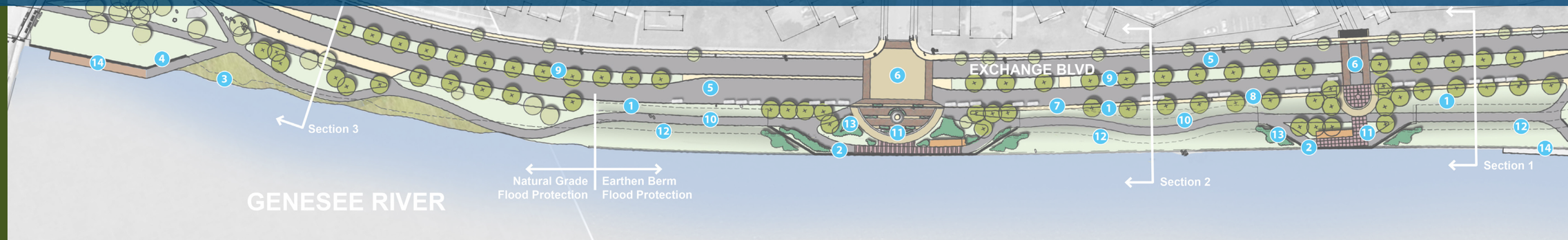
WEST RIVER WALL MASTER PLAN

planning and preliminary design

ROCHESTER, NEW YORK | JANUARY 2015



City of Rochester

Bergmann associates
architects // engineers // planners

acknowledgments

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City of Rochester Mayor

The Honorable Lovely A. Warren

Citizen Advisory Committee

J.B. Afoh-Manin	19th Ward Nieghborhood Association
Steve Baldwin	Corn Hill Nieghborhood Assciation
John Borek	Sector 4 Community Development Corporation
Nolia Brook	PLEX
Roger Brown	Rochester Regional Community Design Center
John Comato	
John Curran	PLEX-Southwest Rochester Riverfront
Dan Demarle	Location 19
John DeMott	Sector 4 Community Development Corporation
Richard Desarra	Rochester Bicycling Alliance
Steve DiMarzo	Mark IV Enterprises
Larry Francer	Landmark Society
Dennis Fronheiser	Genesee Waterways Center, Rochester
	Community Inclusive Rowing
Rob Goodling	Corn Hill Nieghborhood Assciation
Dorian Hall	PLEX
Pat Jackson	SWAN
Robert Lauterbach	Sanford St. Block Club
Jeffrey Martin	
Collen McCarthy	University of Rochester
Henry McCartney	Corn Hill Nieghborhood Assciation
Dawn Noto	South West Common Council
Gregory Parris	Church of Love
Victoria Schmitt	Corn Hill Navigation
Jon Schull	Rochester Bicycling Alliance
Nick Tamburrrini	Corn Hill Nieghborhood Association
Robert Walker-Smith	South West Area Neighborhoods

Technical Advisory Committee

Ambrose Barbuto	NYS Canal Corporation
JoAnn Beck	City of Rochester
Doug Bensen	City of Rochester
Amy DeGaetano	NYS Department of State
Scott Duell	Department of Homeland Security / FEMA
Jim Farr	City of Rochester
Tim Frasier	NYS Canal Corporation
Thomas Hack	City of Rochester
Karis Manning	NYSDEC Region 8
Rick Manns	NYS Canal Corporation

Project Manager - City of Rochester

Thomas Hack, P.E., Senior Structural Engineer

Consultant

Bergmann associates
architects // engineers // planners , Prime Consultant

Arcadis

Fisher Associates

Popli Design Group

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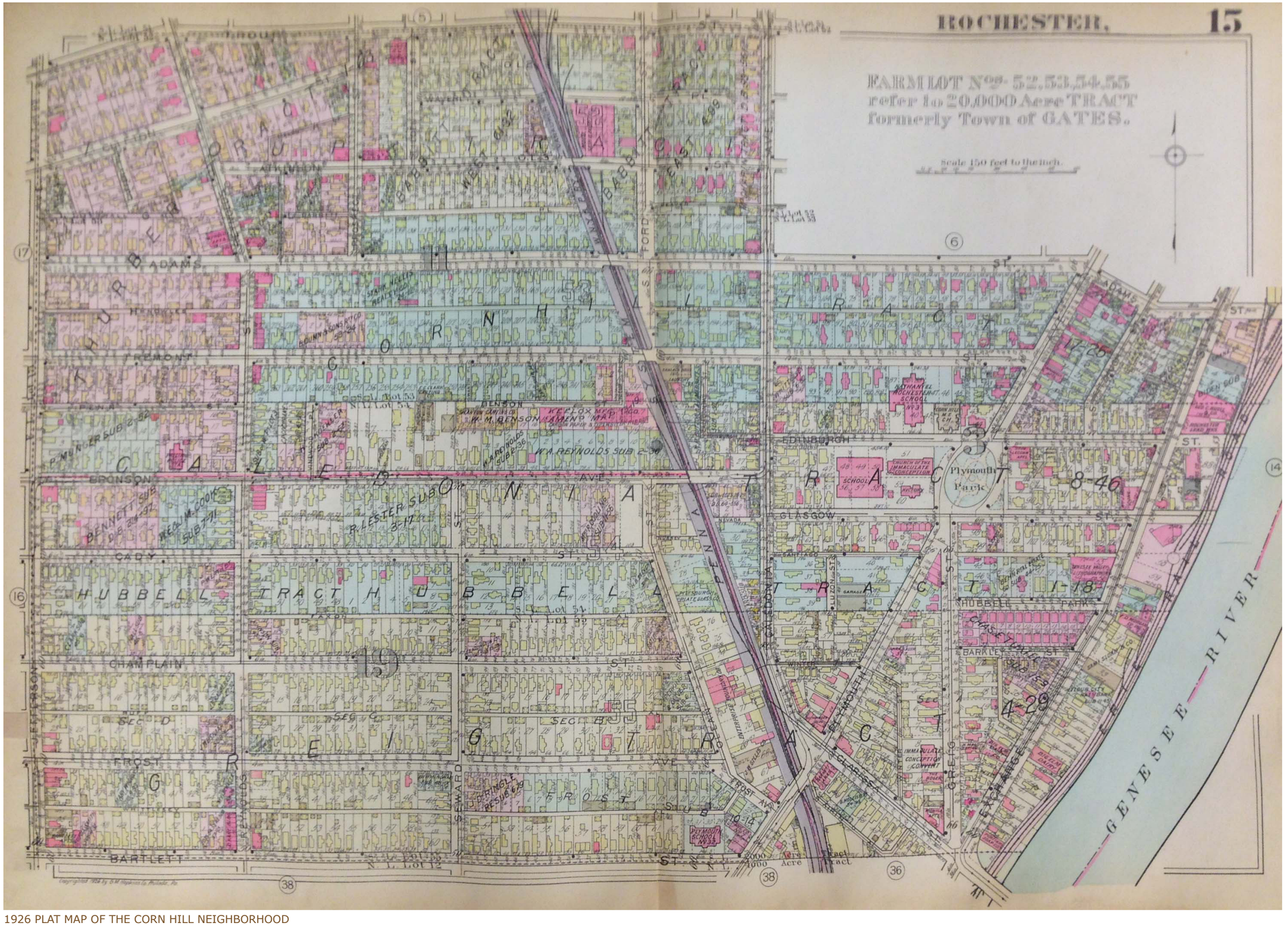


1926 PLAT MAP OF THE CORN HILL NEIGHBORHOOD

introduction

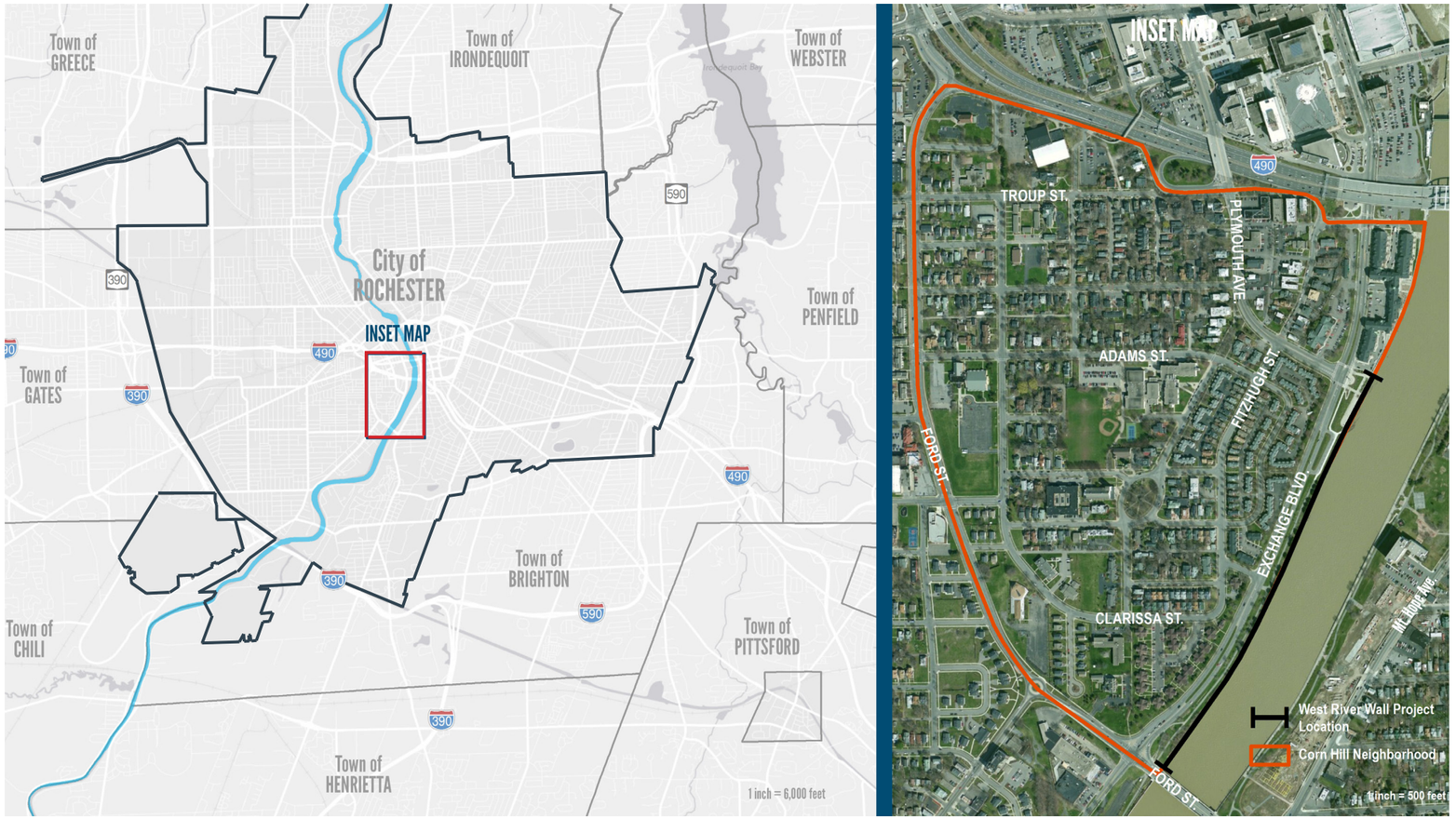
Project History

The City of Rochester is actively planning for and investing in the redevelopment and modernization of its waterfront. Plans and investments, such as the Genesee South Corridor Development Plan, Corn Hill Vision Plan, Local Waterfront Revitalization Plan, Vacuum Oil Brownfield Opportunity Area, redevelopment at Brooks Landing, Corn Hill Landing, University of Rochester student housing, Erie Harbor Park, and reconstruction of the East River Wall and the Ford Street Bridge are some of the primary private and public projects redefining and reshaping the city's relationship with the Genesee River.

As part of this ongoing effort, the City of Rochester, with a matching grant from the New York State Department of State, has undertaken a study to evaluate a 2,200 foot stretch of the West River Wall (and approximately 3.7 acres of adjacent green space) located on the west side of the Genesee River, between Plymouth Avenue and Ford Street, and directly south of Corn Hill Landing.

The West River Wall was constructed in 1918 to facilitate shipping and commercial activities along the Genesee River, while also serving to protect the adjacent neighborhoods from river flooding. Corn Hill, established along the west side of the river in the early 19th Century, is the oldest neighborhood in Rochester. The neighborhood's early growth and development were directly influenced by its proximity to the Genesee River and the opening of the Erie Canal in 1825.

The West River Wall was considered an accredited flood protection structure until 2008 when the Federal Emergency Management Agency (FEMA) developed revised flood maps for Monroe County, including the Corn Hill area. As part of that process, FEMA de-accredited the West River Wall (in part due to its condition), thus triggering new flood insurance requirements for some property owners. Since its importance as a flood control structure no longer meets FEMA guidelines, the wall has become less important as a flood protection measure and is now a physical and visual barrier, separating the community from the Genesee River waterfront.



PROJECT LOCATION MAP

VIEW OVER TOP OF RIVER WALL LOOKING EAST

2012 CORN HILL COMMUNITY VISION PLAN

Project Goals and Outcomes

The primary goals of this project are to recommend a flood protection solution within the study area that supports the community's objectives to preserve natural and historic features, improve visual access to the river, and improve physical access to the river. The project also seeks to interpret the history of the area while establishing an accessible water and land-based recreational resource for the community.

The specific outcomes of this report are the following:

1. A master plan for improving public spaces and enhancing physical / visual access to the Genesee River;
2. Determination of the base flood elevation of the Genesee River within the project study area;
3. Evaluation of the condition of the West River Wall; and
4. Recommendation for a cost-effective solution that provides flood protection and supports the master plan.

In addition to the above outcomes, the City has begun a parallel effort to prepare a Letter of Map Revision (LOMR) for the purpose of revising the base flood elevation. The LOMR will be submitted to FEMA and if accepted, some properties in Corn Hill may have reduced flood insurance premiums. The LOMR process is described in more detail in the Implementation section of this report.

The balance of this report and supporting documents describe the analysis, evaluation of alternatives, and master plan recommendation completed for this project. In addition, Appendix E includes 50% Design Drawings for the recommended flood protection structure.

Project Partners

This project was funded in part by the New York State Department of State, which awarded a matching grant to the City of Rochester to evaluate potential public space improvements to the waterfront as well as reasonable reconstruction alternatives for the West River Wall. Project partners included:

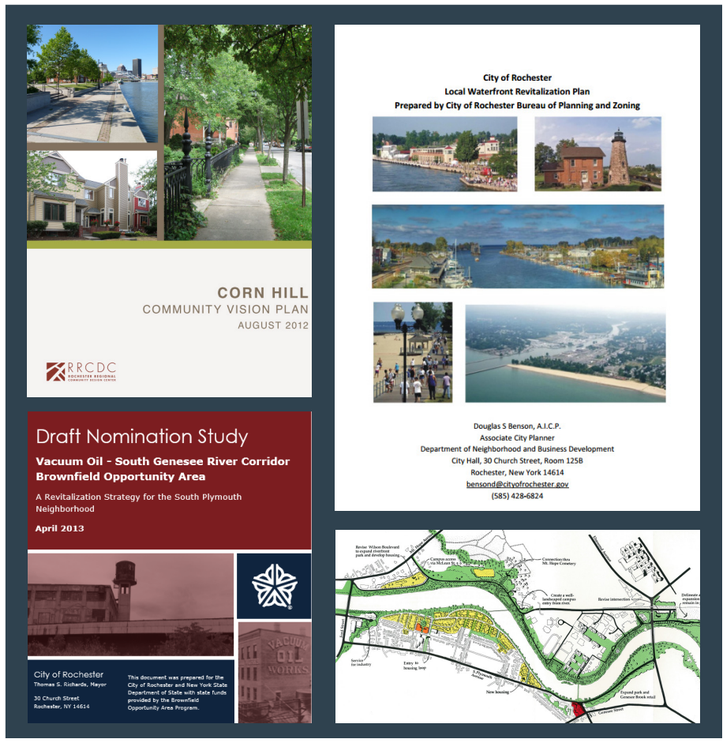
- The New York State Canal Corporation (NYSCC), which owns and maintains the River Wall. The section of the Genesee River from its intersection with the Erie Canal in Genesee Valley Park north to the Court Street Dam is part of the NYS Canal System and the NYSCC maintains a navigable channel in this section of the river;
- The New York State Department of Environmental Conservation (NYSDEC), which regulates the environmental quality of water bodies in New York State, including the Genesee River;
- The Federal Emergency Management Agency (FEMA), which oversees the National Flood Insurance Program and identifies flood hazard areas through its Risk Mapping, Assessment and Planning program;
- The City of Rochester, which owns and maintains the vacant lands between the River Wall and Exchange Boulevard;
- The PLEX Neighborhood, which is located immediately south of the project location;
- South Wedge Planning Committee, located on the East side of the Genesee River; which is focused on making the South Wedge a great place to live, work, and play;
- The Corn Hill Neighborhood Association, which is actively involved in the planning and revitalization of the waterfront; and
- Mark IV Enterprises, developer of Corn Hill Landing.

