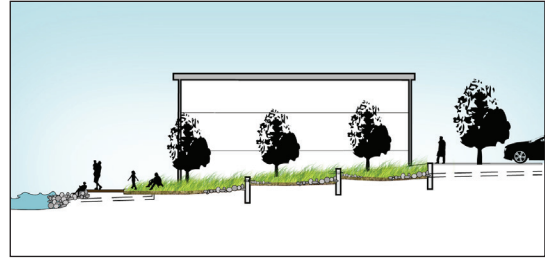
**Figure 40: Site Planning Recommendations.** Building orientation should directly relate to the riverfront. Private and public outdoor spaces should be provided to create an amenity.

*Adapted from Jamestown, New York Urban Design Plan, 2006*

- Grade sites strategically to create bioswales and rain gardens, and direct stormwater from impervious surfaces into these areas instead of directly into the Boardman River.
- Native plants should be used in vegetated areas whenever possible.

#### 4. Aesthetic Value

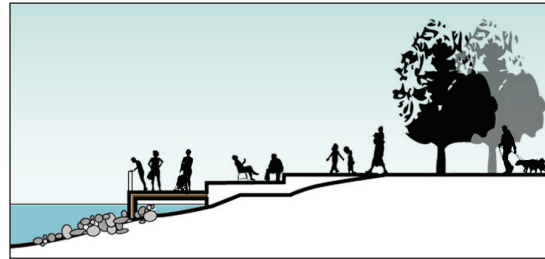
- Developers are encouraged to integrate art into the design process for buildings and outdoor spaces to further enhance the river's character within the neighborhoods of the city.
- Use plant materials that are compatible with urban environments and provide year-round interest and health with a realistically-expected level of care.



**Figure 41: On-site Stormwater Management.**  
Where space allows, site planning and grading should transport stormwater runoff from impervious surfaces into rain gardens to detain and treat water before it enters the river.  
*Adapted from Baraboo, Wisconsin Riverfront Redevelopment Area Plan, 2006*

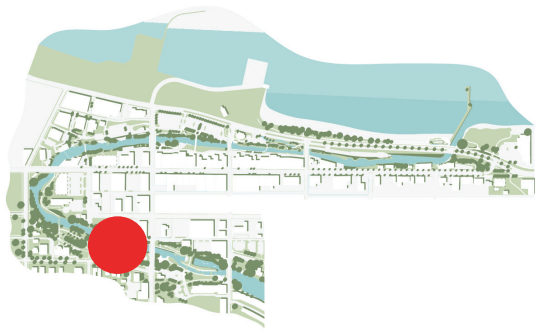
#### 5. Building Form and Programming

- Increase riverfront viewshed by incorporating tiered development adjacent to the river.
- Buildings adjacent to the Boardman River should be designed with two entries, one on the riverfront side and one oriented towards the streetside or parking lot.
- Buildings should be a minimum of two stories in height (or 20 feet) and a maximum of 4 stories in height (or 50 feet), in keeping with existing downtown streetscape.
- Architectural form of new structures should maintain existing downtown character with respect to building articulation, floor heights, and other defining physical features.
- Buildings are encouraged to be mixed-use, with retail at the ground floor and residential and/or offices encouraged to occupy upper floors.



**Figure 42: Promote Direct Access to the Boardman.**  
Public right-of-way along the river's edge should be maintained to allow for a continuous public boardwalk. Kindling public-private partnerships will facilitate this and will ensure public access.  
*Adapted from Jamestown, New York Urban Design Plan, 2006*

## HANNAH PARK



*Hannah Park is a traditional park located in the Central Neighborhood on historic 6th Street between the Union Street Bridge and Wadsworth Street. This land has a storied past, used by local Native Americans as a burial ground before being converted into a railyard during Traverse City's lumber age. Finally, the land was renovated into a city park (Bacigalupi, 2012). Named for lumber baron Perry Hannah, the park is long and narrow, following the banks of the Boardman River.*

### **SITE ANALYSIS**

Currently, Hannah Park has a pastoral quality reminiscent of early 19th century American parks, featuring large expanses of lawn beneath a mature canopy of trees. The site features striking topography that cascades from the sidewalk's edge towards the river. The park is well maintained, but lacks flow, a sense of place, and a connection to the surrounding Victorian style neighborhood.

Hannah Park is mainly used by neighborhood residents for strolling, picnicking, fishing and sledding, but overall it is not a busy park. Because of this, there is a small homeless population in the western edge of the park, which discourages local residents from using the park. Occasionally, there are neighborhood and city events such as the Riverside Shakespeare and Heritage Festivals, but overall it is underutilized by the community. Hannah Park could be better served with more direct programming of spaces for education, activities and community gathering. There is also an opportunity to enhance connections with the History Center of Traverse City.

The topography of Hannah Park acts as a visual asset, but steep slopes running west from the history center parking lot cause runoff and erosion problems. In this and other areas, there are opportunities to catch

storm water runoff, prevent erosion, and improve the water quality of the river. Traverse City began to address these problems in 2008 with the installation of a 1300' long riparian buffer (Watershed Center, 2007), but additional measures could be taken to mitigate water-related issues.

There are three entrances to Hannah Park, none of which have a strong visual presence from the sidewalk. An informal entrance along Union Street connects to a dirt path and is utilized by maintenance vehicles. This vehicle access should be maintained, but there is an opportunity to create an entrance that better defines the park's character and history. Along 6th Street, a stairway leading to the middle of the park acts as the main entry point.

A somewhat problematic entrance exists along Wadsworth Street, where a dirt path runs in close proximity to a private residence. This entrance could be formalized, but opportunities to remove pressure from it by emphasizing other options should be explored where possible.

Hannah Park's single dirt path does not provide effective circulation, but there are opportunities to better choreograph movement through the park. The construction of a pedestrian bridge would link the space to the northern side of the river and Pine Street. In addition, the city is interested in the idea of a tunnel connecting Hannah Park to the Union Street Dam (Soyring, 2012), which would enhance the overall legibility of the river.



Figure 43: Central Neighborhood.



Figure 43 (left): Central Neighborhood. This historic neighborhood borders Hannah Park to the south and is highlighted by idyllic 6th Street.

