

# DULUTH LAKEWALK RENEWAL AND BRIGHTON BEACH RESILIENCY PLAN

Duluth, Minnesota

Entry Category: Planning and Urban Design

## Abstract:

The Lakewalk is a beloved and heavily-used trail system running along the shore of Lake Superior in Duluth. It faces severe impacts from storm damage and heavy use. The Duluth Lakewalk Renewal and Brighton Beach Resiliency Plan focuses on implementing sustainability goals by "retreating away" from the lake and "re-wilding the landscape" to its natural North Shore Coastal Forest ecology. Design solutions address shoreline protection, accessibility improvements, and create spaces for reflection and gathering. This plan is tremendously important for both the Lakewalk itself and as a model for how we plan resiliency into our landscapes throughout the state.

## NARRATIVE: DULUTH LAKEWALK RENEWAL AND BRIGHTON BEACH RESILIENCY PLAN

The Lakewalk is one of the most beloved and heavily used trail systems in Duluth, Minnesota, beginning in Canal Park and running nearly eight miles along the shores of Lake Superior to Brighton Beach. The surrounding landscape is extraordinarily beautiful and is unique in its proximity to Lake Superior's waterfront. However, like many of our state's most popular landscapes, the trail is facing devastating impacts from storm damage and heavy use. The landscape architecture team's role in shaping a plan that will protect this resource for decades to come is tremendously important for both this project and as a model for how we plan resiliency into our landscapes throughout the state.

While Duluth is considered a "climate refuge," it is still impacted by climate change with swings in lake levels and more frequent and powerful storms rolling in from Lake Superior. From October 2017 to October 2019, six powerful storms occurred that produced hurricane-force winds and rising wave surges that battered the landscape and sent large rocks and pavement flying inland. These storms not only overturned a large portion of the Lakewalk and Brighton Beach Road, but also devastated the strength of the City's protective shoreline barrier. In addition, the trail is in poor condition due to heavy pedestrian use as Duluth grows as a tourist destination. Social trails (informal footpaths caused by repeated off-trail use) cut through delicate ecosystems and increase erosion in sensitive areas.

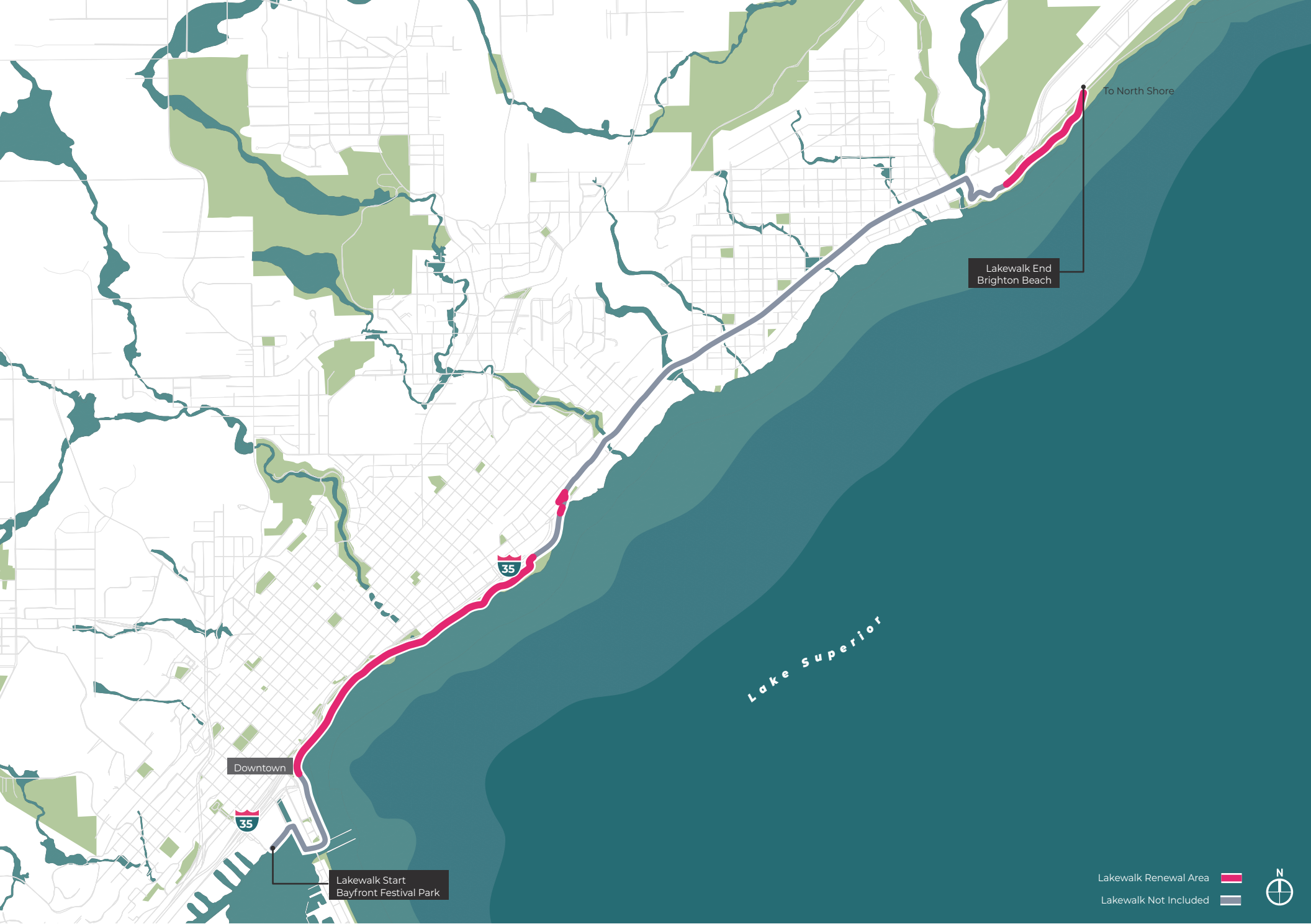
The landscape architects, in collaboration with City staff and their coastal engineer, developed the Duluth Lakewalk Renewal and Brighton Beach Resiliency Plan to establish revitalization goals and create conceptual designs for the corridor. Design themes focused on implementing sustainability and resiliency by "retreating away" from the lake and by "re-wilding the landscape" to its natural condition. By restoring as much of the shoreline as possible to North Shore Coastal Forest, the City reduces maintenance needs while reestablishing a more sustainable and resilient landscape. Some coastal areas will require significant large-scale infrastructure such as walls and armored stone to resist the huge forces of the lake, and some areas will remain more conventional with mowed grass, but the primary landscape will focus on vegetation restoration using native plant community typologies.