Related Planning Efforts

Over the last few decades, both public and neighborhood entities have developed several plans and design concepts for the Corn Hill area and the south Genesee River corridor. These include:

- Genesee River South Corridor Land Use and Development Plan (1986)
- Local Waterfront Revitalization Plan (1990)
- New York State Canal Recreationway Plan (1995)
- Erie Canalway National Heritage Corridor Preservation and Management Plan (2006)
- Corn Hill Community Vision Plan (2012)
- Vacuum Oil Brownfield Opportunity Area Plan (2013)
- Local Waterfront Revitalization Plan Update (Expected completion June 2015)

Though the LWRP update is not scheduled for completion until June 2015, it is noted that the existing LWRP Project C.5 – Regional Trailways (Genesee Riverway Trail) includes development of a continuous linear river trail system connecting the Seaway Trail, Erie Canal Heritage Trail and the Genesee Greenway Trails. The



project calls for providing high quality trail amenities including parking at trail heads, information & safety signs, solid trail surfaces, etc. The West River Wall Master Plan project begins the planning and waterfront conceptual design process for an enhanced trail link in this area.

Many of the recommendations presented in these plans were incorporated into the 2012 Corn Hill Community Vision Plan (Vision Plan), completed by the Corn Hill Neighborhood Association and the Rochester Regional Community Design Center. Key principles from the Vision Plan that are most relevant to this project include recommendations for improved connections to the Genesee River, including:

- Protect, improve, and utilize the River
- Integrate the River into the daily lives of Corn Hill residents
- Highlight the River as a destination for recreation, entertainment and activities
- Create safe pedestrian crossings
- Improve gateways and construct amenities such as seating, pedestrian lighting and signage.

These recommendations serve as guiding principles for this project and were incorporated into planning and preliminary design recommendations presented in later sections of this report.

Civic Engagement

Throughout the course of this project, the City of Rochester has engaged a variety of stakeholders and provided numerous opportunities for public participation. The City convened a Technical Advisory Committee (TAC) and a Citizens Advisory Committee (CAC) for the purpose of providing guidance and feedback on the project at regular intervals.

Technical Advisory Committee (TAC) included representatives from the City of Rochester, the NYS Canal Corporation, the NYS Department of State, the NYS Department of Environmental Conservation, and Bergmann Associates.

Citizen Advisory Committee (CAC) included representatives from the Corn Hill Neighborhood Association, the Rochester Regional Community Design Center, Plymouth-Exchange Neighborhood Association (PLEX), Landmark Society, Rochester Bicycling Alliance, Genesee Waterways Center, Southwest Common Council, residents and interested members of the community.

Each committee met three times. These technical experts, citizen advisors and community members have provided valuable input that has been incorporated into the recommended Master Plan and wall reconstruction design. In addition, the City hosted two public meetings:

Public Meeting #1, held in September 2014, introduced the project to the community, including the various issues that needed to be addressed. Participants provided feedback on the proposed alternatives, noting support for the recommended flood protection alternative and master plan.

Public Meeting #2, held in late November 2014, included a presentation of the recommended Master Plan, timeline and implementation strategy.

Detailed summaries of each meeting are included in Appendix A.

AN OBSTRUCTED VIEW OF THE RIVER FROM THE RIVERWAY TRAIL, LOOKING SOUTH

THE RIVERWAY TRAIL AND THE WEST RIVER WALL, LOOKING NORTH TOWARDS DOWNTOWN FROM THE FORD STREET BRIDGE

VIEW LOOKING SOUTH SHOWING RELATIONSHIP OF EXISTING TRAIL AND EXCHANGE BOULEVARD

existing conditions

A comprehensive evaluation and inventory of existing conditions was completed to help inform the selection of alternatives and recommendations. A complete review of this process can be found in Appendix B, Interim Report. This section summarizes several of the key conditions and factors with potential to influence the various alternatives considered.[1]

The Corn Hill Neighborhood

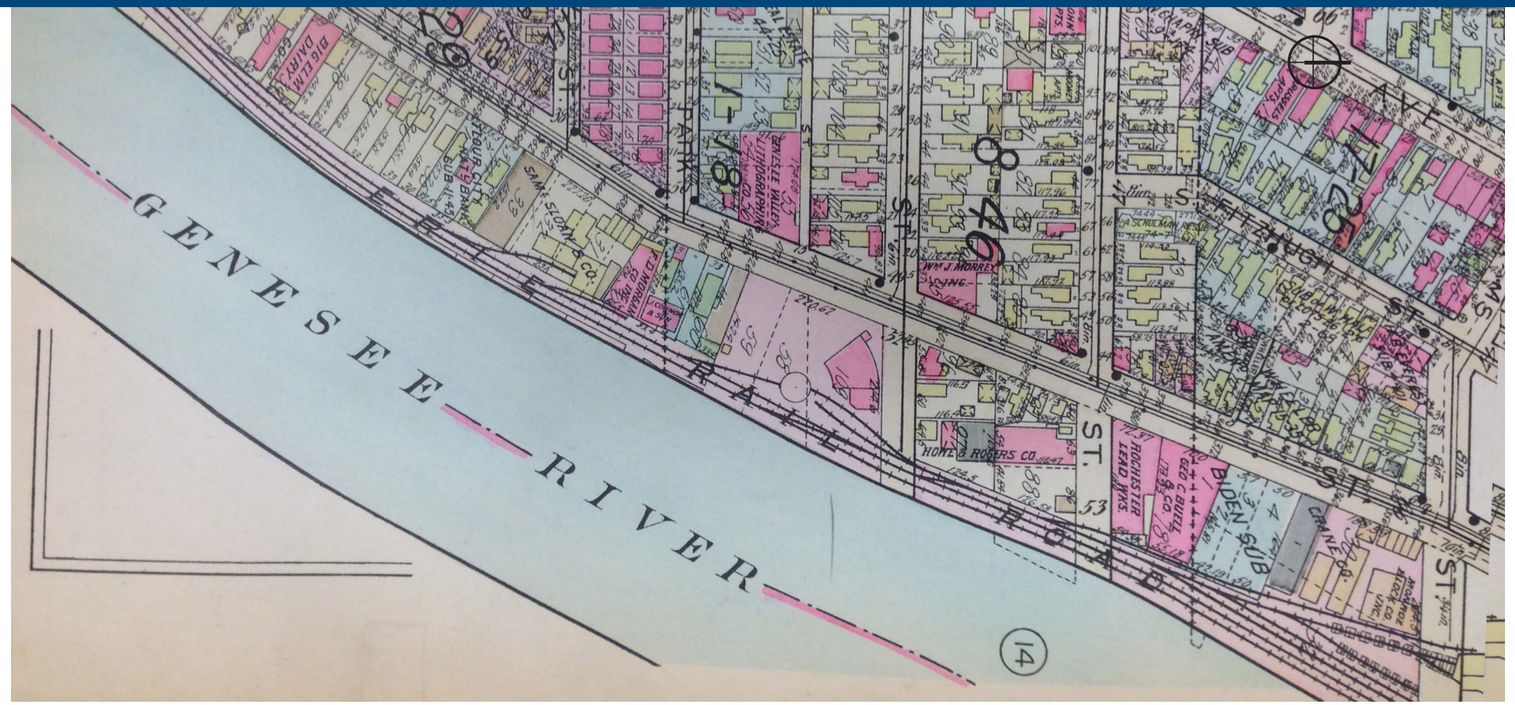
The historic relationship between the Corn Hill neighborhood, the Genesee River and the West River Wall is a key factor that influenced recommendations for flood protection and design of future public spaces within the vicinity. The following section provides information about the history and existing conditions of the neighborhood, including its relationship to the River.

HISTORIC CORN HILL MANSIONS

Historic and Cultural Context

The Corn Hill neighborhood was established along the west side of the Genesee River in the early 19th Century and is the oldest neighborhood in Rochester. The neighborhood was originally known as "Rochesterville" and later as the Third Ward. The neighborhood's

[1] Sources of historical information include the Corn Hill Neighborhood Association, the Landmark Society of Western New York, the *Corn Hill Neighborhood Vision Plan*, the Monroe County Library website, and the City of Rochester website description of the Corn Hill neighborhood.



1926 PLAT MAP OF STUDY AREA

current day boundaries are defined by the I-490 to the north, the Genesee River to the east and Ford Street to the south and west. Corn Hill's early growth and development were directly influenced by its proximity to the Genesee River and the opening of the Erie Canal in 1825.

By 1854, the Erie Railway Company, later known as the Erie Lackawana Railroad and Conrail, was established along the western edge of the Genesee River in the Corn Hill neighborhood. In Corn Hill, the area immediately south of Plymouth Avenue was eventually developed into railroad yards, which stored trains, coal, and oil. The location of the rail lines along the edge of the River led to the development of pockets of industry adjacent to the Corn Hill neighborhood which included A. Bronson and Sons Lumber Yard, Big Elm Dairy Company, and Rochester Lead Works to name a few. The railroad's decline and eventual closure in the 1980's left numerous vacant and underutilized sites along the river.

In 1918, the New York State Canal Corporation constructed the west river wall for the purpose of protecting the Corn Hill area from frequent flooding of the Genesee River. At that time, the area was referred to as the "stuffed shirt" neighborhood, named for the merchants, craftsmen, and professionals who built homes in the years after the Erie Canal was completed.

When steam barges replaced the mule-towed boats, the towpath was no longer needed and the flat land along the canal eventually became railroad yards with coal and oil storage areas.

Many of the city's prominent residents built homes in the neighborhood, including Nathaniel Rochester (founder of the City of Rochester), Hervey Ely (owner of a flour mill) and William Kimball (a tobacco manufacturer). Though many of the homes were later demolished as part of urban renewal efforts, some remain today, including the Hervey Ely home, which was purchased in 1920 by the Daughters of the American Revolution. Today the

neighborhood contains numerous other examples of mid-19th century architecture, such as Greek Revival, Italianate mansions, worker's cottages and carriage houses.

By the 1960s, many of the neighborhood's homes had fallen into disrepair and were scheduled for demolition as part of the City's urban renewal efforts. In response, a group of neighbors called "New Rochester" organized to protect and rehabilitate many of the homes and other structures in the neighborhood.

In the mid-1970s, portions of the neighborhood were placed into two distinct historic districts (one national and one local). Properties in the locally designated Preservation District are subject to the City's Preservation Ordinance, which defines the process to manage physical changes to these properties.

Corn Hill and the West River Wall Today

The Corn Hill neighborhood is now home to a mix of commercial, residential, community service, and office uses. More recent development includes construction of the Mark IV townhomes and apartments in the early 1980s and the Corn Hill Landing mixed-use development in 2008. The neighborhood is currently experiencing a resurgence, partially due to its location in close proximity to the center city, its walkable attributes, and strong desire among residents to live in one of the city's premier historic districts.

MIXED-USE COMMERCIAL / RESIDENTIAL USES AT CORN HILL LANDING, LOOKING SOUTH ALONG EXCHANGE BOULEVARD

There are numerous commercial uses located in the northern part of the neighborhood (north of Plymouth Avenue), which includes offices for small businesses, non-profit organizations and restaurant/retail establishments. In addition, the Corn Hill neighborhood hosts multiple annual events and festivals. These include the Clarissa Street Reunion, the Holiday Tour of Homes, and the Corn Hill Arts Festival. The Arts Festival began in 1968 and is considered to be one of Rochester's premiere summer festivals, attracting between 175,000 and 200,000 visitors per year.

The Corn Hill neighborhood and Genesee River have undergone significant changes in the nearly 100 years since the original construction of the west river wall. The downstream Court Street Dam was improved in 1926 and the Mount Morris Dam, located south of Rochester in Livingston County, was constructed in 1952. Together these facilities have provided considerable flood control and protection for the area. While the west river wall continues to play a role in flood protection, it is less important as a flood control measure. At the same time, the condition of the wall has deteriorated, further reducing its importance in flood protection for the neighborhood

In the Fall of 2014, the Erie Canalway National Heritage Corridor was nominated for inclusion on the National Register of Historic Places. While the river wall is not specifically listed, it was constructed in 1918, approximately the same time as the Canal, requiring coordination with the New York State Historic Preservation Office and careful consideration during final design of river wall and waterfront improvements.


THE RIVERWAY TRAIL AT CORN HILL LANDING, LOOKING NORTH TOWARDS DOWNTOWN ROCHESTER


AN OBSTRUCTED VIEW OF THE RIVER FROM THE RIVERWAY TRAIL. NOTE THIS HISTORIC CLEAT ATOP THE WALL.

In its current condition, the west river wall exists as a physical and visual barrier between the Corn Hill community and the Genesee River. Exchange Boulevard further separates the neighborhood from the river and the existing Riverway Trail, as there are limited safe locations for pedestrians to cross the street. The Corn Hill community expressed a desire to improve access to the River and enhance the public space between the River and Exchange Boulevard.

The relationship between the Corn Hill neighborhood and the river wall as it exists today was a key consideration for this project. Understanding this relationship was central to ensuring that recommended design improvements are sensitive to the neighborhood context and incorporate the needs and desires of the Corn Hill neighborhood.