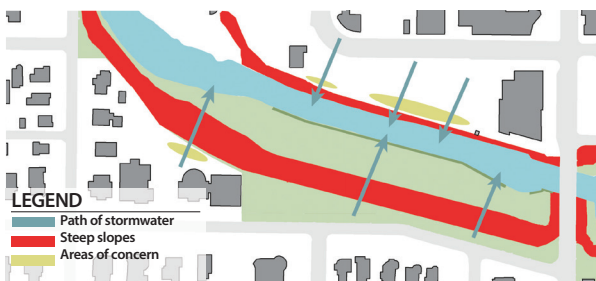


Figure 44: Ecological Conditions.

Figure 44: Ecological Conditions. Stormwater enters the park from the neighboring roads and parking lots, moving quickly down steep banks toward the river. Areas of concern are highlighted where rain gardens could prevent further erosion and treat stormwater.

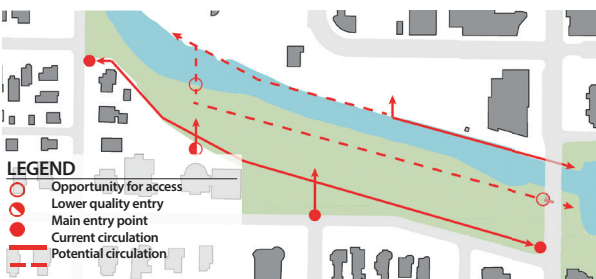


Figure 45: Entrances and Circulation.

Figure 45: Entrances and Circulation. Three designated entrances to the park and a single pedestrian path highlight the current circulation. There is an opportunity to improve entrances and provide additional circulation, creating a link to the north and east.



## DESIGN GOALS

- Designate formal entrances to the park.
- Increase activity through improved circulation and organization.
- Design for specific programming in conjunction with the history center.
- Foster an aesthetic that reflects the architecture and history of the surrounding neighborhood.

## SOLUTION

A re-imagined Hannah Park maintains the defining naturalistic aesthetic while increasing overall park use and celebrating the area's history. Proposed improvements include a small amphitheater, an interpretive path to the history center and a children's park adjacent to the history center overlooking Hannah Park and the river.

Tucked between the old growth trees, the amphitheater's circular design reflects 6th Street's Victorian architecture and creates a neighborhood destination. The stage is backed by six small podiums and can accommodate small concert performances, live theater, public art, snow sculpture displays or other community events. The amphitheater is prominently located on the Pine Street axis, where it can be easily seen from both sides of the river.

This amphitheater acts as a focal point within the park's overall circulation network. A renovated path system runs the entire length of the park, increasing access and activity throughout. At the western tip of Hannah Park, the path provides an easy connection to senior housing, and the loop layout of the new system promotes walking for exercise.

At the eastern end the path terminates in a tunnel leading towards the proposed whitewater park, and at stairs up to Union Street. The tunnel must be a minimum of 9.5' tall and 18' wide to accommodate emergency and maintenance vehicles. It is faced with stone, well lit, and wide enough to maintain a feeling of safety and comfort.

In addition to the tunnel and pedestrian bridge, the existing entry points are redefined. At Union Street, an added sculptural element is reminiscent of Hannah Park's historic past. The renovated entryway includes a circular trellis and seating wall that create visual links between the Park, Union Street and the History Center. A proposed pedestrian bridge links Hannah Park to the walkway and boardwalk on the northern side of the river. It is oriented towards the History Center, visually emphasizing the architecturally significant building and leading users to the interpretive path that winds up the hillside. Formalized plantings and artifacts pertaining to Hannah Park's railroad and lumber history line the path.

To the east of the History Center, a children's park encourages families to engage more frequently with Hannah Park. Sited close to the neighborhood for easy access and safety, the small play area offers views over the river.

This space could become a flexible area for use during larger events due to its proximity to the amphitheater and History Center. An element that is not highly prevalent in Traverse City's urban fabric, a children's playspace would draw both locals and tourists alike.

In keeping with the overall strategies presented in the Master Plan, rain gardens are placed in strategic locations to collect rainwater before it creates an erosion and water quality issue. The rain gardens also help to soften the look of the parking lots and reduce the impermeable surface. Rock piles and boulder outcroppings are placed along the riverbank and in the current to improve aquatic habitat as well as recreational fishing opportunities near the platforms. River banks in this area remain natural, but should be trimmed regularly to maintain windows through the vegetation to the river beyond.

**Illustration 34: Northeast Entrance to Hannah Park.**  
A formalized entrance visible from Union Street features seating walls with overhead trellis and a sculpture reflecting the historical significance of Hannah Park.

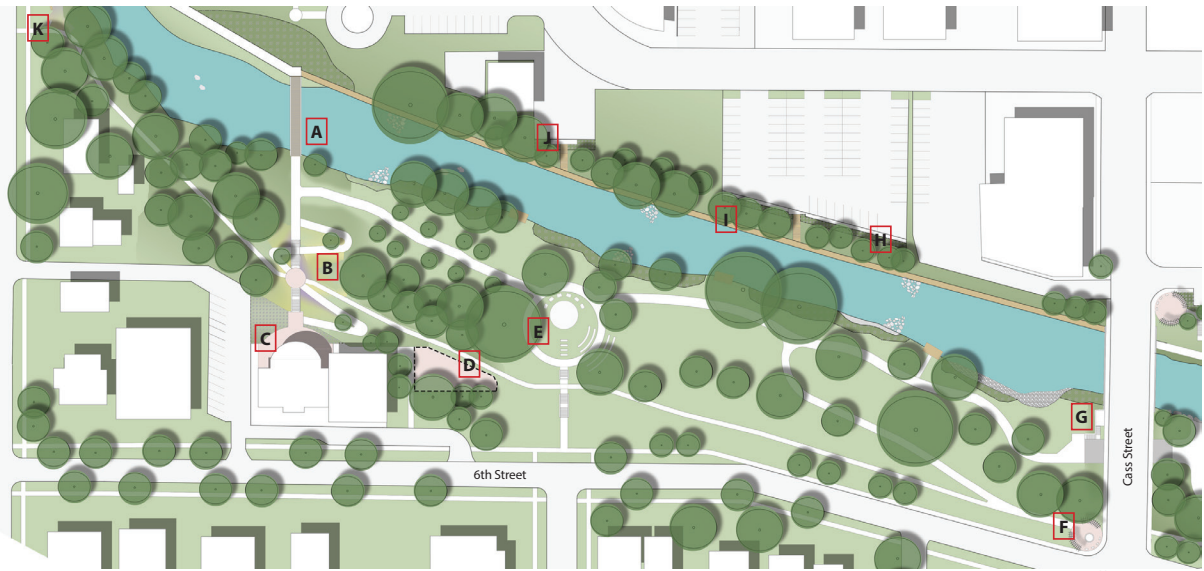


Illustration 35: **HANNAH PARK SITE PLAN**  
NOT TO SCALE

## WHITEWATER PARK SITE PLAN

### A. FOOTBRIDGE CONNECTION

The footbridge and path system allow pedestrians and bicyclists to utilize the full extent of the park while connecting to the Warehouse District and the History Center.