Another main priority was providing public access to the lakeshore, while trying to balance protecting natural resources and preserving the natural character of the area. There are roughly 53 social trails along this section of the Lakewalk. In order to prevent further erosion, while simultaneously providing access to the water's edge, the landscape architects recommended that approximately half of the existing social trails be permanently closed and that the remaining ones be formalized and restored with a more sustainable approach. The team also evaluated and reconfigured the trail alignment in three locations to better accommodate the accessibility needs of all users.

In addition to the overall trail alignment and coastal infrastructure areas, the project includes eleven Pause Areas along the corridor and the redevelopment of Kitchi Gammi Park and Brighton Beach. The Pause Areas are key nodes or areas of interest where there is ample parkland and additional open green space for gathering and reflection. Recreational activities are either already occurring at these locations or are newly proposed and include picnicking, overlooks, and small group gatherings. Each node is unique, but they feature furnishings, shelters, and similar amenities, coupled with areas for coastal forest restoration, rain gardens, and other green infrastructure.

At Kitchi Gammi Park and Brighton Beach, the team focused on eliminating lawn, restoring the park back to a North Shore Coastal Forest and daylighting the natural drainageways to be key site features with a dynamic stream channel design that changes with the natural flux of the shoreline. Special attention is paid to opportunities for the public to directly access the lake with beach access pockets and kayak launches. Repeating design themes are used to increase user legibility and align with the broader goals of resiliency, equity, and access.

The Duluth Lakewalk Renewal and Brighton Beach Resiliency Plan has already gained significant support from the community and the many agencies involved in its creation and implementation. The landscape architecture team, along with the City's coastal engineer, are currently preparing documents for a 2022 construction based on designs included in this plan for Brighton Beach and a portion of the Lakewalk Trail. This transformative and award-worthy plan will create a resilient future for this beloved place, and act as a model for places facing similar challenges.



The beloved Lakewalk Trail runs for nearly eight miles along the shoreline of Lake Superior from Canal Park to Brighton Beach. It is integral to Duluth's local character, linking iconic landmarks, weaving through unique landscapes, and providing stunning views of the lake. This project focused on the "Lakewalk Renewal Area."





Of Duluth's 16.9 miles of lakeshore, almost half, or

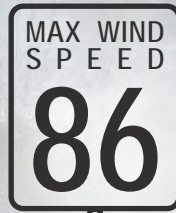
**7.25 miles** are part of the Lakewalk



The City of Duluth receives **6.7 million visitors a year**  
That's equal to the populations of Minnesota, North Dakota, & South Dakota combined



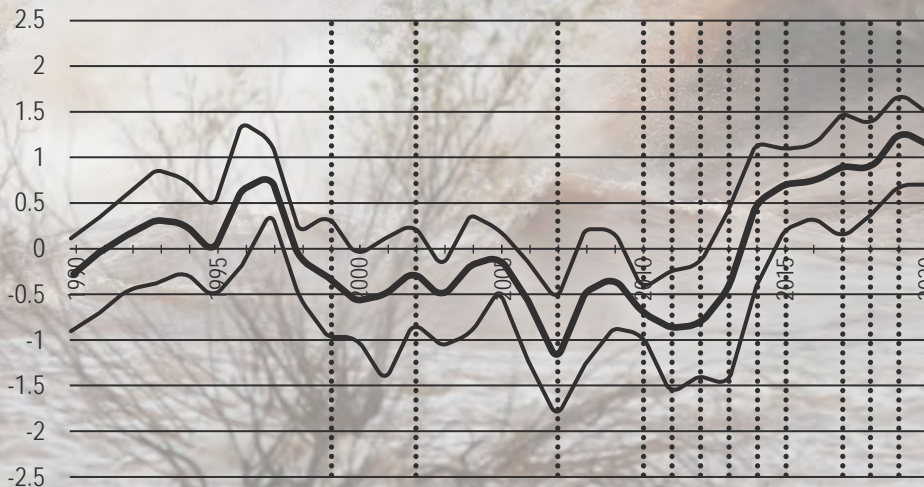
**20 foot high waves** are typical during storm events, equal to an average two story home