Socio-Economic Characteristics

A review of socio-economic factors suggests Corn Hill is an economically and racially diverse neighborhood, with relatively higher proportions of retirees as well as residents under 30, when compared to the rest of the city. While the rate of home ownership is lower than the city as a whole, the neighborhood contains a variety of housing types and experiences relatively low rates of vacancy. These findings, described in more detail in the following

					Projected 2013 - 2018		
Area	2000	2013	% Change	AAGR	2018	%Change	AAGR
Corn Hill	1,948	2,120	8.8%	0.7%	2,026	-4.4%	-0.9%
Rochester	219,921	208,952	-5.0%	-0.4%	208,004	-0.5%	-0.1%
Monroe County	735,343	746,719	1.5%	0.1%	751,974	0.7%	0.1%

FIGURE 1 - TOTAL POPULATION 2000-2018
SOURCE: ESRI
NOTE: AAGR= AVERAGE ANNUAL GROWN RATE

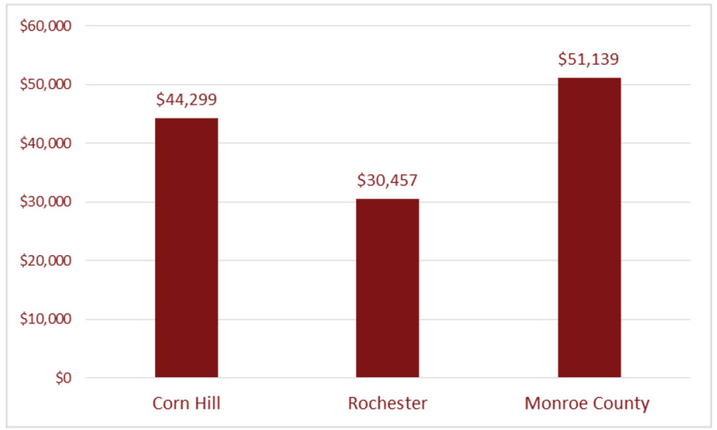


FIGURE 2 - MEDIAN HOUSEHOLD INCOME, 2013
SOURCE: ESRI

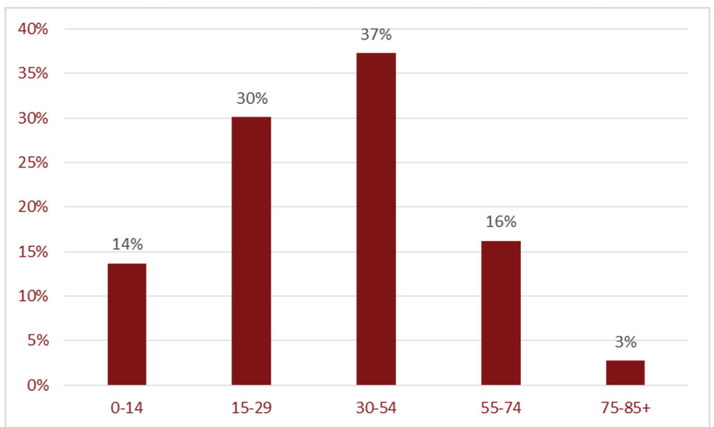


FIGURE 3 - AGE DISTRIBUTION, CORN HILL NEIGHBORHOOD, 2010
SOURCE: ESRI

paragraphs, underscore the importance of providing safe and convenient recreational opportunities in a neighborhood that is home to a diverse range of city residents.

The population of the Corn Hill neighborhood in 2013 was 2,120, approximately one percent of the city's total population (Figure 1). The neighborhood experienced an 8.8 percent increase in population between 2000 and 2013, accounting for 170 new residents during that time period. By contrast city's population declined by 5 percent over the same time period. Corn Hill and the City of Rochester are projected to experience population declines over the next five years, while Monroe County is projected to continue growing (albeit at a relatively slow rate).

The median income in Corn Hill in 2013 was $44,299, which was higher than the city as a whole, at $30,457, but lower than in the county, which was $51,139 (Figure 2).

The age distribution of the Corn Hill neighborhood indicates that 37 percent of the neighborhood's population is between the ages of 30-54 and almost 20 percent of the neighborhood's population is over the age of 55 (Figure 3). Children under 15 account for 14 percent of the neighborhood. This indicates that the neighborhood is made up of residents of all ages. Further, the presence of children and seniors shall be a consideration for any proposed pedestrian access improvements to the River.

The Corn Hill neighborhood's racial composition is similar to the city as a whole, with the exception of the Hispanic population, which constitutes 5 percent of the population in Corn Hill, but 17 percent city-wide. Similar to the city, the Corn Hill neighborhood includes almost equal percentages of white and black populations. Corn Hill has a higher proportion of Asian residents than the city as a whole, but a lower percentage of those indicating "two or more races" or "other race." The populations of both Corn Hill and the City of Rochester are more diverse than Monroe County (Figure 4).

The percentage of owner-occupied homes in Corn Hill is 22 percent, which is lower than the 33 percent city-wide, and the 60 percent in Monroe County (Figure 5). Though a lower percentage of homes are owner-occupied, the neighborhood contains a wide variety of housing units—both in age and type. These include recently constructed apartments, townhomes, condominiums, and single-family homes, as well as historic homes, apartment buildings and mansions that have been converted to apartments. The 12 percent vacancy rate of Corn Hill neighborhood is slightly higher than the City's 10 percent and the County's 6 percent rates.

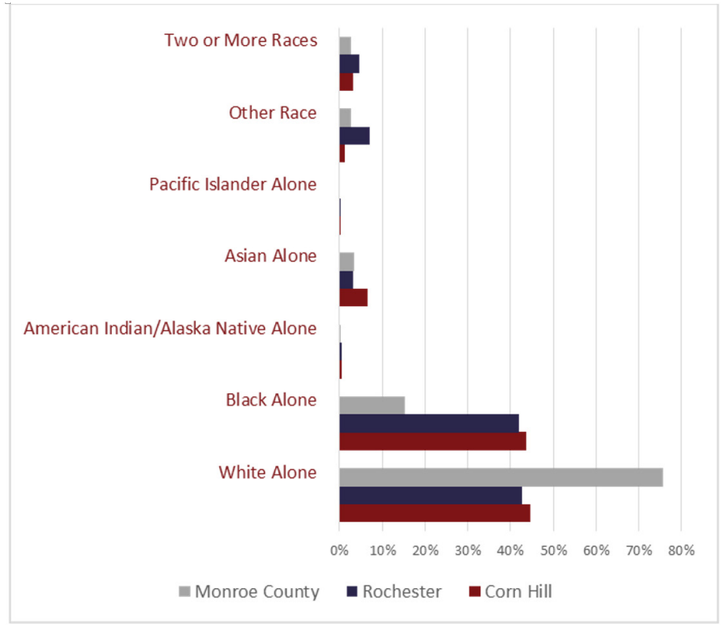


FIGURE 4 - RACIAL COMPOSITION, CORN HILL, ROCHESTER MONROE COUNTY
SOURCE: ESRI

	Corn Hill		Rochester		Monroe County	
2013 Total Housing Units	**1,284**	**100%**	**96,279**	**100%**	**322,406**	**100%**
Owner Occupied	287	22%	31,777	33%	192,363	60%
Renter Occupied	837	65%	54,808	57%	109,922	34%
Vacant	160	12%	9,693	10%	20,121	6%

FIGURE 5- HOUSING TENURE, 2013
SOURCE: ESRI

Land Use and Zoning

Though the Corn Hill neighborhood is primarily residential in character, the neighborhood's compact arrangement of uses includes a mix of residential, commercial, and community services (Figure 6). The interior of the neighborhood is primarily residential, while commercial uses, such as restaurants, bars, offices, and small shops are located north of Plymouth Avenue and at Corn Hill Landing.

(Note: the City of Rochester classifies apartments as commercial uses. The commercially designated area located between the Ford Street Bridge and Clarissa Street is primarily made up of apartments and townhomes).

The majority of the neighborhood is zoned High Density Residential (R-3). A small portion of the commercial area north of Plymouth Avenue is zoned CCD-R Center City Commercial District-R. The southern portion of the landside area between the river wall and Exchange Boulevard is zoned Open Space while the northern section of the landside area is zoned CCD-R (in and around Corn Hill Landing).

Parks and Open Space / Access to the River

The west river wall and adjacent public spaces are part of the overall park and open space system in the Corn Hill neighborhood, which also includes Lunsford Circle Park (formerly Plymouth Circle Park) and the Ralph Avery Mall. Both neighborhood parks contain landscaping and seating. In addition to these parks, a major recreational feature in the neighborhood is the national

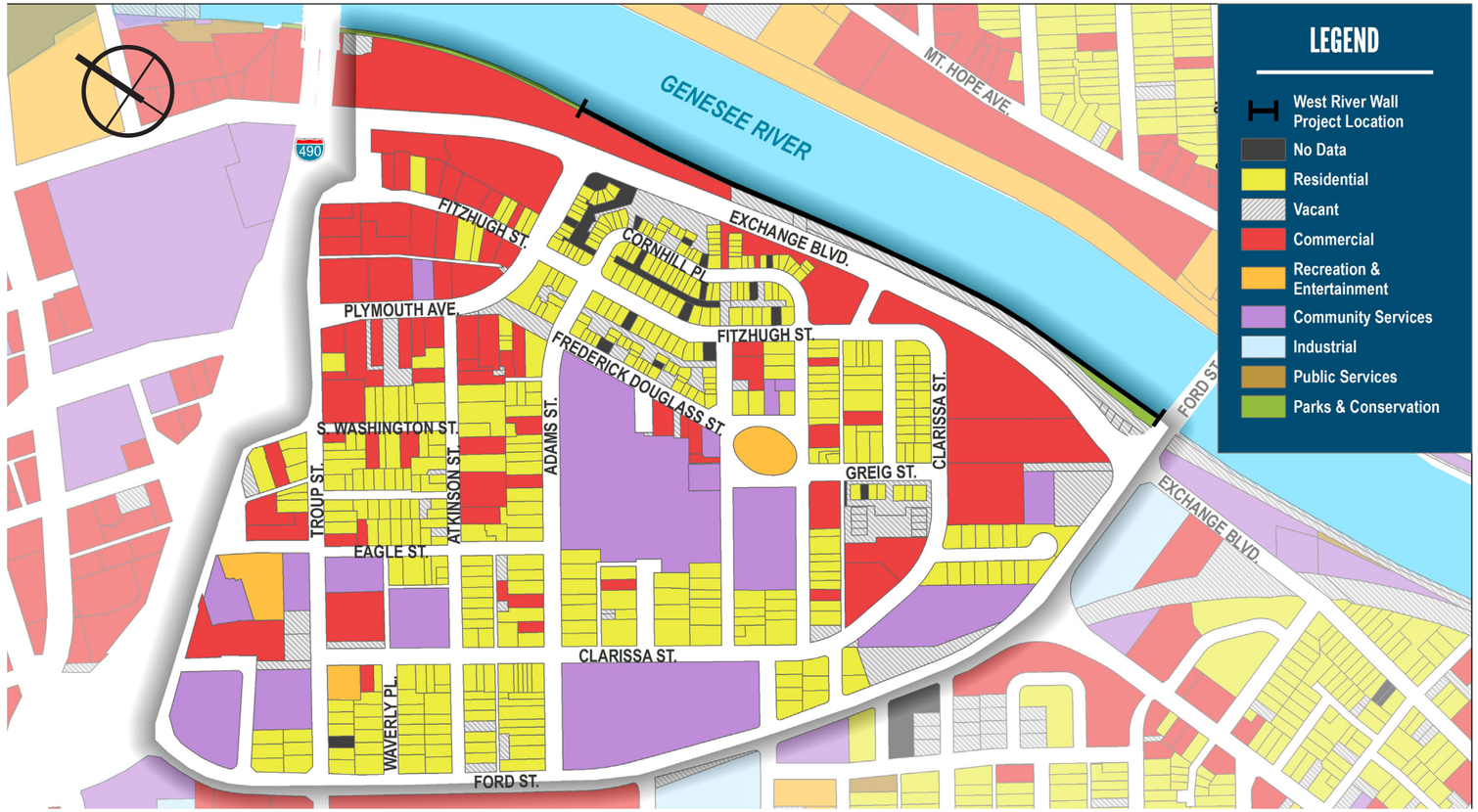
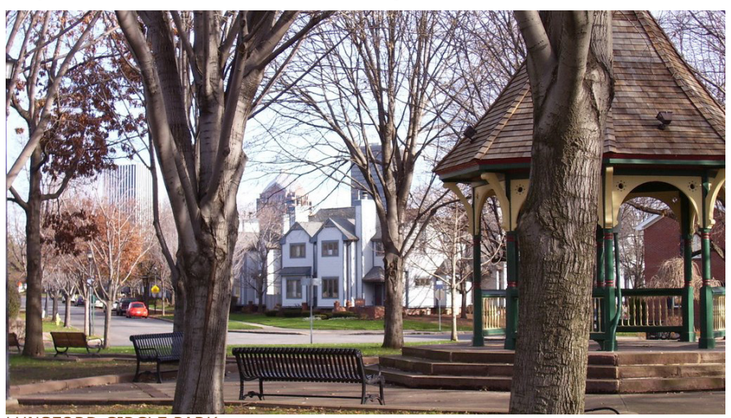


FIGURE 6 - EXISTING LAND USE
SOURCE: CITY OF ROCHESTER PARCEL DATA, 2014



LUNSFORD CIRCLE PARK

GRIFFIN SCULPTURE

THE RIVERWAY TRAIL LOOKING NORTH TOWARDS CORN HILL LANDING, SHOWING EXISTING FLOOD GATES AND THE TRANSITION FROM OLD TO NEW SECTIONS OF THE RIVER WALL

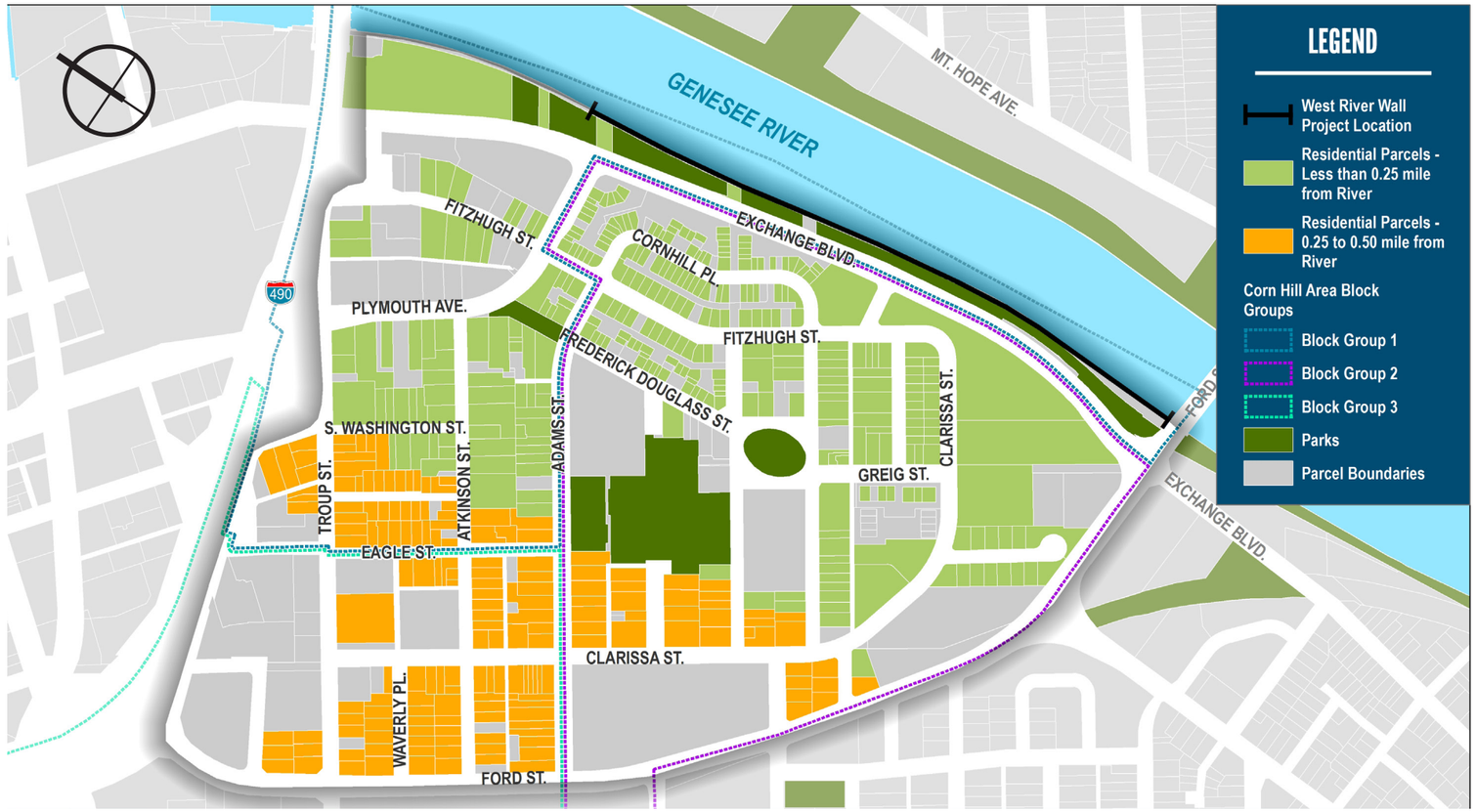


FIGURE 7 - ACCESSIBILITY ANALYSIS
SOURCE: CITY OF ROCHESTER PARCEL DATA, 2014

award winning Genesee Riverway Traill, located on the east side of Exchange Boulevard. There are currently no formalized connections between the neighborhood parks and the riverfront area / Riverway Trail.