### B. INTERPRETIVE WALK

The stairway and accessible path allow for a visual and physical connection to the History Center. Native plantings and sculptural "historic" elements offer opportunities for interpretation.

### C. HISTORY CENTER PLAZA

A small plaza with permeable paving and rain gardens formalizes the connection to Hannah Park.

### D. HISTORY THEMED PLAY AREA

The play area is sited in close proximity to the History Center, the central neighborhood and the Hannah Park amphitheater. The area could have a history theme with play equipment reminiscent of Traverse City's past.

### E. HANNAH PARK AMPHITHEATER

The 30' diameter elevated stage, backdropped by small pedestals and the Boardman River offers flexible use for concerts, theatre and year-round events. Tiered seating set into the hillside overlooks the stage with the option for grass seating to the west.

### F. UNION STREET ENTRANCE

A formalized entrance with trellis and seatwalls surround a sculptural element. This entrance draws attention to the park and History Center from Union Street.

### G. PEDESTRIAN TUNNEL

The tunnel connects to the proposed whitewater park and allows for accessible connectivity along the river.

### H. RAIN GARDENS

Rain gardens line the northern parking lots to help mitigate stormwater runoff and prevent erosion.

### I. BOARDWALK CONNECTION

The existing boardwalk is extended to improve circulation by connecting Pine Street to the proposed pedestrian bridge and Hannah Park.

### J. PINE STREET OVERLOOK

An overlook with rain gardens at the termination of Pine Street looks down onto the Hannah Park Amphitheater. A stairway connects to the proposed boardwalk.

### K. WADSWORTH STREET ENTRANCE

A single bench, sign and native plantings formalize the west entrance to the park.

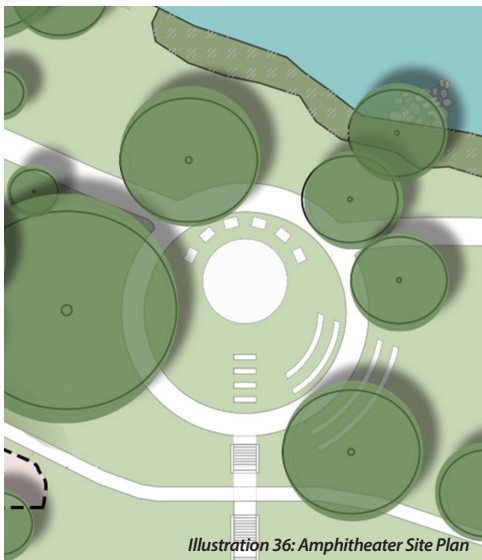


Illustration 36: Amphitheater Site Plan



**Circular Stage (far right).** A children's concert is an example of the programming that could occur on the circular stage.

**Terraced Seating (right).** Set between the trees, terraced seating similar to that shown here would overlook the stage at Hannah Park.