**86 miles per hour** recorded during the October 2018 storm event



**\$25 million** needed to recover & rebuild lakeshore infrastructure



Upper Bound  
**Lake Superior average water level**  
Lower Bound

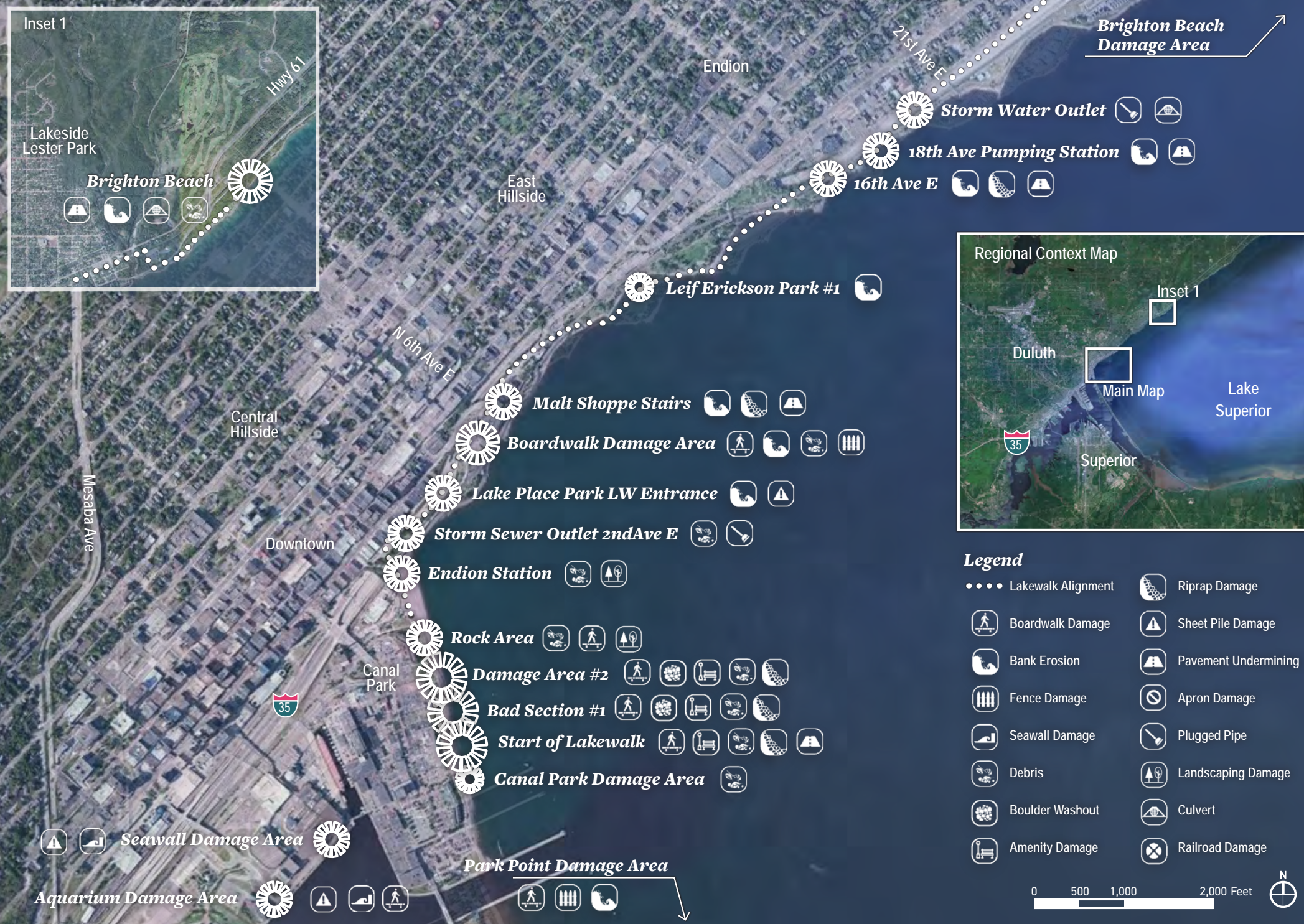
The past decade's **increase in storm event frequency** has occurred concurrently with Lake Superior sustaining **historic high water levels**, maximizing shoreline impacts

.... **Storm Event** (NOAA Storm Event Database entries of flood, lakeshore flood, strong wind, or heavy rain in St. Louis County)