The existing character of access points to the Genesee River is a key consideration for this project, as the overall limitation to River access has been an ongoing concern for Corn Hill residents. An accessibility analysis conducted for all residential parcels in the neighborhood shows parcels within a quarter-mile and half-mile of the Riverway Trail (Figure 7). While much of the Corn Hill neighborhood is within convenient walking distance of the Riverway Trail, safe access from the neighborhood to the Riverway Trail is limited. Exchange Boulevard acts as a barrier between the neighborhood and the Genesee River, as formal crosswalks are limited to one location at the intersection of Exchange Boulevard and Plymouth Avenue. There are no other crosswalks along Exchange Boulevard in the study area.

GENESEE RIVERWAY TRAIL LOOKING SOUTH TOWARDS FORD STREET BRIDGE

EXCHANGE BOULEVARD TODAY

An analysis of the residents within different Census Block Groups in the neighborhood shows that the part of the neighborhood furthest from the Riverway Trail, Block Group 3, also contains the largest proportion of residents under the age of 20. The area closest to the Riverfront, Block Group 1, contains the largest percentage of those over 55 years old. This suggests that proposed improvements to the riverfront area will need to consider safety enhancements for children and, for crossing Exchange Boulevard and accessing the riverfront from all parts of the neighborhood.

Transportation and Parking

Figure 8 shows annual traffic volumes on major streets in the neighborhood (Average Annual Daily Traffic). According to the latest published Monroe County Traffic Volume Maps, there are 12,996 trips per day along Exchange Boulevard and 12,663 trips along Plymouth Avenue within the study area.

A key factor in the planning and preliminary design for the river wall and adjacent public spaces was the location and configuration of Exchange Boulevard: it is a two-lane boulevard with bike lanes and on-street parking on both sides, divided by a median. The street in its current configuration does not offer convenient pedestrian access or well-defined crossings to the river side. There is a sidewalk along the west side of the street and there is a trail on the east side (set back from the curb). There is only one formal pedestrian crossing on Exchange Boulevard at the north end of the study area, located at Plymouth Avenue. The remaining length of Exchange Boulevard to Ford Street does not have any crossings, leading pedestrians to cross at unsafe locations.

FIGURE 8 - AVERAGE ANNUAL DAILY TRAFFIC
SOURCE: CITY OF ROCHESTER PARCEL DATA, 2014

Utilities

Records indicate that an 18-inch diameter vitrified sewer pipe is present along the back side of the river wall, along with a 6-inch diameter vitrified drainage line. Manholes are also shown on the record drawings that extend down to these pipes. It is unknown if the system remains active. It is suspected that the 6-inch vitrified pipe was installed to provide drainage and limit hydrostatic pressures along the back side of the wall. It is not known if the drainage system is open (cleared) and works effectively to drain soils behind the wall. Field inspection did not reveal the presence of these manholes on site. No other utilities are known to be located between the river wall and the eastern curb line of Exchange Boulevard.

Hazardous Waste and Contaminated Materials

NYSDEC's Environmental Site Database does not indicate the presence of environmental contamination within the study area, though there was one spill recorded at Corn Hill Landing in 1999. The City maintains documentation of remediation actions taken regarding this event. Due to the study area's historic industrial and rail use, further environmental study in the form of a Phase 1 and 2 should be completed as part of the final design process.

The Genesee River

This section describes key considerations for flood protection and management in and around the river wall, including an updated hydrologic and hydraulic analysis of the Genesee River and a sedimentation analysis.

Flood Protection and Water Management

Protection from Genesee River flooding in the Corn Hill area has historically been provided by the river wall, constructed around 1918 by the New York State Canal Corporation (NYSCC). The construction of the Mount Morris Dam, completed in 1952 by the U.S. Army Corps of Engineers, Buffalo District, provides considerable flood control by storing the volume of the floodwaters behind the dam. In 1972, Hurricane Agnes caused severe flooding throughout western New York State. The Mount Morris dam retained the excess floodwaters from this storm event, to the point of its capacity. In addition, the sector gates at Court Street Dam were lowered to the minimum level, dropping the river levels. In the Rochester area the combination of these operations resulted in minimal flooding downstream of Mount Morris. It is estimated that these actions saved over $200 million in flood damages in Rochester. These projects have made the river wall less important as a flood control measure.

In addition to these structural flood control measures, the City of Rochester practices floodplain management through its participation in the National Flood Insurance Program (NFIP). This program, run by the Federal Emergency Management Agency (FEMA), provides for otherwise unavailable flood insurance, in return for the City adopting and enforcing a Flood Damage Prevention Ordinance. This ordinance requires all new and substantially improved structures in the mapped floodplain to be elevated to at or above the 100-year flood elevation (frequently referred to as the Base Flood Elevation, or BFE). In New York State, through the state's requirement of adoption of higher standards, new and substantially improved construction in the mapped floodplain must be 2.0 feet above BFE. An additional provision of the NFIP is a requirement to purchase flood insurance for properties purchased with federally-insured mortgages.

In the City of Rochester, there are 88 flood insurance policies in force with an average yearly premium of $1,360 (as of 4/30/2014). FEMA's privacy policies do not allow the locations of individual policy holders to be released, but it is reasonable to assume that many of these policy holders are in the Corn Hill area. The historic FEMA floodplain maps, issued in 1977, showed the river wall providing flood protection and the Corn Hill area as being located outside of the floodplain.

When FEMA produced a seamless county-wide map for Monroe County in 2008, the agency used hydraulic analyses from the historic maps and mapped the new floodplain, showing the river wall as no longer providing flood protection. As a result there are

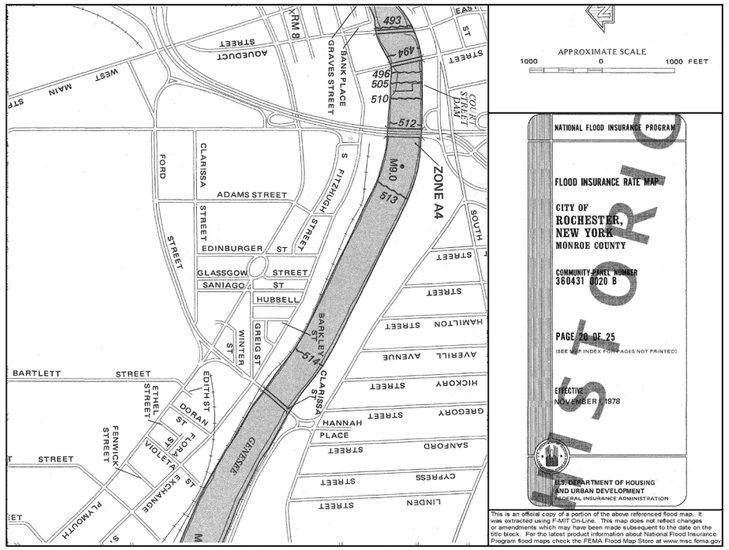


FIGURE 9 - FLOOD INSURANCE RATE MAP, 1978

SOURCE: FEMA (ELEVATIONS ARE ACCORDING TO NATIONAL GEODETIC VERTICAL DATUM OF 1929)

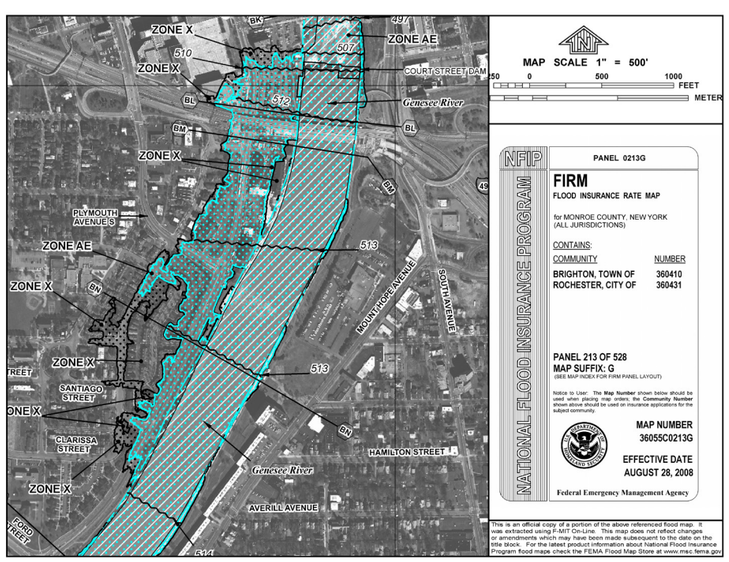


FIGURE 10 - FLOOD INSURANCE RATE MAP, 2008

SOURCE: FEMA (ELEVATIONS ARE ACCORDING TO THE NAVD88 DATUM. THE CONVERSION FROM NAVD88 TO CITY OF ROCHESTER IS +1.56' FOR THE PROJECT SITE)

areas in Corn Hill that are in the newly mapped floodplain.
It is believed that many of the flood insurance policy holders in the City of Rochester are property owners in the Corn Hill area who are financing their home purchase with a mortgage and are therefore required to obtain insurance. Reconstruction of the river wall to meet FEMA criteria for levees and floodwalls would relieve this financial burden on the homeowners.

Flood Elevation Analysis

An updated hydrologic and hydraulic analysis of the Genesee River was conducted to establish an appropriate flood elevation for design purposes. One of FEMA's criteria for indicating on its maps that a floodwall provides protection is that it has three feet of freeboard. Therefore, the project team developed an updated representation of the 100-year flood conditions of the Genesee River for presenting to FEMA for a map update.
The historic hydrologic analyses used a regression equation to estimate the 100-year discharge. A Log Pearson statistical analyses of the years 1956 to 2013 resulted in a 100-year flow of 24,493 cubic feet per second (cfs). When compared with the historic hydrologic 100-year flow of 32,500 cfs, the analyses showed significant flow reduction. The USGS gage recorded 22,500 cfs in 1972 (during Hurricane Agnes) which compares favorably with these results.

The hydraulic analyses were intended to reflect actual operations during flood conditions, specifically, (1) Mount Morris Dam gate closure and (2) lowering of sector gates at Court Street Dam.
The findings of the hydraulic analysis indicate a required top of wall ranging from El. 516.6 (near Ford Street) to El. 515.9 (near Corn Hill Landing), according to City Datum. The original top of wall surface ranges from El. 519.8 (near Ford Street) to El. 518.7 (near Corn Hill Landing), per City Datum. Hence, this suggests that the top of the wall could be lowered on the order of 2.75 feet to 3.25 feet.

In addition, the team evaluated current sediment conditions in the vicinity of the West River Wall, showing a sedimentation rate of 0.073 (0.87 inches) feet per year. Assuming this sedimentation rate would continue for another 20 years, the resulting water surface elevations would increase by about 0.5 feet.

VIEW OF RIVER SIDE OF WALL LOOKING UPSTREAM FROM CORN HILL LANDING

Waterfront Recreation and Natural Resources

Current recreational opportunities within the landside waterfront area behind the West River Wall are limited to walking and biking along the Riverway Trail. The trail is both physically and visually separated from the river (by wall and overgrown vegetation), further limiting the recreational experience. At the northern end of the study area, there an aluminum floating dock system and gangway, anchored to the wall. Depending on water levels, the dock system can become hung up on accumulated river sediment. Use of the dock system is also somewhat impeded by the presence of high river sediment, which greatly limits allowable boat draft. The docks system also appears to be in disrepair. There are no other locations within the study area that provide access to the river.

Corn Hill Landing, by contrast, draws a variety of users and residents, offering shopping opportunities and restaurants, a pedestrian plaza with seating, a kayak launch, and interpretive signs and amenities. This suggests an opportunity to leverage activity occurring at Corn Hill Landing by developing improvements such as docking for larger recreational craft and utility hookups for boaters that invite those visitors to explore and use the waterfront area in the study area.

The West River Wall is located within the Lower Main Stem of the Genesee River, which is a Class B waterbody (segment # 0401-0001), according to the New York State Department of Environmental Conservation's Waterbody Inventory. The inventory notes that aquatic life, fish consumption, public bathing, and other recreational activities are significantly restricted by pollutants from various industrial and municipal sources in the urbanized area of metropolitan Rochester. This segment of the river is impacted by pollutants, including nutrients, PCBs, pesticides, sediment, and oil and grease. Recreational activities in the river are limited by poor aesthetics, high silt, and limited clarity, other pollutants from industrial and municipal discharges, and storm sewers. Because of its classification and because the Genesee River is navigable, any disturbance to the bed or banks of the river would require demonstration of adequate erosion and sediment controls. Other natural resource considerations include habitat and endangered or protected species. Due to a recent proposed listing of the Northern Long-eared bat on the list of threatened or endangered species list, NYSDEC may require review of any plans that propose removal of trees greater than three feet in diameter (which is considered suitable roosting habitat). These natural resource considerations and potential requirements are discussed further in the Implementation Section of this report, Permitting and Applications.

VIEW OF WALL LOOKING SOUTH TOWARDS FORD STREET BRIDGE

The West River Wall

The West River Wall consists of a concrete gravity wall with a battered stem and concrete footing. New York State Canal Corporation (NYSCC) record drawings (Contract No. 59.) suggest the wall was originally constructed in about 1918 and is founded on bedrock. The wall structure lines the Genesee River and is owned by the NYSCC. Although the wall continues further in either direction, the limits of wall being considered as part of this project extend from the Ford Street Bridge (southerly limit) to Corn Hill Landing (northerly limit). This translates to approximately 2,200 linear feet of wall.

The wall is made up of a series of concrete monoliths with joints spaced from approximately 25 to 40 feet in length. The top of the wall varies slightly and is sloped in the downstream direction (1' in 2000'), starting at an approximate elevation (El.) of 519.8 (City Datum) near the Ford Street Bridge and transitioning to El. 518.7 at Corn Hill Landing. Depth to bedrock also varies at this site ranging from approximately El. 494 to El. 499. There are two different wall sections at the site, which are similar in makeup. Where rock is deeper, the wall transitions from a Type 'B' wall to a slightly enlarged Type 'C' wall. For a description of Type 'B' and Type 'C' walls see section 2.2 Wall Structural Evaluation in Appendix B.

The wall is typically shown to be founded on bedrock, but the foundation is not shown to be keyed into the bedrock. The concrete structure is largely unreinforced, but does indicate some reinforcement running along the backside of the stem (into the heel), extending through a mid-height construction joint, and at the toe of the footing.

The soil on the backside of the river wall is nearly even with the top of the wall at the northerly limits of the study area, but the backside of the wall can be exposed by up to 8 feet at the southerly project limits near Ford Street. The exposed wall height transitions randomly along the length of the wall. River sediments on the river side of the wall also vary along the length of wall and range from approximately El. 510 at the northerly limits to about El. 502 at the southerly project limits near Ford Street. Normal Ordinary High Water (OHW) is generally 512.5 during navigation season.