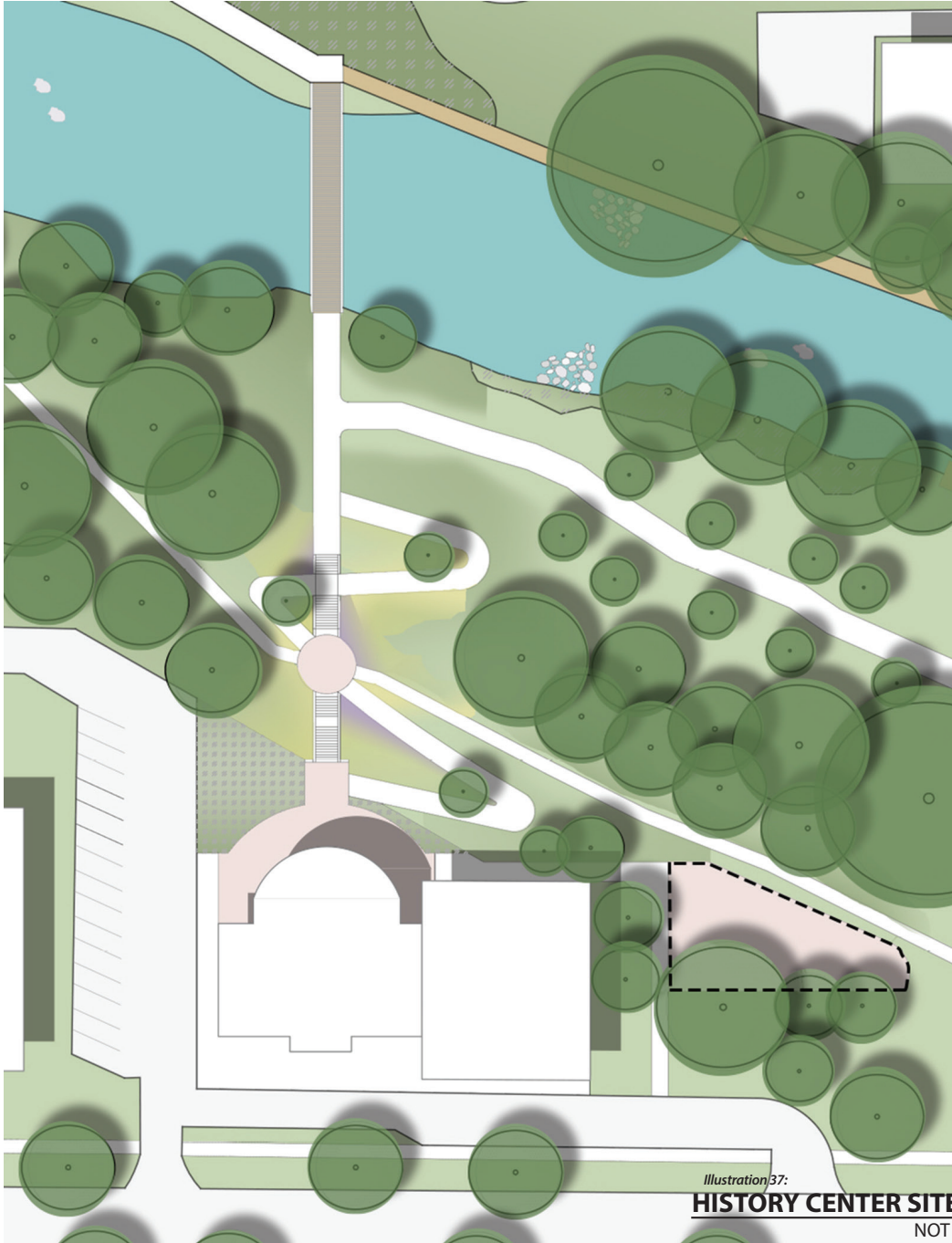


Illustration 37:  
**HISTORY CENTER SITE PLAN**  
NOT TO SCALE





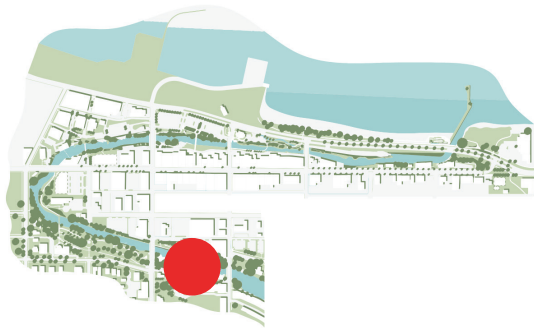
*Illustration 38 (above): Hannah Park Section.* Integrated into the slope, tiered seating overlooks the stage and the river's natural setting.



*Illustration 39: Interpretive Walk.* A stairway and meandering path enhance the connection between the History Center and Hannah Park. *Children's Play Area (below).* An example of the character of the proposed play space.



## TRAVERSE CITY WHITEWATER PARK



*The Union Street Dam and its surrounding land offers opportunities for urban recreation on the edge of downtown Traverse City. The small park sits directly between two historic bridges on Union and Cass Streets, both listed on the National Register of Historic Places (National Register, 2013). Their distinct character is highly visible from within the park, which is bisected by the Boardman River's flow. The city is interested in retrofitting the dam to allow for a whitewater kayak park to increase urban recreation opportunities, improve river accessibility and create a destination in downtown Traverse City. (Soyring, 2012).*

### **SITE ANALYSIS**

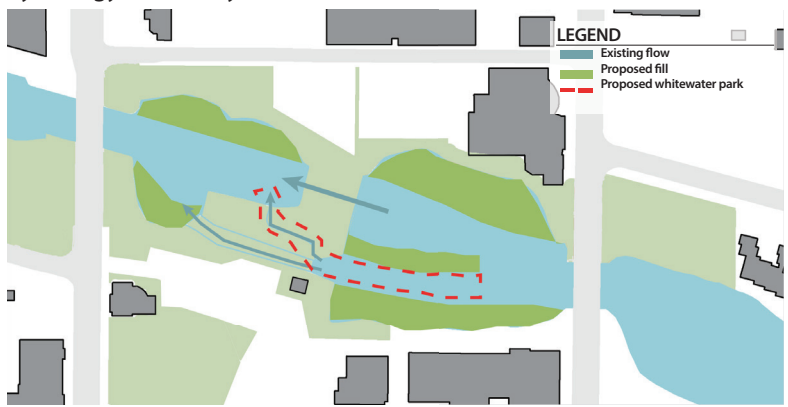
Originally constructed in 1867 to provide mechanical power for a flour mill, the Union Street Dam is currently used to control the water level of Boardman Lake. The dam consists of a 250-foot-long earthen embankment containing two spillways and a fish ladder that was constructed to allow migration of salmon and trout while blocking upstream sea lamprey migration. Any retrofit of the dam must maintain water levels and the ability to regulate the passage of fish and lamprey. Atop the dam crest, a pedestrian walkway traverses the river alongside an unsightly 12-inch diameter cast iron water main. Circulation provided by the walkway connection should be maintained, while alternative solutions to an above-ground water pipe should be explored. A small utility building adjacent to the dam is no longer in use and could be utilized for activities surrounding the proposed park.

In addition to the visual impact of the dam itself, its structure has slowed water flow above and below the dam creating significant ponding and degrading water quality and fish habitat. Additional ecological considerations include steep slopes along the north and west banks, where runoff from parking lots and roadways increases erosion concerns. During high water flow, flooding results in an inaccessible path along the river's northern edge.

The land surrounding the Union Street Dam currently provides some access to urban recreation. Fishermen tend to congregate beneath the dam, near the fish ladder, and canoers and kayakers traveling down the river pass through this area. However, the dam requires that all canoes and kayaks be portaged if users wish to continue travel along the river. Increasing the quality of recreational opportunities will be prioritized in the redesign of this area, with the end goal of attracting highly active uses and increasing connectivity. As a possible solution, the City of Traverse City has discussed the potential of this area to be renovated into a recreational whitewater park.

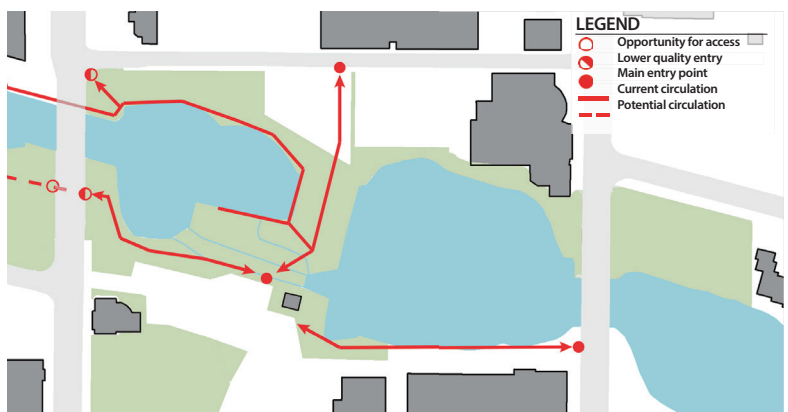
Pedestrian connections within this area are unclear and sometimes unsafe. Existing access is hindered by extremely steep pathways, uneven stairways, and illegible routes. Currently, no connection exists to Hannah Park except a very steep stairway over the bridge that is unsafe and should be removed. As discussed previously, the City is exploring the idea of a tunnel, which would connect Hannah Park to the Union Street Dam area. In addition, nearby Legion Park could be integrated into a larger plan for the Union Street Dam area.