Photo courtesy of Duluth News Tribune

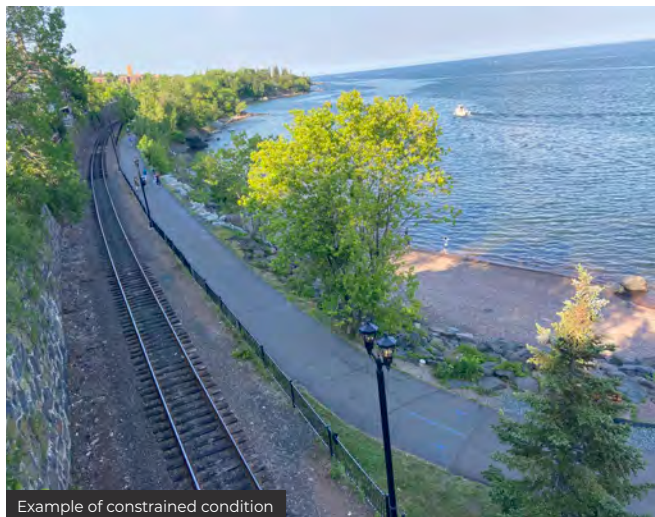
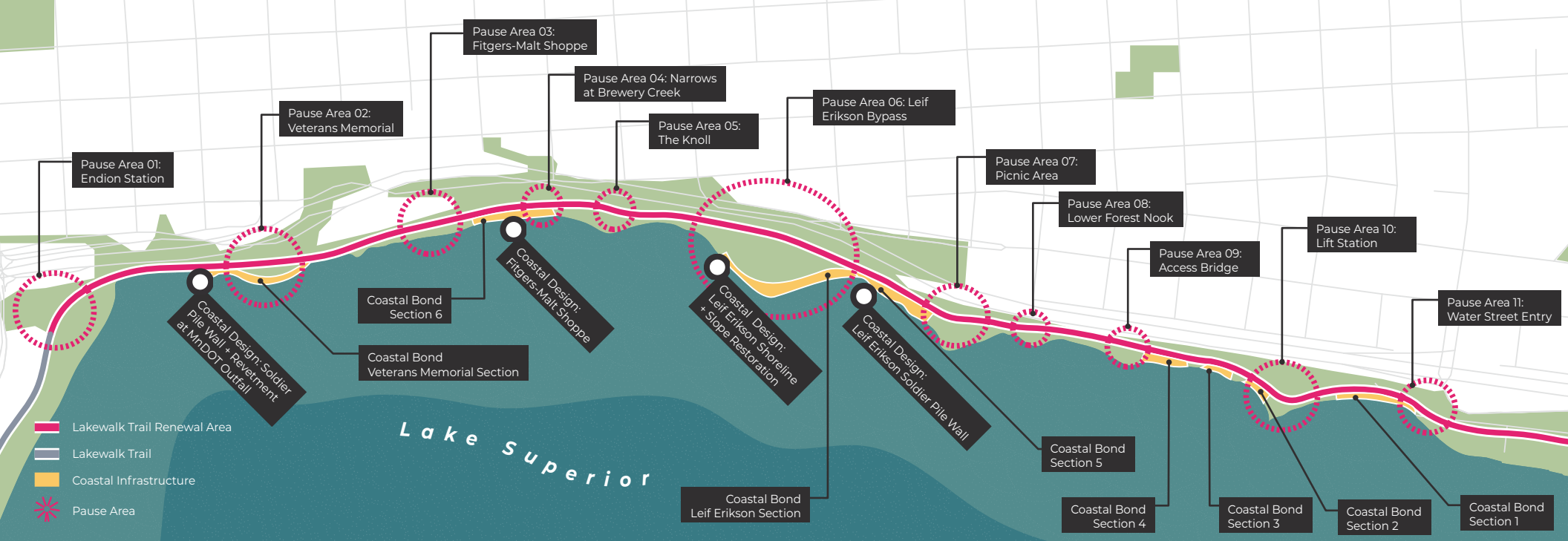
Lake Superior is famous for gale force windstorms that sink ships and living in harmony with this Great Lake can be difficult. Recent record high-water levels coupled with more frequent powerful storms caused significant damage to the Lakewalk Trail, while increased traffic has impacted its sensitive ecology.



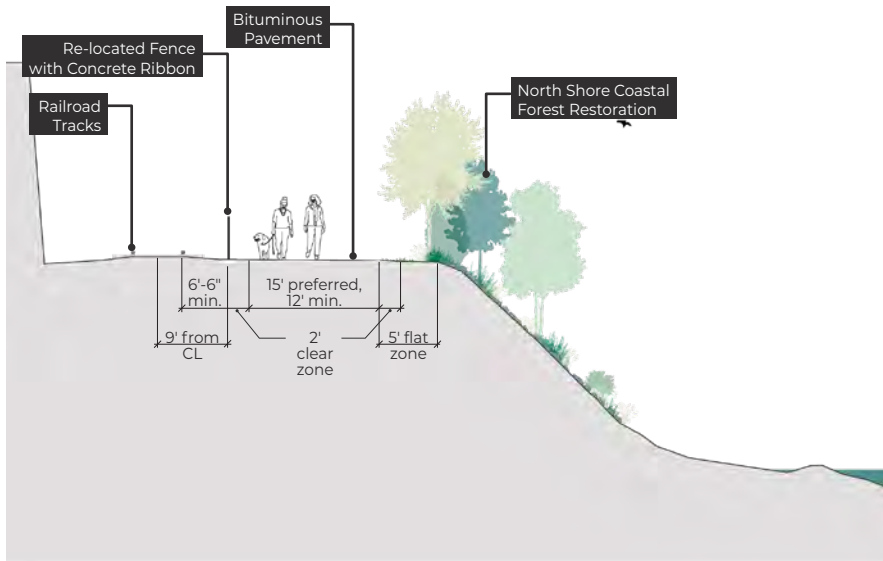


A damage inventory from one storm included flying boulders and debris, pavement undermining, boardwalk, fencing, and site furnishings displacement, embankment erosion, as well as destruction to other significant infrastructure components. The plan for revitalization aims not just to repair damage, but to build a more resilient future for the trail.