According to record mapping the wall is furnished with periodic mooring cleats along the top of the wall and includes recessed ladders on the riverside spaced approximately 500 feet apart.

VIEW OF WALL SHOWING CONCRETE IN POOR CONDITION

Wall Condition - Structural Assessment

Assessment of the existing river wall was conducted by both inspection and coring of the concrete walls. Wall stability assessment is discussed in the next section. The visual, non-intrusive, inspection of the wall (above and below water) was conducted in the spring of 2014 as part of this project and detailed inspection findings are presented within Appendix B, Interim Report.

PHOTO OF CONCRETE CORE SAMPLE FROM THE WEST RIVER WALL

VIEW OF WALL SHOWING CONCRETE IN POOR CONDITION

There have been very few documented wall repair or renovation efforts since the wall's original construction. Results of the structural analysis show that the wall is generally in poor condition and displays signs of significant deterioration.

Many of the wall sections are deeply eroded at the waterline and the top of the wall is scaled and rounded off. Core samples show that the concrete is deteriorating in many places. In addition, the top of wall elevation is notably lower than the original wall profile due to the extent of deterioration in many areas, in some cases forming significant grooves in the wall.

Heavy vegetation, including poison ivy and trees, is present along the back side of the wall. The presence of vegetation limited observation of the wall in some areas. The vegetation may be causing damage to the wall concrete and should be considered for removal during alternatives analysis.

Despite the poor concrete condition, no major signs of a progressing stability failure were identified, such as displacement between monolith joints or a tilting/rotated wall section. However, the deep and progressing deterioration near the waterline greatly increases the risk of a potential wall failure mid-height of the wall.

Wall Condition - Stability Assessment

The existing wall primarily acts as a retaining structure, but is also considered a floodwall. Stability evaluations of the wall were performed along the length of the wall to capture results for varying wall geometries, varying bedrock depth, varying sedimentation elevation, and varying landside soil elevations. In general, the wall was evaluated approximately every 100 ft. Using U.S. Army Corps of Engineers (USACE) guidelines for Stability Analysis of Concrete Structures (EM 1110-2-2100) and Retaining and Flood Walls (EM 1110-2-2502), the stability analysis looked at different types of forces and stress that are likely to impact the stability of the wall. These include hydrostatic water pressure, uplift pressure, silt pressure, seismic forces, soil and hydrodynamic loads, and the weight of the wall structure itself. The analysis found that several areas along the length of the wall do not satisfy stability criteria.

For full documentation of structural stability calculations see Appendix B, Interim Report

Summary of Key Findings

Key findings from the Existing Conditions analysis and non-wall related studies and analyses are summarized below:

- **The wall is a physical and visual barrier to the Genesee River.** The West River Wall currently acts as a physical and visual barrier to the river and the surrounding landside, and the area generally lacks safe and convenient pedestrian connections to the river and Riverway Trail. Exchange Boulevard, which is directly adjacent to the study area, adds an additional barrier between the Corn Hill neighborhood and the river. There is just one formal connection (crosswalk) between the Corn Hill neighborhood and the river, located at the very north end of the project area at the intersection of Exchange Boulevard and Plymouth Avenue. There are no other crosswalks along Exchange Boulevard within the study area. These conditions restrict safe access to the river from the majority of the neighborhood which is not consistent with the objectives of the Corn Hill Vision Plan.

- **There are few pedestrian or recreational amenities within the waterfront area.** With the exception of the Riverway Trail, there are few pedestrian amenities within the study area. The lack of recreational amenities and landscaped area creates an unwelcoming atmosphere for pedestrians, bicyclists, and adjacent neighborhood residents.

- **The wall does not meet standards for flood protection.** In 2008, FEMA produced a county-wide floodplain map using hydraulic analyses from historic maps, showing the West River Wall as no longer providing flood protection (due to its condition), thus placing sections of the Corn Hill area into the floodplain. For this project, an updated hydrologic and hydraulic analysis of the 100-year flood conditions of the Genesee River was prepared in accordance with FEMA criteria for levees and floodwalls. The findings indicate the flood elevation could be lowered by approximately 1.6'. Therefore, this suggest that the existing top of the West River Wall, which exceeds the height it is required to be at the new flood elevation, could be lowered from El. 519.7 (near Ford Street) and El. 518.8 (near Corn Hill Landing) to El. 517.1 and El. 516.3 respectively.

- **The West River Wall is generally in poor structural condition.** Results of the structural analysis show that the wall is generally in poor condition and displays signs of significant deterioration. Many of the sections are deeply eroded at the waterline and the top of the wall is scaled and rounded off. Core samples show that the concrete is deteriorating in many places. In addition, the top of wall elevation is notably lower than the original wall profile due to the extent of deterioration in many areas, in some cases forming grooves in the wall. Finally, heavy vegetation including ivy and trees is present along the backside of the wall which may be causing damage to the wall concrete.

- **Portions of the wall do not meet stability criteria.** Using U.S. Army Corps of Engineers (USACE) guidelines for Stability Analysis of Concrete Structures (EM 1110-2-2100) and Retaining and Flood Walls (EM 1110-2-2502), the stability analysis looked at different types of forces and stress that are likely to impact the stability of the wall. These include hydrostatic water pressure, uplift pressure, silt pressure, seismic forces, soil and hydrodynamic loads, and the weight of the wall structure itself. The analysis found that several areas along the length of the wall do not satisfy stability criteria.

- **The current wall condition is unsightly.** As noted previously, much of the length of the exposed river wall is deteriorating with extensive spalling of the concrete surface and top of wall. This creates an unsightly, neglected appearance and contributes negatively to the character of the adjacent Corn Hill Neighborhood.

VIEW OF DOWNTOWN ROCHESTER FORM THE CORN HILL LANDING PLAZA

alternatives analysis

Evaluation Framework

The evaluation of alternative solutions for the West River Wall is intended to balance multiple stakeholder objectives. The following project goals were used to develop alternatives and inform our evaluation of them. More detail can be found in the Draft Alternatives Report (Appendix C).

Project Goals

As discussed in the report's introduction, the goals of this project include:

- Development of a flood protection structure that can be accredited by FEMA, which reduces or eliminates flood insurance requirements for property owners in the Corn Hill neighborhood; and

- Improvement of visual and physical access to the River, including an enhanced user experience.

The project also strives to balance flood protection with historic and natural resources protection and enhancement through sensitive design and interpretation.

Feasibility Factors

To inform the development of alternatives, the team evaluated a variety of potential limiting factors that could affect the overall feasibility of the project, regardless of which alternative is recommended. These factors can be described as potential "fatal flaws" that would prevent the project from achieving the goals described above. The project was evaluated to determine if the following factors would prevent any of the alternatives from achieving the project's goals:

- **Traffic Impacts.** Exchange Boulevard is currently configured with one travel lane in each direction, five-foot bicycle lanes, and eight-foot parking lanes on both sides. None of the alternatives considered propose land use changes that will cause significant increases in traffic volume within the study area. Based on existing traffic volumes, including peak hour volumes, it was determined that without significant growth or changes in intensity of land uses, current volumes can be adequately accommodated in the current configuration. Given this, it was determined that any alternative developed in accordance with the project's goals would not create traffic impacts and would therefore not be a limiting factor for the project.

- **Environmental Considerations.** This factor considers whether the project area may be impacted by environmental contamination that would impact the feasibility of the project. NYSDEC's Environmental Site Database does not indicate the presence of environmental contamination within the study area, though there was one spill recorded at Corn Hill Landing (north of the project site) in 1999. The City maintains documentation of remediation actions taken regarding this event. Due to the study area's historic industrial and rail use, further environmental study in the form of a Phase 1 and 2 should be completed as part of the final design process.

- **Natural Resources.** The Genesee River is classified by NYSDEC as a Class B waterbody. Because of this classification, and because the Genesee River is navigable, any disturbance to the bed or banks of the river would require special permitting and may require permission from the Army Corps of Engineers. Any proposed alternative would need to demonstrate adequate erosion and sediment controls. Other natural resource considerations include habitat and endangered or protected species. Due to a recent proposed listing of the Northern Long-eared bat on the list of threatened or endangered species list, NYSDEC may require review of any plans that propose removal of trees greater than three inches in diameter (which are considered suitable roosting habitat). It is noted that the alternatives developed for this project would consider water quality and habitat improvements. All necessary requirements and permits could be accommodated and thus impacts to natural resources and habitat are not considered to be a limiting factor in achieving the project's goals.

- **Neighborhood/Community Character.** This factor considers the impact the project may have on adjacent communities. Any alternative considered must include enhanced pedestrian access and improvements to the public realm along the waterfront, in accordance with the vision set forth in the Corn Hill Community Vision Plan (2012). Therefore, potential negative impacts to the surrounding community are not considered a limiting factor for this project. In fact, the project will serve to enhance community character.

- **Historic Resources.** In the Fall of 2014, the Erie Canalway National Heritage Corridor was nominated for inclusion on the National Register of Historic Places. While the River Wall is not specifically listed, it was constructed in 1918, approximately the same time as the Barge Canal. Final design will require coordination with the New York State Historic Preservation Office to ensure flood protection measures are met while allowing for historic interpretation and preservation goals to be met as well.

- **Utilities.** Records indicate that an 18-inch diameter vitrified sewer pipe is present along the land side of the river wall, including a six-inch diameter vitrified drainage line. It is unknown if the system remains active. No other utilities are known to be located within the study area. Location, type, and current use of all utilities will need to be addressed during final design.

The review above indicates no issues are present that eliminates the potential feasibility of implementing a new flood protection structure that meets the goals of the project.

Alternatives Evaluation Criteria

Four alternatives were developed for this project, described in more detail below. The criteria below were used to evaluate the degree to which each alternative supports the goals of the project.

- **Flood Protection.** This evaluation criterion addresses whether each alternative provides adequate flood protection, meets FEMA guidelines, and helps reduce or eliminate flood insurance premiums for homeowners in the neighborhood.

- **Neighborhood Objectives.** This evaluation category measures the extent to which each alternative meets neighborhood objectives outlined in the Corn Hill Community Vision Plan (2012).
  - Improved visual access to the River (Principle #8)
  - Improved physical access to the River (Principle #8)
  - Preservation and promotion of natural and historic features (Principle #9)

- **Cost of Implementation.** This criterion addresses the cost of implementing each of the alternatives relative to each other.

- **Long Term Maintenance.** This criterion addresses the cost of the long term maintenance for each of the alternatives relative to each other.

Evaluation of Alternatives

The following section includes a narrative description comparing each alternative against the evaluation criteria. Each alternative was scored from zero to five.

Alternative #1: Do Nothing

This alternative involves making no changes to the existing river wall, nor adding any public space improvements. It is noted that if the wall remains without any rehabilitation, the concrete will continue to degrade, presenting an increased risk for local failure or breach. Until the wall is renovated or an alternative means of flood protection is provided, a maintenance and emergency action plan to maintain the current level of protection would need to be employed to mitigate any risks.

Evaluation: This alternative does not meet any of the project goals. It does not satisfy the requirements for flood protection, nor does it satisfy the goals of the community (to improve access to the river). The cost of this alternative is not known, although it is likely that future repairs and maintenance will be necessary and will occur at unpredictable intervals, thus incurring costs on an ad hoc basis.

Alternative 1 - Do Nothing		Rank
Criterion 1	Flood Protection	3
Criterion 2	Improved Physical Access	0
Criterion 3	Improved Visual Access	0
Criterion 4	Preservation of Natural & Historic Features	5
Criterion 5	Cost of Implementation	5
Criterion 6	Cost of Future Maintenance	1
	Rank	**14**

Alternative #2: Repair/Reconstruct Entire Length of the Existing River Wall

This alternative considers reconstruction of the existing wall to comply with FEMA criteria. Under this alternative, the deteriorated concrete would be removed and reconstructed to restore the wall to its original condition and configuration. The River Wall would be lowered from El. 519.7 (near Ford Street) and El. 518.8 (near Corn Hill Landing) to El. 517.1 and El. 516.3 respectively. Some stability improvements would also be required, including installation of vertical post- tensioned rock anchors in some locations.

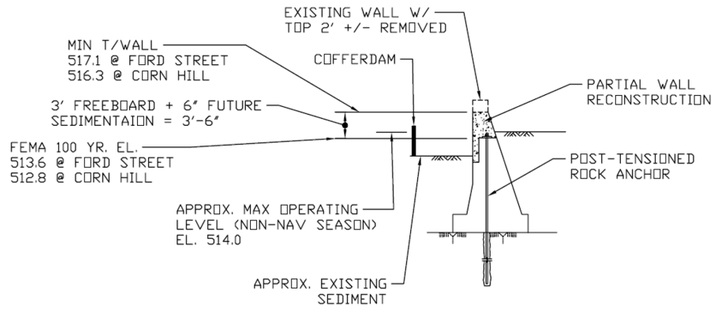


FIGURE 11 - ALTERNATIVE 2 CROSS-SECTION
SOURCE: BERGMANN ASSOCIATES, 2014

Evaluation: This alternative provides flood protection and would allow the wall to be reaccredited by FEMA, potentially reducing or eliminating flood insurance requirements for Corn Hill property owners. Further, this alternative would better facilitate grade changes behind the wall (i.e. filling) and could be designed to allow for removal of river sediment in front of the wall to better facilitate recreational boating.

This alternative partially satisfies the community's desire for enhanced visual access to the river, as the height of the wall could be lowered and the land side raised. However, this alternative does not provide opportunities to create a natural river edge, nor does it provide opportunities for easy physical access to the river.

Reconstruction of the wall would alter the materials and appearance of the wall, and could therefore potentially impact the historic value of the wall (it is noted that the wall is not specifically listed on the National Register of Historic Places). However, historic characteristics and potential opportunities for preservation could be addressed during the design phase.

This alternative is more costly and would require greater long-term maintenance than alternatives #3 and #4.

Alternative 2 - Repair entire length of wall		Rank
Criterion 1	Flood Protection	5
Criterion 2	Improved Physical Access	2
Criterion 3	Improved Visual Access	3
Criterion 4	Preservation of Natural & Historic Features	3
Criterion 5	Cost of Implementation	1
Criterion 6	Cost of Future Maintenance	2
	Rank	**16**

Alternative #3: Construct a Protection Berm Behind the Existing West River Wall

This alternative considers a berm (levee) behind the existing floodwall. Under this alternative, the River Wall is assumed to be irrelevant as a flood protection structure. Rather, flood protection would be provided by the berm, which would become the primary flood protection element while the wall would remain only to retain the river's edge. The new berm would be designed to comply with FEMA criteria and would be engineered as a water-retaining feature.

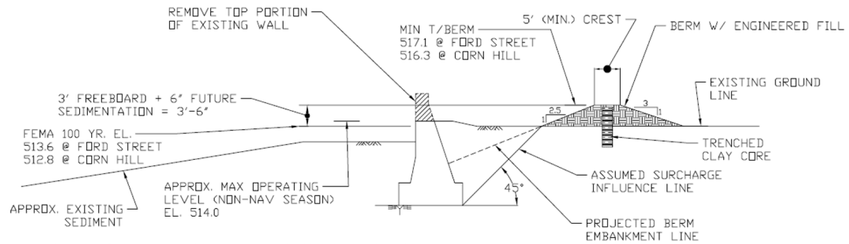


FIGURE 12 - ALTERNATIVE 3 CROSS-SECTION
SOURCE: BERGMANN ASSOCIATES, 2014

Evaluation: This alternative provides adequate flood protection, allows opportunities to create a natural river's edge, and could offer potential wave attenuation (which is beneficial to boaters). This alternative is cost effective, relative to complete reconstruction of the wall and would likely have lower long-term maintenance costs. Grade changes behind the wall (i.e. filling) and removal of river sedimentation may be limited due to the wall's lack of stability in certain locations. Because the wall in this alternative would not be restored, potential failure would necessitate repair or regrading to stabilize the embankment in the vicinity of the failed wall.