Design guidelines and precedent studies have been used to site the white water park, and illustrate how it might fit into the context of the Union Street Dam and the Boardman River. Ultimately, a professional whitewater engineering company should design the final course to be certain of proper engineering, hydrology and safety.



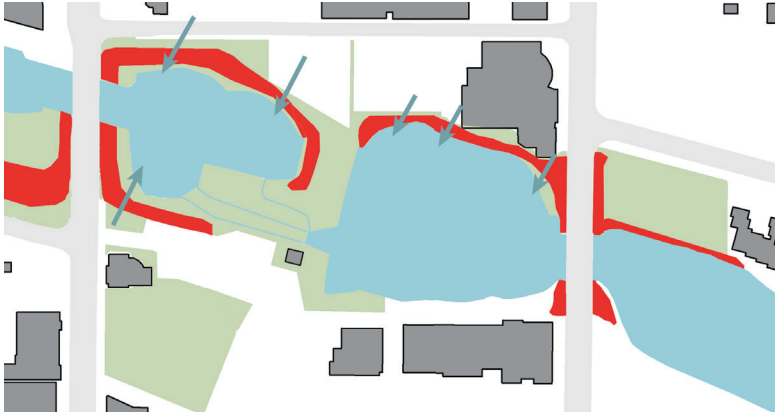
**Fish Ladder:** The existing fish ladder will be replaced with the proposed whitewater park run, which would need to follow specific guidelines in order to maintain the functionality of aquatic species management.

**Figure 46: Existing Dam and Proposed Retrofit.** The existing dam, fish ladder and secondary spillway will be altered for the proposed whitewater park. Proper functioning of the park will require additional fill and an expanded riparian edge.



**Flooded Path:** The paths along the river below the Union Street Dam flood with increased river levels. Any improvements should consider this fluctuation.

**Figure 47: Entrances and Circulation.** Circulation and access could be improved by making low quality entrances accessible and through the implementation of the pedestrian tunnel connection to Hannah Park.



**Figure 48: Ecological Conditions.** Stormwater enters the park from the neighboring roads and parking lots, moving quickly down steep banks toward the river. Accessibility and ecological interventions should be considered at these points.



**Steep Slopes Along Union Street (left):** This access point is inaccessible and dangerous. The pedestrian tunnel would provide an accessible alternative to this entrance while connecting to the larger path system along the river.

**American Legion Memorial Bridge (below):** This historic bridge along Cass Street will be maintained and will be a termination point for accessible circulation along the river's edge.

**Crest of Union Street Dam (bottom):** Fish ladder and utility building along with existing infrastructure functionality should be considered in any retrofit to the dam.





## DESIGN GOALS

- Enhance public access to the river.
- Retrofit the Union Street Dam to accommodate a whitewater park that maintains Boardman Lake water levels and acts as an invasive species barrier.
- Increase water flow to improve water quality and fish habitat.
- Create an aesthetic that balances both urban and natural qualities.

## SOLUTION

Union Street Dam's central location and need for renovation provides an exciting opportunity for Traverse City to create an urban playground for paddlers. The existing dam is modified to include a whitewater run while maintaining the elevation of Boardman Lake, blocking invasive species movement, and providing upstream passage for desirable fish. The improvements will increase public access to the river and provide an attraction to residents and visitors who seek whitewater for recreation, events and competition. The result is a community amenity and destination along the Boardman River that improves the ecology around the dam and stimulates the local economy.

To accomplish this, the existing spillway and fish ladder are replaced with a series of cascading boulder-lined pools that increase water flow and mimic a naturally flowing stream. Through the use of sluice gates, water is directed towards the whitewater course, towards the existing dam or split between both depending on the desired water flow; a setup that is similar to Confluence Park in Denver, Colorado. The final cascade in the series of pools would utilize a combination of a velocity barrier and a low-head barrier to block the passage of sea lamprey, while providing an exciting opportunity for kayak surfing (Great Lakes Fishery Commission, 2000). At lower flow levels, the park will provide recreational opportunities for less experienced paddlers as well as intermediate and expert users who come to the site for fitness and practice. At higher flows, the more powerful whitewater features will create a regional draw for intermediate and expert users and an exciting event for spectators (Anderson, 2012).

This area's design provides a variety of viewing options. Two pedestrian bridges cross the river and offer an up-close experience for spectators, tiered concrete steps and boulders line the waters edge, and there is space for temporary bleachers on the lawn on either side of the course.

Hosting events such as kayak competitions will engage the community, draw visitors from the region and be a positive economic driver. Empirical evidence shows that whitewater parks and improvements to river access can have significant, positive economic benefits for a community (Lacy, 2008). For example, the Clear Creek Whitewater Park in Golden, Colorado has a positive annual economic impact of between \$1.4 million - \$2 million and a similar park in Reno, Nevada has an annual \$1.8 million economic impact (Lacy, 2008).

For events and peak season use, the existing small building on the south side of the dam will be retrofitted and used for kayak rentals, concessions or other commerce, while enhancing the entry to the park. In addition, the parking lot has been modified to allow for ease of drop-off and pick up of kayaks, and Lay Park could be used as a staging ground for paddlers during large events. Cooperation with nearby property owners such as the United Methodist Church could work to accommodate overflow parking.

The aesthetics and materiality of the site will blend urban and natural features through the use of large boulders, riparian plantings and concrete terracing to help define the river's edge and prevent erosion. Visual access to the site from inside nearby residences and businesses was considered to ensure that pleasant views are maintained.

This innovative, added amenity serves two functions - recreational and ecological. Rock structures increase the flow of the river and improve trout and aquatic habitat, while a restored riparian edge further elevates the quality of the aquatic habitat and provides a buffer for stormwater runoff. In addition, rain gardens are placed at the top of steep slopes and along parking lot edges will slow stormwater flow of water and prevent erosion, while improving the quality of water entering the river. Paddlers and spectators in this area will not only be exposed to exciting sport but will also actively engage with an ecologically sensitive urban space.