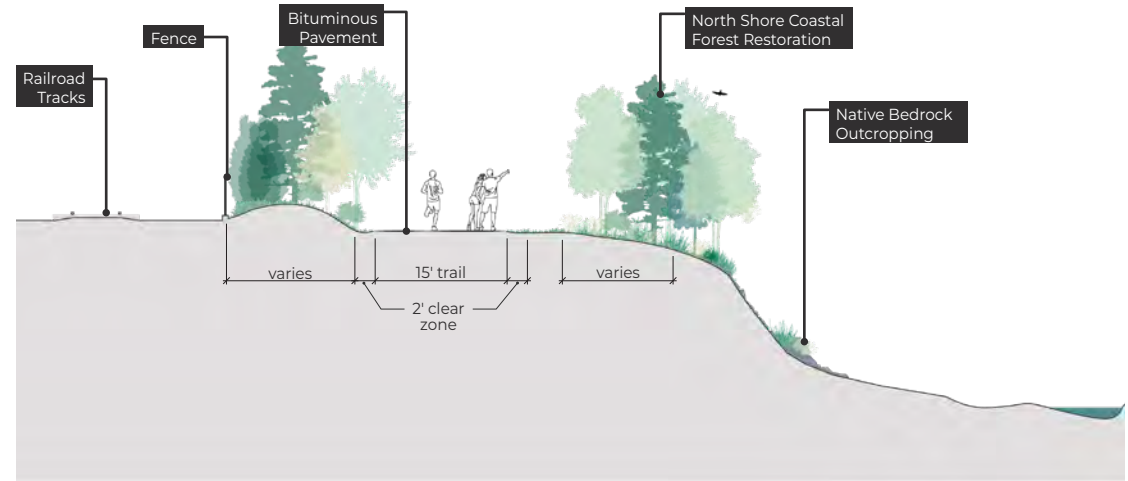




The Lakewalk Renewal Area is focused on 1.7 miles of trail improvements, which include eleven “pause areas” along the corridor. This portion, close to downtown and the Canal Park entertainment district, experiences heavy visitor use and congestion. Six shoreline revetment sections will also be addressed by the coastal engineer.



Constrained Condition



Wide Condition



Split Condition

Trail design standards were developed for three trail conditions: constrained, wide, and split. The design promotes habitat and coastal forest restoration and offers secondary routes, allowing pedestrians to get closer to the shoreline for reflection and discovery.



## Planting Scheme

Throughout the Lakewalk corridor and at Brighton Beach and Kitchi Gammi park, the overall recommended planting scheme will be to restore and re-wild the shoreline to its original condition as a North Shore Coastal Forest. This strategy will help lower the City's maintenance needs while installing a more sustainable and resilient landscape. Although some areas will remain the same and will be reserved for traditional park-like mowed grass, the primary landscape terrain surrounding the Pause Areas will focus on vegetation restoration using native plant community typologies. A maintenance plan will be developed to ensure the success of the restoration areas by controlling



invasive species and managing plant growth throughout the establishment period.

In the following pages illustrating the enlarged Pause Area preliminary designs, the recommended planting zones are color coded by plant community and represent an all native palette. When each Pause Area is ready for final design, a detailed planting plan will be designed and implemented. Below are the descriptions of each of the plant communities along with their dominant species.

### Native Plant Community Types for North Shore Coastal Forest

The North Shore of Lake Superior's combination of cool summer temperatures and shallow soil has led to a unique coastal forest community. Below are the native plant communities that can be found within a North Shore Coastal Forest.

#### Upland White Cedar Forest

White Cedar is the dominant canopy tree, followed by quaking aspen, paper birch, balsam fir, white spruce, and some white pine. Starflower, bluebead lily, and wild sarsaparilla are common plants in the ground layer.

#### North Shore Spruce-Fir Woodland

This community's open tree canopy is composed of balsam fir, white spruce, paper birch, and black spruce. The forest floor is covered by many species of lichens and mosses. The soil is thin with a lot of exposed bedrock. Low shrubs like blueberry, and bush honeysuckle are common. Additional herbaceous plants include Canada mayflower, bunchberry, and large-leave aster.

#### Lake Superior Bedrock Shrubland

This subcanopy community consists of patchy vegetation of shrubs, wildflowers, grasses, sedges, lichens, mosses that are interspersed among rocky outcrops, cliffs and scattered trees. Many plants are stunted by the thin soil. Common shrubs include juneberry and hawthorn species. Trees include balsam fir, white spruce, paper birch and mountain ash.



### Additional Plant Communities

#### Shrubland and Slope Stabilization

This is a mixture of plants with a base matrix of the Lake Superior Bedrock Shrubland species, but includes more shrub and under story species to help stabilize steep slopes. Woody shrubs include, willows, dogwoods, and early wild rose. Where this community is already existing along the shoreline, the new designs will strive to preserve as much of it as possible as the established plants are already stabilizing the slope.