Because the wall would remain in its existing condition without restoration, this alternative could impact the historic character and value of the wall by virtue of neglect and further deterioration over the long-term.

This alternative partially satisfies the community's desire for enhanced visual access to the river, as pedestrians would be able to view the river from a trail along a raised berm (which would be set back from the wall approximately 20 feet). However, this alternative does not provide physical access to the river.

Alternative 3 - Protection berm behind existing wall		Rank
Criterion 1	Flood Protection	5
Criterion 2	Improved Physical Access	1
Criterion 3	Improved Visual Access	3
Criterion 4	Preservation of Natural & Historic Features	3
Criterion 5	Cost of Implementation	5
Criterion 6	Cost of Future Maintenance	2
	Rank	19

Alternative #4: Hybrid Wall / Berm

While alternatives #2 and #3 above are considered reasonable alternatives to establish flood protection within the study area, a combination of both alternatives would provide the most flexibility for waterfront site improvements, historic interpretation, and meeting community objectives. This alternative includes a protection berm along intermittent segments of the study area, approximately 20-25 feet behind the existing river wall. The berm would slope gently towards the river, allowing the river wall to be reduced in height in some locations and be flush with the landside grade. Sections of the wall could remain and be restored to allow pedestrian plazas/overlooks to be constructed against the back side of the wall. Where the berm is installed, the wall could be removed to allow for a new boat dock and naturalized shoreline.

Evaluation: This alternative provides adequate flood protection allowing the berm and reconstructed wall segments to be reaccredited by FEMA as a flood protection structure, thus offering potential reduction or elimination of flood insurance requirements. The historic character and value of the wall could be accommodated during the design phase. This alternative meets the community's goals by providing both visual and physical access to the river. In addition, this alternative is more cost-effective than full reconstruction of the wall and was widely accepted by members of the community, the Canal Corporation, and the City's partner agencies.

Alternative 4 - Hybrid option		Rank
Criterion 1	Flood Protection	5
Criterion 2	Improved Physical Access	5
Criterion 3	Improved Visual Access	5
Criterion 4	Preservation of Natural & Historic Features	4
Criterion 5	Cost of Implementation	3
Criterion 6	Cost of Future Maintenance	2
	Rank	24

Recommendation

After consideration of the four alternatives summarized above, the City and Technical Advisory Committee determined that Alternative #4 best meets the objectives of the project, as it provides flood protection while improving physical and visual access to the River, preserving elements of the wall's historical character, and allowing for optimal flexibility in the design of other landside and waterside waterfront improvements. The recommended alternative is the direct result of close collaboration between the City and the Corn Hill community. Development and selection of Alternative #4 was based in part on extensive feedback provided by the community over the course of the project at public meetings, CAC meetings, and through written communication. Participants at both public meetings provided overwhelming positive feedback and support for the recommended alternative.

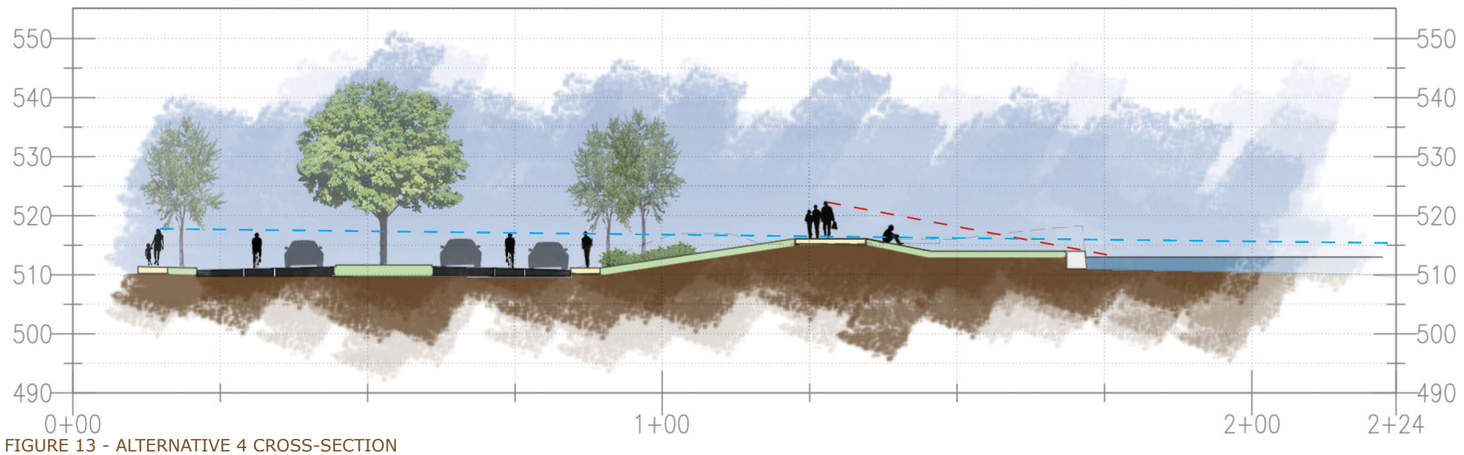
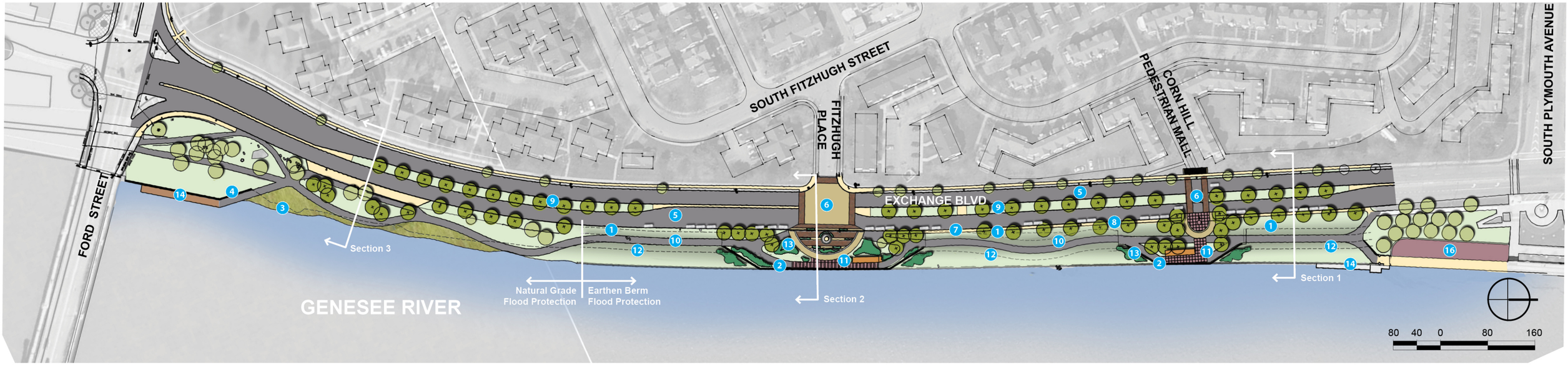


FIGURE 13 - ALTERNATIVE 4 CROSS-SECTION
SOURCE: BERGMANN ASSOCIATES, 2014

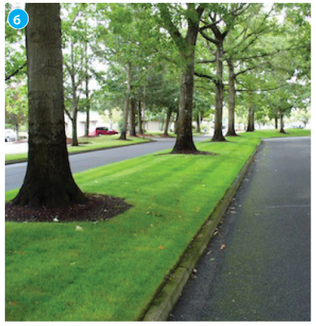
WEST RIVER WALL PUBLIC MEETING - NOVEMBER 2014

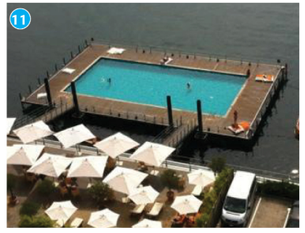


West River Wall - Master Plan

Legend (#)

1. Berm Locations
2. Wall Reconstruction
3. Naturalized Shoreline
4. Wall / Berm Transition at Ford Street Bridge
5. Resurface and Restripe Exchange Blvd
6. Enhanced Pedestrian Crossings
7. New Sidewalks
8. New Street Lighting
9. Median Plantings
10. Pedestrian / Bicycle Trail
11. Pedestrian Plazas / Overlooks
12. Informal Grass Amphitheater
13. Plantings
14. Boat Dock
15. Corridor Improvements
16. Existing Corn Hill Landing Plaza Improvements





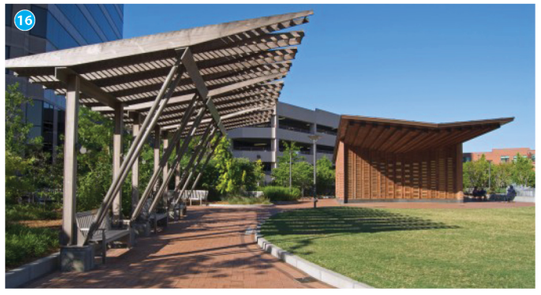


FIGURE 14

master plan

Overview

The project team evaluated the neighborhood's vision as set forth in the 2012 Corn Hill Neighborhood Vision Plan, with specific focus on the Exchange Boulevard and West River Wall segment. The West River Wall Master Plan incorporates elements from the Vision Plan in conjunction with the hybrid wall / berm flood protection as described in the Alternatives Analysis section. Objectives incorporated in the West River Wall Master Plan from the 2012 Vision Plan include:

- Enhance pedestrian crossings from the Corn Hill Neighborhood to the river.
- Connect the Corn Hill Neighborhood to the river.
- Enhance gateways.
- Green the street.
- Provide river access, activity in green space, and recreation amenities.
- Increase visual and physical access to the river.
- Create gathering spaces on the river.
- Create amphitheater / viewing area on the river.

Plan Elements

The preferred Master Plan depicted in Figures 14 and 16 incorporates the hybrid wall / berm levee option to optimize the goals of the project (increased visual/physical access to the river and flood protection at a reasonable cost). This hybrid option can accommodate a range of features and pedestrian experiences that take full advantage of this section of the Genesee River. Below are descriptions of the improvements envisioned in the West River Wall Master Plan as they relate to the following categories:

- Hybrid Wall / Berm Components
- Exchange Boulevard Improvements
- Landside Improvements

Hybrid Wall / Berm Components

Input provided by the community stated that enhanced, safe pedestrian connections from the Corn Hill neighborhood to the river are a main desire. The proposed location of these crossings at Fitzhugh Place and the Corn Hill Pedestrian Connection influenced the location of the new pedestrian plazas and overlooks, which in turn determined which method of flood protection (wall or berm) is used along this segment of the river. The proposed improvements to flood protection as they relate to the West River Wall Master plan, summarized below, are illustrated in Figures 15 to 20. (bulleted numbers correspond to the Master Plan labels in Figure 14.)

1. Berm locations. Construct a protection berm along intermittent portions of the study area, approximately 20-25 feet from the back of the existing River Wall and approximately 4 to 5' in height. In these locations, the berm will slope gently towards the river. This will allow the river wall to be reduced in height approximately 4 to 5' to Elevation 514' and be flush with the landside grade (Figure 15).

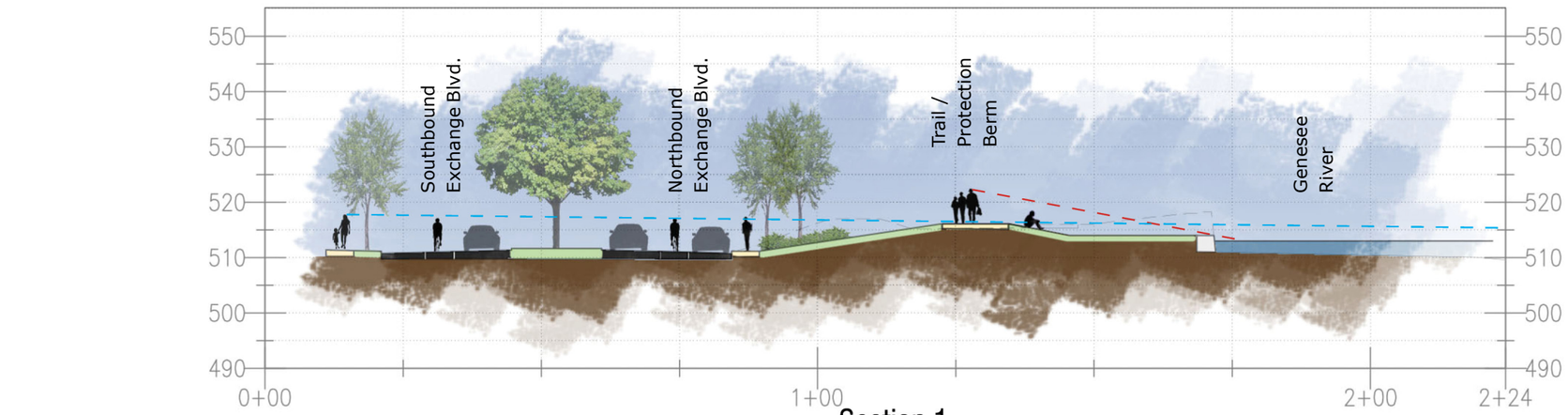
2. Wall reconstruction. Lower two sections of the existing West River Wall (approximately 350 LF) to an Elevation of 517' and fully reconstruct to ensure stability for pedestrian plazas/ overlooks constructed on the back side of the wall. In these locations, the pedestrian plazas will be flush with the top of the River Wall.

3. Naturalized shoreline. Transition the protection berm to natural grade as it heads south due to the rising Exchange Boulevard which provides adequate flood protection. The existing West River Wall in this location will be lowered below the water surface to an elevation of 511' in order to allow for a naturalized shoreline (Cross Section 3, Figure 16 and 17). This natural region will be designed to resist erosion from the river. Given the relatively low velocity at the river bank (< 3ft/ sec), several options to provide erosion control are feasible. This naturalized area also provides the opportunity for program elements such as an environmental education station to be used by local schools and organizations.