Illustration 40: **WHITEWATER PARK SITE PLAN**  
NOT TO SCALE



## WHITEWATER PARK SITE PLAN

### **A. NORTHWEST OVERLOOK**

This entry point features seating walls with an overhead trellis, while offering views of the whitewater park. An accessible pathway transitions past viewing platforms toward the fishing deck at Union Street Dam.

### **B. PEDESTRIAN TUNNEL & VEHICULAR TURNAROUND**

The tunnel connects the proposed whitewater park to Hannah park under Union Street. A vehicular turnaround doubles as a place for small food carts, tables and chairs to enjoy the setting.

### **C. MAIN ENTRANCE**

The curb at this entrance is altered for ease of kayak drop-off. A small plaza surrounds the utility building which could be retrofitted for commercial use.

### **D. WHITEWATER PARK RUN**

Tiered steps and boulder edges line the run that features a series of drop pools. The flow and difficulty of the rapids will be determined by water levels and final engineering of the park.

### **E. ACCESSIBLE RIVER ACCESS**

Accessible river access ramps are used to enter and exit the river before and after the kayak run.

### **F. FISHING PLATFORM**

An improved fishing platform is cut into the base the of dam and supported by a retaining wall with railing.

### **G. STAIRWAY AND PATH**

A stairway from the overlook connects to a 10' path along rivers edge. A raised rocky bank and a low vegetated buffer prevent flooding in this area during high water events.

### **H. RAIN GARDENS**

Rain gardens line the northern edge of the parking lots to help mitigate stormwater runoff and prevent further erosion.

### **I. RIPARIAN EDGE**

A large riparian buffer around the dam area prevents further erosion and improves habitat.

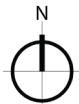
### **J. AMERICAN LEGION PARK**

This park is utilized as a secondary river access point to take pressure off of parking and reduce traffic near Lay Park. Features include a drop-off zone, kayak racks, and accessible ramp at rivers edge.



Illustration 41: **WHITEWATER PARK ENLARGED PLAN**

NOT TO SCALE



## WHITEWATER PARK ENLARGED PLAN

### **A. MAIN ENTRY**

An accessible ramp marks the main entry point to the run, but it can also be utilized as a takeout point for those who wish to bypass the whitewater.

### **B. SLUICE GATES**

The first rocky outcropping marks the beginning of the run and the point of the sluice gates. The gates are used to increase or decrease the water flow and are used in conjunction with the Union Street dam gates.

### **C. PENINSULA AND LAWN AREA**

A grassy peninsula and large lawn shape the outside of the run. These areas create a park setting and can be utilized for events and to stage temporary bleachers for competitions.

### **D. PEDESTRIAN BRIDGES**

Two pedestrian bridges at the beginning and end of the run provide pedestrian circulation across the river and offer a unique viewing area for watching the kayakers.

### **E. LAMPREY BARRIER**

The final and tallest drop in the run provides the largest rapids, while doubling as a sea lamprey barrier.

### **F. TERRACING**

Terracing along the run and a larger series of terraces at the finish provide river access and are optimal for viewing the kayakers in action.

Petoskey Whitewater Park (Petoskey, MI)



Confluence Park (Denver, CO)



Reno Whitewater Park (Reno, NV)





*Illustration 42: Whitewater Park Section.* The park has a blend of urban and naturalistic qualities and offers pleasant views to neighboring residents, as well as opportunities for community interaction and entertainment.

*Illustration 43: Whitewater Park.* A park setting with terraced steps and rock outcroppings provides an opportunity for visitors to relax and enjoy the whitewater park.





## IMPACT STATEMENT

Consistent strategies have been proposed throughout the project area that enhance specific features of the river corridor and create new amenities for Traverse City to enjoy. The Boardman River Plan's goals include: creating highly connected destinations, improving the ecological health of the river, and improving the overall sense of place. The implementation of the Plan would go a long way toward meeting those goals. Although the details of the design vary throughout the plan, responding to the specific character and needs of the river's adjacent areas, the impacts of those designs can be defined by six key categories.



**1. Vegetation as a driver for ecological health:** raingardens filter and treat stormwater before it enters the river, while improved quality of vegetation along the river reduces erosion and stabilizes banks.



**2. Public gathering spaces:** New plazas, river terraces and gardens provide additional places for people to congregate outdoors. Often,



these spaces bring users close to the riverfront, offering places for personal interaction with the water.

**3. Iconic urban destinations:** Key elements act as anchors for the newly revitalized Boardman River, drawing both visitors and residents through the improved pedestrian circulation system.



**4. Urban recreation:** Outdoor sporting venues offer opportunities for recreation within walking distance of Traverse City's downtown, attracting visitors and in some cases providing new sources of potential revenue for local businesses and entrepreneurs.



**5. Enhanced riparian habitat:** Small, simple, repeated ecological interventions work together to improve aquatic habitat along the river corridor.



**6. Linkages:** Improved circulation strategies facilitate the flow of people along the river corridor and through the city as a whole.

## CONCLUSION

From the Union Street Dam to the river's outlet at Grand Traverse Bay, the Boardman River Plan seeks to integrate the river into the fabric of Traverse City, revitalizing it into one of the defining elements of the dynamic urban area. Heavily influenced by extensive multi-scalar site analysis, this Plan provides a coherent, interconnected conceptual vision for the future of this historically vital waterway. The Plan recognizes the importance of both social and environmental factors, working to improve the riverfront in a contextually appropriate way that integrates the needs of the community with the functionality of a healthy river system.

The Boardman River Plan's environmental goals focus on improving the overall health of the river. This is accomplished through a sustainable approach to stormwater management, as well as the implementation of ecological interventions designed to enhance the river's health, support a dynamic community of aquatic organisms, stabilize eroding banks, and facilitate the continued management of the invasive sea lamprey. Rain gardens and permeable pavers are strategically located throughout the city to filter and slow stormwater, counteracting the effects of urban stream syndrome and reducing the amount of pollution and sediment entering the river. An emphasis on vegetation management along the river banks will stabilize slopes and reduce erosion, and the careful placement of stone elements and woody debris will encourage a thriving and healthy aquatic community. Finally, the whitewater park is designed to increase the flow of the river, while blocking the sea lamprey from migrating further upstream.