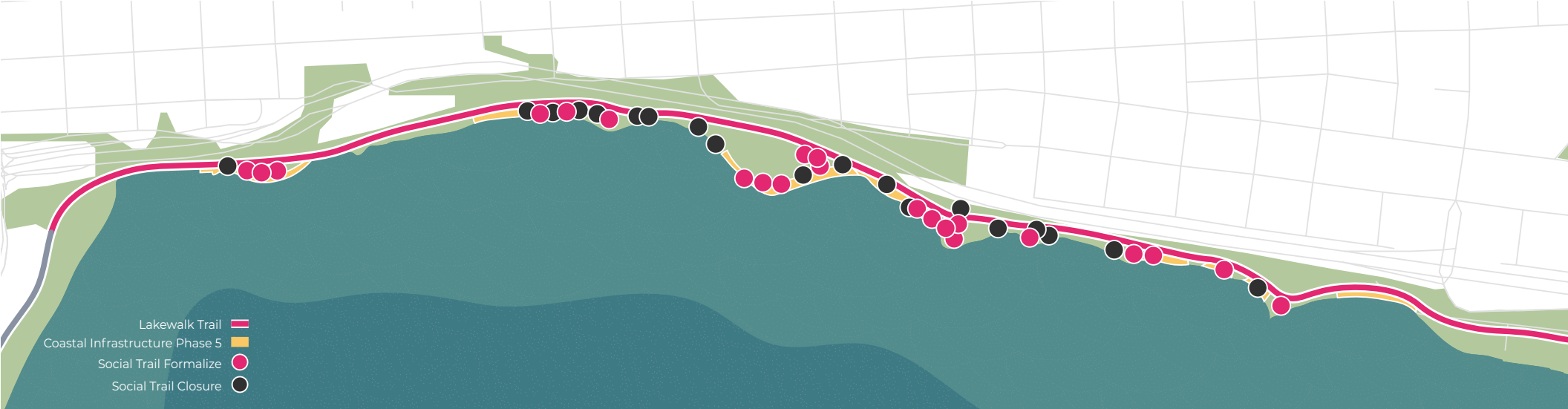
#### Mowed Turf Grass

In programmed areas and along the 2' clear zone on either side of the trail, a drought tolerant low mow turf grass mix will be used. A low mow grass allows for intermittent mowing but also can withstand more frequent mowing when needed.



The North Shore's combination of cool summer temperatures and shallow soils results in unique coastal forest plant communities. The planting strategy includes restoring and re-wilding the shoreline to its original condition as a North Shore Coastal Forest built around four native plant community types.





A variety of characteristics were considered in assessing 53 existing social trails for potential closure, including destination, trail configuration, slope, location in relation to pause areas, and existing conditions like erosion. Maintaining beach access points and overlooks were prioritized, and some key trails were realigned to meet ADA standards.



Landscape improvements at Endion Station will enhance the current use and circulation patterns as a main entry point to the Lakewalk. Key design features include maintaining the open programmable lawn, refining redundant pathways, improving trail connection points, and allowing for a future Peace Memorial and/or public art display.