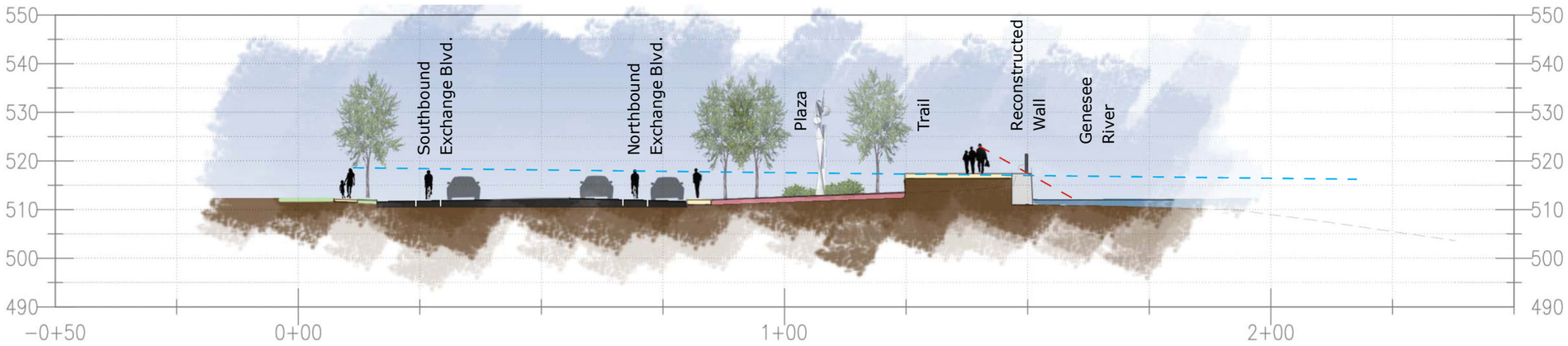
EXISTING VIEW LOOKING SOUTH TOWARDS FORD STREET BRIDGE

PROPOSED VIEW LOOKING SOUTH TOWARDS FORD STREET BRIDGE

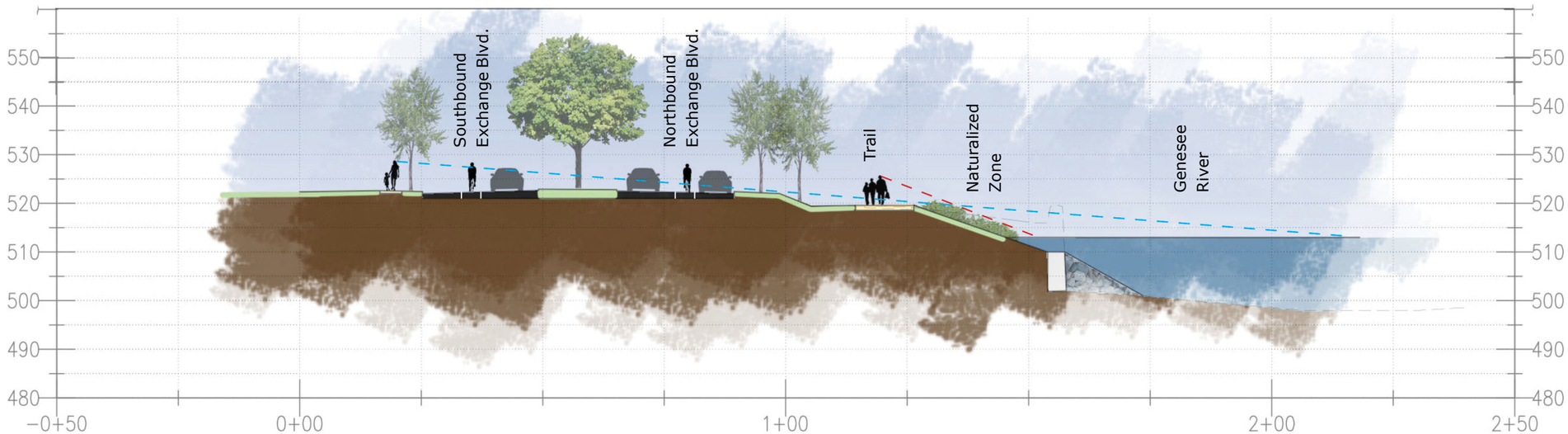
FIGURE 15



Section 1



Section 2



Section 3

CROSS SECTIONS

FIGURE 16

EXISTING VIEW LOOKING NORTH FROM FORD STREET BRIDGE

PROPOSED VIEW OF NATURALIZED SHORELINE LOOKING NORTH FROM FORD STREET BRIDGE

FIGURE 17

4. Wall / berm transition at Ford Street Bridge. Lower a section of the existing wall in the very southern portion of the study area to an elevation of 517’ and restore to allow for a boat dock to be constructed in front of the wall. This area is ideal for a boat dock because it is an area of natural scour that will not require dredging. The protection berm will span perpendicularly from the natural embankment to the reconstructed floodwall near Ford Street in order to mitigate the impacts of potential floodwater moving from the project area to regions south of the site. The berm would be transitioned to blend with the pedestrian walkway that runs under Ford Street (Figure 17).

Exchange Boulevard Improvements

Currently, Exchange Boulevard acts as a barrier to pedestrians between the Corn Hill neighborhood and the river and lacks safe pedestrian crossings. The following improvements (illustrated in Figures 14 and 16) are intended to enhance the median, which is viewed by the community as an asset to the neighborhood, and create safer and inviting pedestrian connections between Corn Hill and the river.

5. Resurface and restripe Exchange Boulevard. Resurface and restripe Exchange Boulevard in its existing footprint to include one travel and one bike lane striped for optimal visibility and safety in each direction, and parking on both the western and eastern sides of the street.

6. Enhance pedestrian crossings. Provide two enhanced pedestrian crossings at the Corn Hill Pedestrian Mall of Exchange Boulevard and at Fitzhugh Place. Both pedestrian crossings are treated with enhanced landscaping and decorative pavement to differentiate and visually enhance the crossing for motorists, which will improve connectivity and aid in traffic-calming.

7. New sidewalks. Provide a new sidewalk along the eastern side of Exchange Boulevard. This will help to enhance pedestrian accessibility as well as provide car loading and unloading space (Figure 18).

8. New Street lighting. Replace street lighting with new ornamental light poles in existing locations.

EXISTING VIEW LOOKING EAST FROM EXCHANGE BOULEVARD TO THE OTHER SIDE OF RIVER

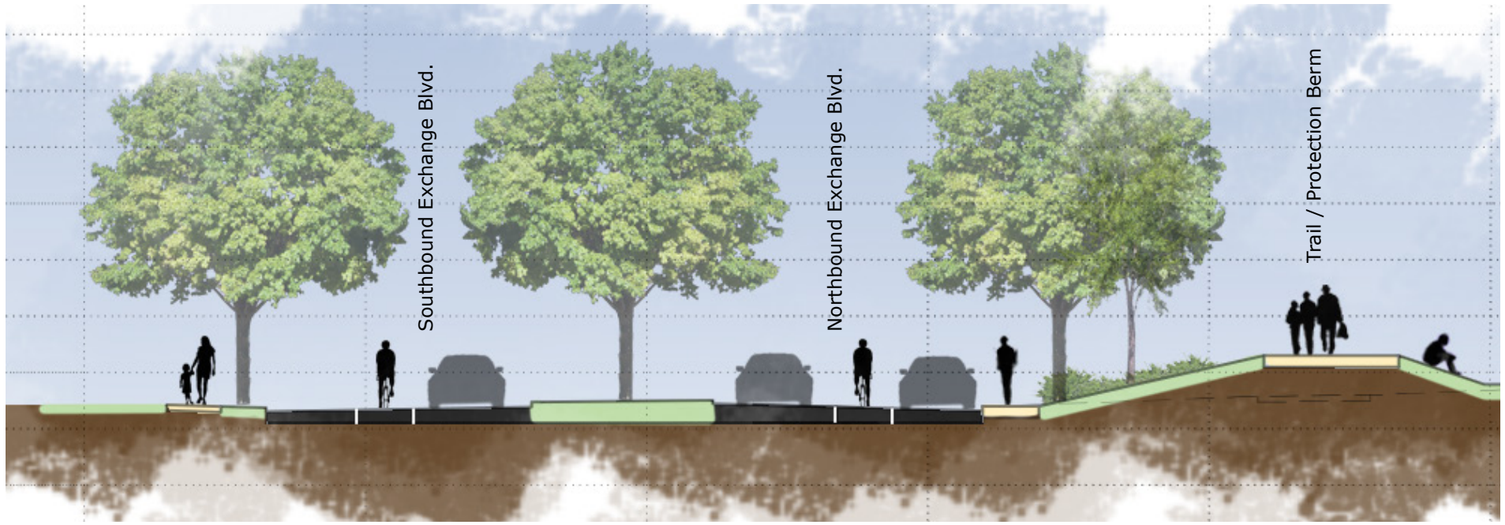
PROPOSED VIEW LOOKING EAST FROM EXCHANGE BOULEVARD TO THE OTHER SIDE OF RIVER

FIGURE 18

EXISTING VIEW OF EXCHANGE BOULEVARD AND FITZHUGH PLACE INTERSECTION

PROPOSED VIEW OF EXCHANGE BOULEVARD AND FITZHUGH PLACE INTERSECTION

FIGURE 19



ENHANCED MEDIAN

9. Median plantings. Enhance the median by planting large deciduous canopy trees. Replace the soil around the trees with an appropriate soil medium to optimize the growth and success of the trees in the median environment.

Landside Improvements

Based on analysis and feedback from the community, the following amenities are proposed to help attract people to the river and enhance physical and visual access to the water. The proposed improvements to the landside area behind the West River Wall, as summarized below, are illustrated in Figures 14 and 16.

10. Pedestrian/bicycle trail. Construct a 12' wide pedestrian/bicycle trail along the length of the study area. In some locations, the trail is shown on the top of the protection berm. In other locations, the trail moves closer to the river, connecting to the overlook/plazas and the boat dock. This offers a richer traveling experience for the trail user by providing ever-changing views of the river and engagement with the shoreline.

11. Pedestrian plazas/overlooks. Construct two proposed pedestrian overlook/plaza areas: (1) at the enhanced intersection at the Corn Hill Pedestrian Mall crossing; and (2) at the Fitzhugh Place intersection. The new plaza overlook areas will better connect the waterfront with the Corn Hill neighborhood, provide unique plaza event space, overlook viewing access at the river's edge, and provide a setting for the placement of public art or focal features. The pedestrian plazas/overlooks also provide the opportunity to have repurposed cargo containers or other minor structures to be used for small retail (bike or kayak rental) or as picnic shelters (Figure 19).

12. Informal grass amphitheater. Construct informal grass amphitheaters between the two proposed plaza / overlook areas. The protection berm slopes downward towards the river as it meets the top of the lowered West River Wall. This gently sloped lawn area can act as an informal amphitheater space, providing opportunities to view activities on the river such as regattas, floating barge performances, and the annual 4th of July fireworks display as well as support more passive uses such as sun bathing, picnicking, etc.

13. Plantings. Remove existing vegetation. There are currently clusters of dense volunteer vegetation, including poison ivy and trees, along the back side of the wall. The NYS Canal Corporation requires a minimum of 15 feet of unobstructed space behind its wall. Furthermore, any wall repairs, reconstruction, or removal will require the removal of adjacent vegetation. The Master Plan envisions new plantings of low-maintenance trees, shrubs, and grasses that will allow for unobstructed or filtered views of the river from the pedestrian trail. To ensure that plantings will not interfere with the integrity

of the protection berm, trees shall not be planted adjacent to the wall or berm. Rather, trees shall be located between the berm and Exchange Boulevard along the length of the study area and in other locations that will not affect the functioning maintenance of the berm (Figure 20).

14. Boat dock. The Master Plan includes a new boat dock located at the southern end of the study area, near the Ford Street Bridge. This area currently has sufficient navigation draft, is expected to be less affected by sedimentation, and is therefore considered preferable and sustainable for providing boat access. A small vehicle parking area is provided to allow for transporting car-top watercraft. Accessible kayak docks are intended to be placed at this location and at the existing dock at Corn Hill Landing to provide easy access to the water.

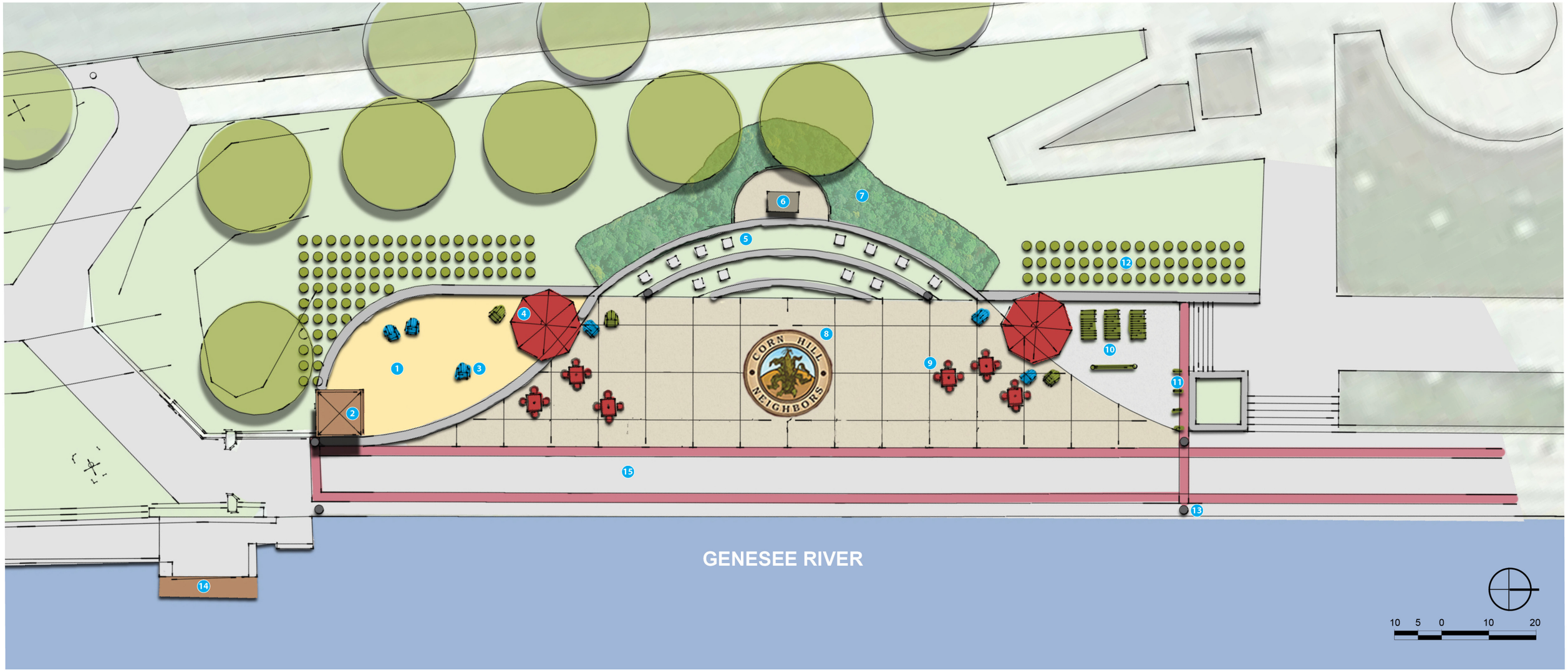
15. Trial Improvements. The Master Plan, although not graphically shown on the concept plan, also includes trail improvements such as pedestrian level lighting, ornamental benches, bike racks, fitness stations, distance markers, informational kiosks, and interpretive panels. These elements will help to activate the corridor from the Ford Street Bridge to Corn Hill Landing and give the corridor a distinct identity.

16. Existing Corn Hill Landing Plaza Improvements. Activating the existing Corn Hill Landing Plaza to the north of the project area is a priority of the Corn Hill Neighborhood Association. Through programming and low-cost improvements, such as providing Adirondack chairs, shade structures, and games/activities, this space can draw users from Corn Hill Landing further south into the study area. The plaza is also a potential location to relocate the Griffin sculpture from the median of Exchange Boulevard. Relocating the sculpture is a priority of the Corn Hill Neighborhood Association in order to prevent further deterioration of the sculpture from salt spray. A conceptual plan for the existing Corn Hill Landing Plaza can be found in Figure 21.