Throughout the Boardman River Plan, elements such as the whitewater park are carefully designed to create cultural and community spaces, while integrating the environmental principles discussed above. Key proposals such as the fishing pier, downtown terraces, warehouse district plaza, and whitewater park anchor the plan, while intermediate elements enhance area connections and re-imagine the entire corridor as a place where people want to be. The plan strengthens the river's legibility as a coherent whole, and draws both residents and visitors to its banks. Multi-use spaces encourage community gathering and can be utilized by area businesses in creative ways to increase in-town spending. By enhancing the visibility of the river throughout the city, the plan will improve community engagement with the Boardman and foster individual commitment to its future.

Although the City of Traverse City once turned to face away from the Boardman River, the city has recognized the benefits of turning back around to face this valuable amenity. The implementation of the Boardman River Plan would go a long way toward elevating the river's place in the city's identity. Visitors and residents alike would benefit from the increased emphasis on urban public space, recreation and environmental health resulting from the river's reintegration into the collective consciousness of the community.



## WORKS CITED

- Allan, J. David. "Upper Midwest Area: Boardman River, Traverse City Area, Michigan." American Rivers. (n.d.). Web: March 2012 Retrieved from <[http://act.americanrivers.org/site/DocServe/Great\\_Lakes\\_Upper\\_Midwest\\_Area.pdf?docID=1483](http://act.americanrivers.org/site/DocServe/Great_Lakes_Upper_Midwest_Area.pdf?docID=1483)>.
- Anderson, John. [Whitewater Course Designer.] Interview: 28 September 2012.
- Bacigalupi, Rob. [Deputy Director of the Traverse City Downtown Development Authority.] Interview: 16 March 2012.
- Bednarek, Angela T. "Undamming Rivers: A Review of the Ecological Impacts of Dam Removal." *Environmental Management*. 27:6 (2001): 803-814.
- Bisson, Peter A., Kathleen Sullivan & Jennifer L. Nielsen. "Channel Hydraulics, Habitat Use, and Body Form of Juvenile Coho Salmon, Steelhead and Cutthroat Trout in Streams, Transactions of the American Fisheries Society. (1988). 117:3, 262-273.
- Boardman River Historical Committee. *Currents of the Boardman*. 1982. Print.
- The Boardman – A River Reborn. *The Boardman: A River Reborn Project Fact Sheet*. 2010. Web. 20 January 2013.
- Burroughs, Bryan et al. "Boardman River Feasibility Study: A Report on the Boardman River Fisheries Existing Data." *Environmental Consulting and Technology, Inc.* 2009.
- The City of Milwaukee. *Milwaukee River Greenway Site Plan Review Overlay Zone Design Standards*. 25 May 2010.
- City of Baraboo, Wisconsin. "Riverfront Redevelopment Area Plan." August 2006. Web. February 2013.
- City of Traverse City. *Traverse City City Commission. City of Traverse City: Corridors Master Plan*. 2012. Print.
- City of Traverse City. *Traverse City City Commission. Traverse City Bayfront 2010*. 2010. Print.
- Department of Natural Resources. *Existing Uses and Recreational Opportunities. Boardman River Watershed*. 2008. Chapter 7. 8-9.
- Department of Natural Resources. "Boardman River Natural River Plan: Grand Traverse and Kalkaska Counties". 2002. Web. 14 April 2013.
- Downtown Traverse City. *Current Projects*. (n.d.) Web. 2 April 2013.
- Downtown Traverse City. *Parking Overview*. (n.d.) Web. 2 April 2013.
- Ervin, Tim and Todd Kalish. "Traverse City, MI: Boardman River Dams Project." *Great Lakes and St. Lawrence Cities Initiative*. (n.d.) Web: March 2012.
- Goody Clancy. "Jamestown Urban Design Plan Volume II: Design Guidelines." *New York Department of State*, August 2006. Web. February 2013.
- Gourdie-Fraser, Cornerstone Architects and Otwall Mawby, P.C. "200 Block East Front Street Alley Study." 2010.
- Great Lakes Fishery Commission. *Sea Lamprey Barriers: New Technologies Help Solve an Old Problem*. 2000. Web. 4 April. 2013
- Hill, Kristina. "Urban Design and Urban Water Ecosystems." in L.A. Barker (ed.), *The Water Environment of Cities*, Springer Science + Business Media, LLC. 2009.
- Kraimer, Ted. *Flyfishing the Boardman River in Traverse City*. *Current-works.com*, 2012. Web. January 2013.
- Lacy, Gary. "Conceptual Design Report for the Whitewater Recreation Improvements-Argo Dam Area." *Recreation Engineering and Planning*. 2008.



- Leach, M. L. A History of the Grand Traverse Region. Traverse City, 1884.
- Lutz, Karl J. Habitat Improvement for Trout Streams. Pennsylvania Fish & Boat Commission. 2007.
- National Oceanic and Atmospheric Administration. NOWData - NOAA Online Weather Data. (n.d.) Web. 20 January 2013
- National Register of Historic Places. Michigan - Grand Traverse County. Web. Retrieved March 2013.
- Norton, Mike. "Visitors Bureau President: 2012 "A Record Year" for Traverse City Tourism." PRWeb. 6 December 2012. Web. 13 January 2013
- Powers, Perry F. A History of Northern Michigan and its People. Chicago: The Lewis Publishing Company, 1912.
- Rails to Trails Conservancy. Trail of the Month: Traverse Area Recreation Trail. Rails To Trails, September 2005. Web. 19 Jan 2013.
- Soyring, Russ. [Director of Planning at the City of Traverse City.] Interview: 16 March 2012.
- TART Trails, Inc. About TART Trails. T.A.R.T. Trails, 2013. Web. 19 Jan 2013
- TART Trails, Inc. Strategic Plan. T.A.R.T. Trails, 2013. Web. 19 Jan 2013.
- TART Trails, Inc. TART in Town Cross-Town Route. T.A.R.T. Trails, 2013. Web. 19 Jan 2013.
- TART Trails, Inc. TART Trail. T.A.R.T. Trails, 2013. Web. 19 Jan 2013.
- TART Trails, Inc. TART Trails, Inc. 3-5 Year Plan. T.A.R.T. Trails, 2013. Web. 19 Jan 2013.
- TART Trails, Inc. Trails. T.A.R.T. Trails, 2013. Web. 19 Jan 2013.
- US Army Corp of Engineers. Monthly Bulletin of Great Lakes Water Levels: Lake Michigan-Huron Monthly Bulletin. 20 March 2013 from: <http://www.lre.usace.army.mil/greatlakes/hh/greatlakeswaterlevels/waterlevelforecasts/monthlybulletinofgreatlakeswaterlevels/index.cfm>
- U.S. Census 2012
- The Watershed Center Grand Traverse Bay. Fact Sheet: Invasive Species. Web. Retrieved April 2013.
- The Watershed Center Grand Traverse Bay. Grand Traverse Bay Watershed Implementation Project. September 2007. Web. March 2013.
- The Watershed Center Grand Traverse Bay. Grand Traverse Bay Watershed Protection Plan. December 2003.
- The Watershed Center Grand Traverse Bay, Ball Environmental Center and Great Lakes Environmental Center.
- The Boardman Lake Watershed Study – Grand Traverse County, Michigan. December 2003.
- Traverse City Convention and Visitors Bureau. Traverse City Area Festivals. (n.d.) Web. 29 March 2013.
- Traverse City Convention and Visitors Bureau. Historical Sites. (n.d.) Web. 23 March 2013.
- Walsh, Christopher, et.al. "The Urban Stream Syndrome: Current Knowledge and the Search for a Cure." *Journal of the North American Benthological Society*. 24:3, 2005.
- Weatherbase. Historical Weather for Traverse City, Michigan. (n.d.) Web. 19 January 2013.
- Wenger, Seth J., and Laurie Fowler. "Protecting Streams and River Corridors: Creating Effective Local Riparian Buffer Ordinances." Carl Vinson Institute of Government. The University of Georgia, 2000. Web. 2 April 2013.
- Wesche, Thomas A. "Stream channel modifications and reclamation structures to enhance fish habitat." *The restoration of rivers and streams: theories and experience* (1985): 103-163.