Bench



Picnic Table



Play Possibility

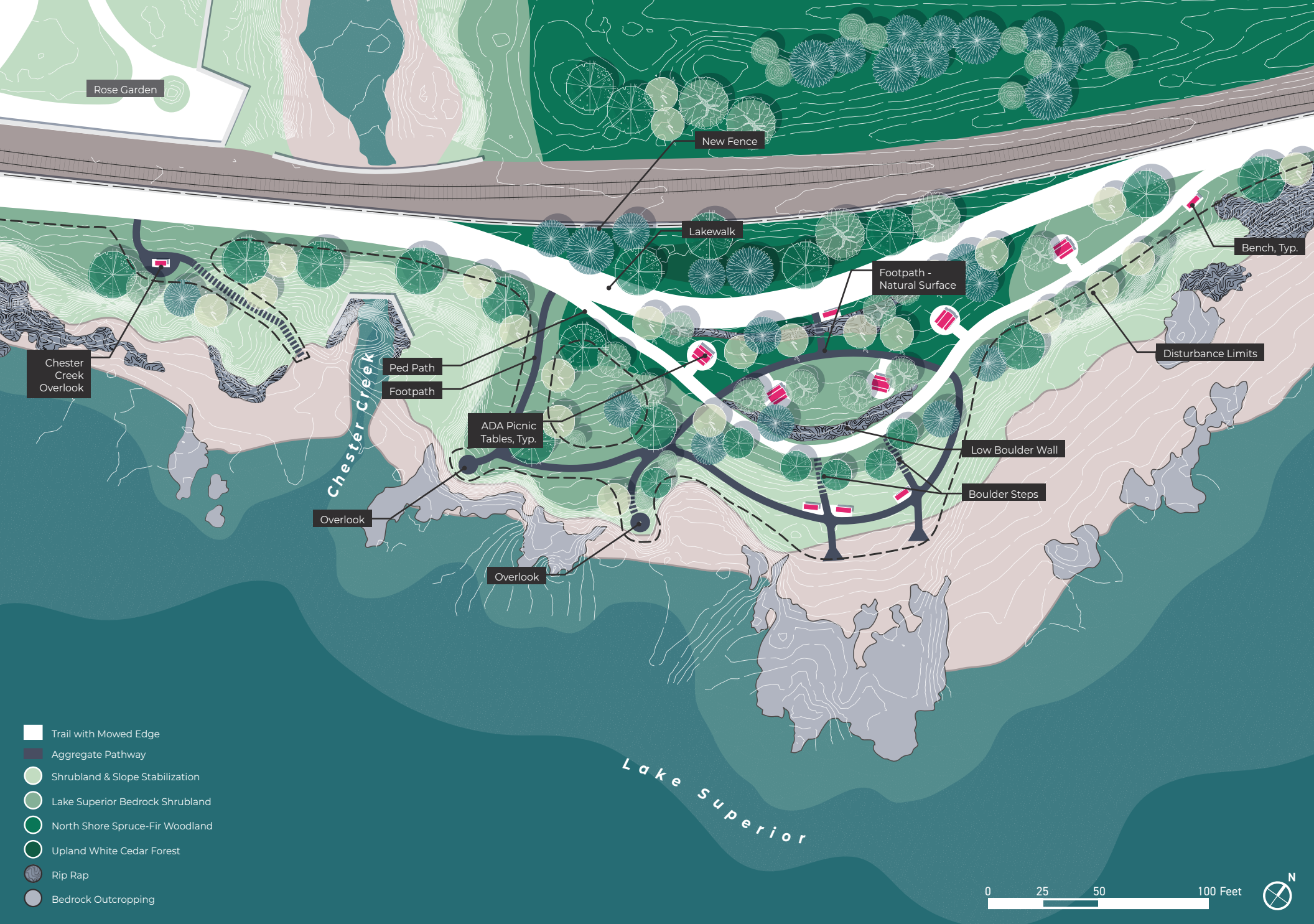


Play Possibility

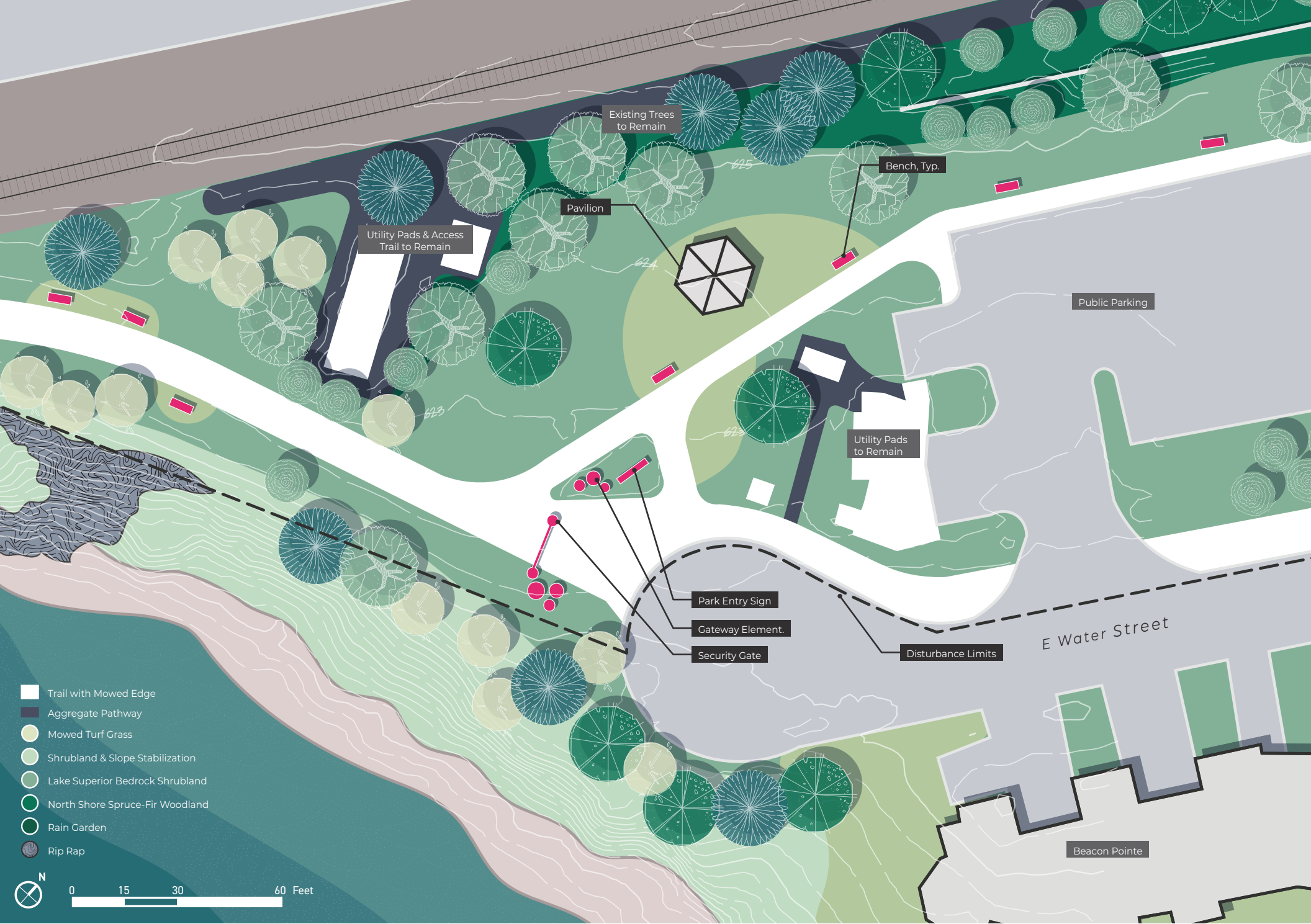


The design for the Pause Area at Fitgers-Malt Shoppe strives to create a destination with flexible areas to rest, eat, play, and connect with local businesses above the Lakewalk, while utilizing a natural material palette that celebrates Lake Superior and its rocky shoreline.