## WORKS CONSULTED

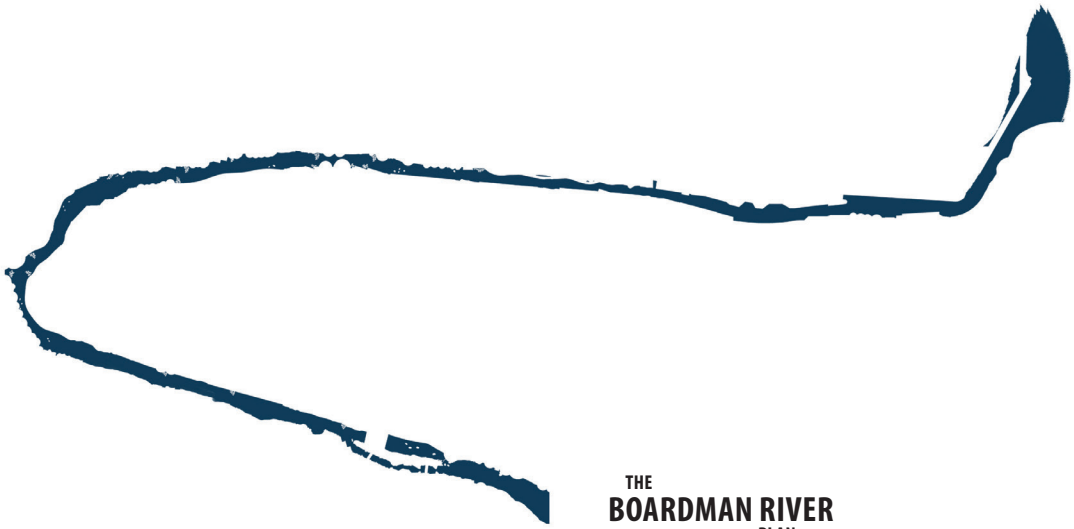
- Berrien County Parks and Recreation Commission. Silver Beach (n.d.). Web 2 April 2012 from <<http://www.berriencounty.org/parks/?dept=1&pid=193>>.
- Best, James L. "Sediment Transport and Bed Morphology at River Channel Confluences". *Sedimentology*. 1988. Volume 35, p. 481-498.
- The Boise River Recreation Park. Project Info. City of Boise, 2012. Web: 1 April 2012.
- The City of Boise Parks and Facilities. Greenbelt Information. City of Boise, 2012. Web: 1 April 2012.
- The City of Milwaukee Department of City Development. Milwaukee RiverWalk Guidelines. Division of Planning, 1993. Web: 31 March 2012.
- The City of Milwaukee Legislation #060578 V. 1. Substitute resolution approving a public-private cost sharing policy for future Riverwalk development within Riverwalk Site Plan Overlay Districts. Approved 9 August 2006. City of Milwaukee. Web: 31 March 2012.
- The City of Saint Joseph Park Advisory Board. Parks and Recreation Master Plan 2011-2015. 2010. Web: 2 April 2012.
- The City of Saint Joseph. Tour of St. Joseph, Michigan. 2009. Web: 2 April 2012.
- Corburn, Jason. "Bringing Local Knowledge into Environmental Decision Making: Improving Urban Planning for Communities at Risk." *Journal of Planning Education and Research*. 22.420 (2003): 420-433. Print.
- Conservation Resource Alliance. The Boardman: A River Reborn—1st Quarter 2012 Activities and Status Report. 2012.
- Great Lakes Fishery Commission. Great Lakes Fishery & Ecosystem Restoration Program Project Summaries. Detroit: US Army Corps of Engineers, 2011.
- The Greenway Foundation. "River Vision Implementation Plan (RVIP)." 2010. Web: March 2012.
- Largent, Steven. [Boardman River Program Coordinator.] Interview. 16 March 2012.
- Marcucci, Daniel J. "Landscape history as a planning tool." *Landscape and Urban Planning*. 49 (2000): 67-81.
- Marsh, William M. *Landscape Planning, Environmental Applications*. 5th. Hoboken, NJ: Wiley, 2010. Print.
- Nassauer, Joan I. "Culture and changing landscape structure." *Landscape Ecology*. 10.4 (1995): 229-237.
- National Park Service. *Rivers, Trails, and Greenway Corridors: A Resource Book*. U.S. Department of the Interior National Park Service. Fourth Edition. 1995
- Searns, Robert M. "Denver Tames the Unruly Platte: A Ten-Mile River Greenway." *Landscape Architecture*. 70.4 (July 1980): 382-386.
- Spirn, Anne Whiston. *The Granite Garden: Urban Nature and Human Design*. Basic Books, USA, 1984.

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THE  
**BOARDMAN RIVER**  
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