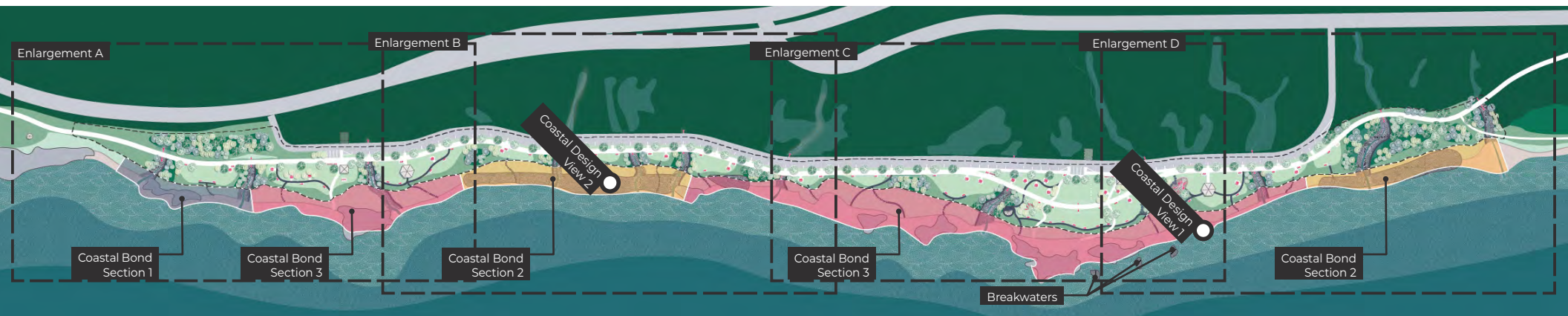


The trail upgrades at the popular picnic node near Chester Creek will improve accessibility along the primary route, and will include a commuter bypass lane to avoid accidents and congestion. A spur trail will provide an opportunity for forest restoration surrounding individual picnic nooks.



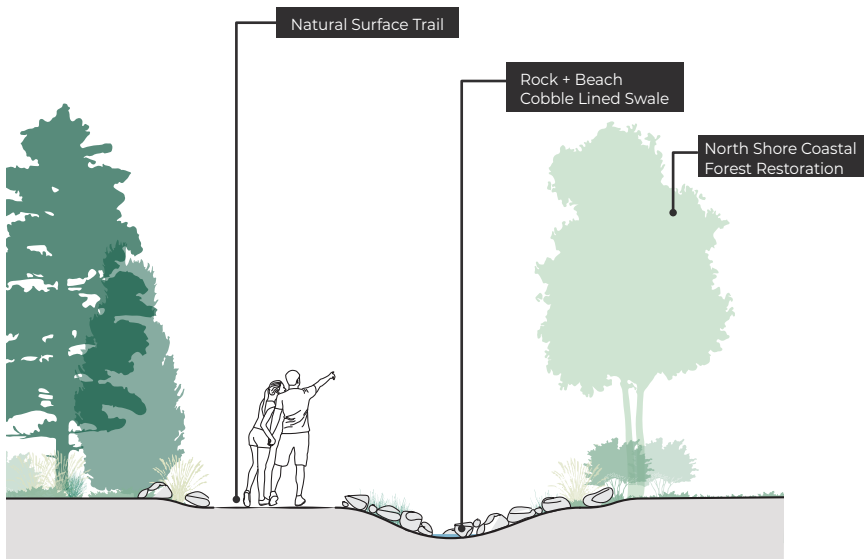
Landscape improvements at the Water Street Trailhead will enhance the Lakewalk's eastern entrance by creating a new gateway element at a more central location to mark the start of this trail section. Re-wilding the surrounding landscape will also reduce mowing maintenance and offer more shading of impervious surfaces.





The same storms that damaged the Lakewalk did significant destruction to the roadway at Brighton Beach and the park has been temporarily closed. A new one-way road and Lakewalk Trail extension will focus on retreating away from the lake while rewilding landscaped areas in between.





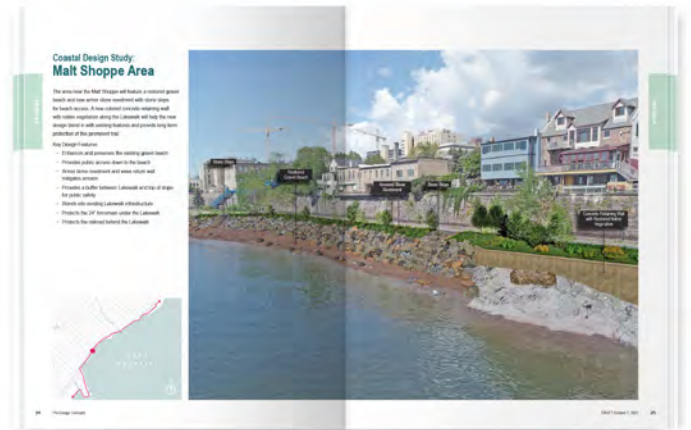
Design features at Brighton Beach also include daylighting stormwater into rock cobble swales, carving in beach access pockets, implementing carriage walks to reduce erosion and improve tree health, and designing a dynamic shoreline with the coastal engineers so the shoreline can shift and change with the conditions of the lake.



# DULUTH LAKEWALK RENEWAL *and* BRIGHTON BEACH RESILIENCY

Pre-Design Concepts

October 7, 2021



The Duluth Lakewalk Renewal and Brighton Beach Resiliency Plan has gained significant support as it strives to protect this unique community asset and tourist destination for future generations. Construction is planned to begin summer of 2022, and this guiding document will help secure future funds for ongoing restoration efforts.