EXISTING VIEW LOOKING SOUTH TOWARDS FORD STREET

PROPOSED VIEW LOOKING SOUTH TOWARDS FORD STREET

FIGURE 20



Corn Hill Landing Plaza Improvements

Legend

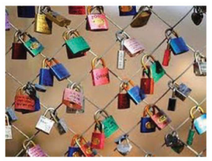
1. Seasonal Urban Beach
2. “Lifeguard Platform” (Viewing Platform)
3. Adirondack Chairs
4. Umbrella Shade Sculptures with Lighting
5. Amphitheater in Hillside
6. Relocated Griffin Sculpture
7. Planting Beds
8. Corn Hill Logo in Pavement
9. Tables / Game Tables
10. Exercise Station
11. Bike Rack / Repair Station
12. “Corn Hill Planting” (Ornamental Grass)
13. Wind Harps on Poles
14. Accessible Kayak Dock
15. Riverway Trail

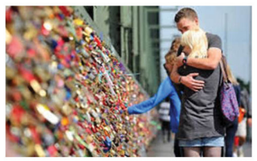
FIGURE 21

Potential Program Elements

- Love locks associated with viewing platform.
- Piece of water / earth from another memorable / significant place in ground or in a monument.
- Water flowing into river.
- Zip line across river.
- Energy-harvesting exercise or play equipment to power lights or kinetic art.
- Floating Chairs


Love Locks






13


10


12


2


14


5

implementation

The purpose of the West River Wall Master Plan is to provide guidance to the City of Rochester, NYS Canal Corporation, Corn Hill Neighborhood residents and the general public on the implementation of the vision illustrated in the Master Plan. The implementation plan will provide the overall framework and actions required to achieve this vision.

Phasing

The Phasing Plan organizes the Master Plan into three distinct implementation phases, each phase building upon the previous.

- **Phase 1a** – Existing Corn Hill Landing Plaza Improvements
- **Phase 1b** – Hybrid Wall / Berm and Multi-Use Trail
- **Phase 2** - Exchange Boulevard Improvements
- **Phase 3** - Landside Amenities between Exchange Boulevard and the Wall / Berm

Phase 1a - Existing Corn Hill Landing Plaza Improvements

Phase 1a of the Master Plan focuses on improvements to the existing Corn Hill Landing Plaza. The improvements to the plaza will build upon existing efforts undertaken by the Corn Hill Neighborhood Association (CHNA) to activate the space. Short-term efforts include adding additional Adirondack chairs to those already in place, game tables, ornamental planting beds, and the relocation of the Griffin sculpture from Exchange Boulevard. Longer-term actions include the creation of a small amphitheater space in the existing hillside, a seasonal urban beach, ornamental shade structures, and other various improvements.
For the recommendations in Phase 1a to become a reality, the following assumptions were identified and must be factored into subsequent budgeting and construction planning.

- Coordination between CHNA, The City of Rochester and Mark IV Enterprises (the owner of the plaza) must take place in order for the CHNA to have the ability to make improvements to a privately-owned public space.
- Funding is identified and secured for the short-term improvements and the design and construction of the long-term improvements.
- Programming is established for the space along with sufficient resources for marketing, ongoing maintenance and general upkeep.

Improvements to the existing Corn Hill Landing Plaza will help to invigorate the neighborhood and give a signal to the general public that changes are happening and progress is being made on vision put forth in the 2012 Corn Hill Community Vision Plan, In reality, these improvements could be taken on at any time as funding from the Corn Hill Neighborhood Association or the City of Rochester becomes available.

Phase 1b - Hybrid Wall / Berm and Multi-Use Trail

Phase 1b of the Master Plan focuses on the construction of the hybrid wall / berm system and the multi-use trail. Construction of the hybrid system is critical for providing a FEMA-accredited flood protection structure and eliminating the need for Corn Hill Neighborhood residents to purchase flood insurance. In the short term, a Letter of Map Revision (LOMR) will be submitted to FEMA to re-establish and lower the base flood elevation based on recent data evaluation. By lowering the base flood elevation, some property owners will not be required to pay flood insurance while others may have their premiums reduced.

Where the walls and earthen berms are constructed is key in setting the stage for future phases, such as the pedestrian plazas and overlooks. The pedestrian / bicycle trail would be constructed with the hybrid system to continue to provide recreation along the river and to increase visual and physical access to the water.
For the recommendations in Phase 1b to become a reality, the following assumptions were made and must be factored into subsequent budgeting and construction planning.

- Ownership and maintenance of the hybrid wall / berm is determined and agreed upon between The City of Rochester and the Canal Corporation.
- Funding is identified and secured for final construction document preparation and construction.

The completion of Phase 1b will reaccredit the flood protection structure, increase visual and physical access to the water, and set the stage for future phases of the Master Plan.

Phase 2 - Exchange Boulevard Improvements

Phase 2 of the Master Plan focuses on improvements to Exchange Boulevard. This phase involves milling, repaving, and re striping Exchange Boulevard to include one lane of vehicular traffic in each direction, bike lanes (striped for optimal visibility and safety) in each direction and parking on both sides of Exchange Boulevard. Phase 2 would also include the addition of a sidewalk on the eastern side of Exchange Boulevard, new ornamental street lighting, and the enhancement of pedestrian crossings at Fitzhugh Place and the Corn Hill pedestrian link which will be key in providing a safe pedestrian connection to draw people from the Corn Hill Neighborhood to the river. For the recommendations in Phase 2 to become a reality, the following assumptions were identified and must be factored into subsequent budgeting and construction planning.

- Coordination with the New York State Department of Transportation (NYSDOT) and the Monroe County Department of Transportation (MCDOT).
- Funding is identified and secured for final construction documents and construction.

The completion of Phase 2 will enhance connectivity and pedestrian safety to the waterfront, improve the look of Exchange Boulevard creating a gateway for the Corn Hill Neighborhood, and further lay the framework for future phases of the Master Plan.

Phase 3 - Landside Amenities between Exchange Boulevard and the Wall / Berm

Phases 1 and 2 set the stage for the placement of the pedestrian plaza overlooks and other amenities that will activate the corridor and draw people from the Corn Hill Neighborhood and the surrounding city to the waterfront. Phase 3 of the Master Plan focuses on the construction of the landside amenities between the

hybrid wall / berm flood control structure and Exchange Boulevard. For the recommendations in Phase 3 to become a reality, the following assumptions were identified and must be factored into subsequent budgeting and construction planning.

- Funding is identified and secured for final design documents and construction.

The completion of Phase 3 will further activate the riverfront creating a destination point drawing people to and from the Corn Hill Neighborhood and other city residents.

Planning-Level Engineer's Opinion of Probable Costs

To guide the phasing of the West River Wall Master Plan and to assist in acquiring funds for the project, a planning-level engineer's opinion of probable costs was calculated for each phase of the project as illustrated in Figure 22. A more detailed estimate can be found in Appendix D.

Permitting and Applications

In reviewing the feasibility of an undertaking, it is generally valuable to identify the potential for environmental impact early in the planning process. Furthermore, in considering the implementation of any action, it can be helpful to identify agencies that would have jurisdiction over a project and to identify any permits or environmental reviews that they would require. It should be noted that the usefulness of such a process is limited to the level of detail developed for the project. The more clarity and detail developed for a project, the more detailed the agency response with regard to the potential for environmental impact and permitting. This section describes the environmental compliance and permitting that would be involved in Phase 1b - Hybrid Wall / Berm and Pedestrian / Bicycle Trail- of the West River Wall Master Plan.

US Army Corps of Engineers (USACE)

The Genesee River is listed as "navigable" from its mouth to Black Creek and is therefore subject to Section 10 of the Rivers and Harbors Act. Any work performed below the "Ordinary High Water (OHW)" of the river is under the jurisdiction of the USACE. The OHW elevation for the project area is approximately 512.5 feet (City Datum). Implementation of Phase 1b will involve construction below OHW for the wall reconstruction areas, for the naturalized shoreline section near the southern end of the study area, and for many of the berm locations.

	Project Phase	Name	Planning Level Cost	Potential Funding Resources	Time Frame
Phase 1a	Phase 1a	Existing Corn Hill Landing Plaza Improvements (see Appendix D for detailed cost breakdown)			
	Project 16	Adirondack Chairs	$2,700	CHNA	2015-2019
	Project 16	Tables and Chairs	$21,000	CHNA	2015-2019
	Project 16	Ornamental Plantings	$8,835	CHNA	2015-2019
	Project 16	Bike Racks and Bike Repair Station	$5,500	CHNA	2015-2019
	Project 16	Fitness Equipment	$14,000	CHNA	2015-2019
	Project 16	Shade Structures	$80,000	CHNA	2015-2019
	Project 16	Wind Harps On Poles	$14,000	CHNA	2015-2019
	Project 16	Urban Beach with Lifeguard Viewing Platform	$46,300	CHNA, City, LWRP	2015-2019
	Project 16	Relocate Griffen Sculpture	$50,000	CHNA, City	2015-2019
	Project 16	Corn Hill Logo Treatment	$6,000	CHNA, City	2015-2019
	Project 16	Amphitheatre	$201,000	CHNA, City, LWRP	2015-2019
	Sub-Total		$449,335		
	Basic Work Zone Traffic Control (5%)		$22,500		
	Survey Operations (2%)		$9,000		
	Erosion and Sediment Control (.5%)		$2,300		
	SWPP Inspections		$5,000		
	Total		$488,135		
	Design Contingency (15%)		$73,220		
	Mobilization (10%)		$48,814		
	Construction Contingency (10%)		$48,814		
	Design and Engineering Services (12%)		$58,576		
	Construction Inspection / RPR (10%)		$48,814		
	Phase 1b Planning Level Cost		$766,373		
Phase Ib	Phase 1b	Hybrid Wall / Berm and Multi-Use Trail (see Appendix D for detailed cost breakdown)			
	Project 1,2,4,12	Hybrid Wall / Berm	$2,459,732	City, NYSCC, EPF, LWRP	2019
	Project 10	Bicycle Trail	$225,500	City, NYSCC, RTP, EPF	2019
	Project 3	Naturalized Shoreline	$4,000	City, NYSCC, RTP, EPF, NYSEFC GIGP	2019
	Project 13	Shade Tree Plantings	$11,000	City, NYSCC, RTP, EPF, NYSEFC GIGP	2019
	Sub-Total		$2,700,232		
	Basic Work Zone Traffic Control (5%)		$135,100		
	Survey Operations (2%)		$54,100		
	Erosion and Sediment Control (.5%)		$13,600		
	SWPP Inspections		$5,000		
	Total		$2,908,032		
	Design Contingency (15%)		$436,205		
	Mobilization (10%)		$290,803		
	Construction Contingency (10%)		$290,803		
	Design and Engineering Services (12%)		$348,964		
	Construction Inspection / RPR (10%)		$290,803		
	Phase 1b Planning Level Cost		$4,565,610		

FIGURE 22 - IMPLEMENTATION CHART

	Project Phase	Name	Planning Level Cost	Potential Funding Resources	Time Frame
Phase 2	**Phase 2**	**Exchange Boulevard Improvements (see Appendix D for detailed cost breakdown)**			
	Project 5	**Exhange Blvd Resurfacing and Restriping**	**$391,500**	**City**	**2015-2019**
	Project 6	**Enahnced Pedestrian Crossings**	**$180,000**	**City**	**2015-2019**
	Project 7	**Concrete Sidewalk East Side of Exchange Blvd**	**$260,000**	**City**	**2015-2019**
	Project 8	**Ornamental Street Lighting**	**$153,140**	**City**	**2015-2019**
	Project 9	**Median Shade Trees and Landscape**	**$65,875**	**City**	**2015-2019**
	Sub-Total		**$1,050,515**		
	Basic Work Zone Traffic Control (5%)		$52,600		
	Survey Operations (2%)		$21,100		
	Erosion and Sediment Control (.5%)		$5,300		
	SWPP Inspections		$5,000		
	Total		**$1,134,515**		
	Design Contingency (15%)		$170,177		
	Mobilization (10%)		$113,452		
	Construction Contingency (10%)		$113,452		
	Design and Engineering Services (12%)		$136,142		
	Construction Inspection / RPR (10%)		$113,452		
	Phase 2 Planning Level Cost		**$1,781,190**		
Phase 3	**Phase 3**	**Landside Amenities Between Exchange Boulevard and Hybrid Wall / Berm (see Appendix D for detailed cost breakdown)**			
	Project 11	**Fitzhugh Place Plaza**	**$620,415**	**City, RTP, EPF**	**2025**
	Project 11	**Corn Hill Pedestrian Connection Plaza**	**$458,225**	**City, RTP, EPF**	**2025**
	Project 13,14,15	**General Cooridor Improvements - Pedestrian Lighting, kayak Dock, Bike Racks, Benches, Wayfinding Signage, etc.**	**$344,500**	**City, RTP, EPF**	**2025**
	Sub-Total		**$1,423,140**		
	Basic Work Zone Traffic Control (5%)		$71,200		
	Survey Operations (2%)		$28,500		
	Erosion and Sediment Control (.5%)		$7,200		
	SWPP Inspections		$5,000		
	Total		**$1,535,040**		
	Design Contingency (15%)		$230,265		
	Mobilization (10%)		$153,504		
	Construction Contingency (10%)		$153,504		
	Design and Engineering Services (12%)		$184,205		
	Construction Inspection / RPR (10%)		$153,504		
	Phase 3 Planning Level Cost		**$2,410,022**		

FIGURE 22 - IMPLEMENTATION CHART CONTINUED

The USACE will make the final determination over which forms of authorization would be used for the project. This will be a topic of discussion as more details of the work are developed. The portions of this work involving wall reconstruction could be authorized under Nationwide Permit 3 – Maintenance of Existing Flood Control Facilities, which authorizes, "The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification."

The naturalized shoreline portion could be authorized under Nationwide Permit 13 – Bank Stabilization, which authorizes bank stabilization activities necessary for erosion prevention. Some of the required criteria include:

- (a) No material is placed in excess of the minimum needed for erosion protection;
- (b) The activity is no more than 500 feet in length along the bank;
- (c) The activity will not exceed an average of one cubic yard per running foot placed along the bank below the plane of the ordinary high water mark;
- (f) No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored trees and treetops may be used in low energy areas);

The berm locations in Phase 1b may fall under Nationwide Permit 31 – Maintenance of Existing Flood Control Facilities, but this would involve agreement with the District Engineer that this work would fall within the "maintenance baseline" of the flood control facility.

If use of the Nationwide Permits does not appear to be a good "fit" after consultation with the USACE, the work could be authorized through a "Letter of Permission," which is more involved than a Nationwide Permit but less involved than an Individual Permit. Finally, the project could be authorized through an Individual permit. Individual permits require much more information and processing than the other forms of authorization discussed, including a required public notification and comment process and an individual Section 401 Water Quality Certification from the New York State Department of Environmental Conservation (NYSDEC).

New York State Department of Environmental Conservation
The Genesee River is classified by NYSDEC as Class "B." The best usages of Class B waters are primary and secondary contact recreation and fishing. These waters shall be suitable for fish, shellfish, and wildlife propagation and survival. Because of this classification, and because the Genesee River is navigable, any disturbance to the bed or banks of the river would require an Article 15 Protection of Waters Permit, pursuant to 6 NYCRR Part 608. One of the conditions of an Article 15 permit is that in-water construction would be prohibited during certain spring months. The actual dates for this restriction are determined by the NYSDEC Fisheries person for that area at the time of permitting. Based on other projects in the vicinity, it is anticipated that the date restrictions for in-water work would be from March 15 to June 30. It should be noted that if a temporary cofferdam was constructed outside of the date restriction time, work could then be performed in the dewatered area behind the cofferdam during the date restriction times.

As discussed above, the project may require a letter of permission or an individual Section 10 permit from the Army Corps of Engineers. Should this be the case, an individual Section 401 Water Quality Certification would be required from the NYSDEC. This requires a determination that the project will "comply with the applicable effluent limitations, water quality standards, and any other applicable conditions of the State Law." The NYSDEC has already granted a blanket Section 401 Water Quality Certification listed for the Nationwide Permits discussed provided the project meets all of the General Conditions of the Nationwide Permits.

One factor in determining the issuance of the above permits would be demonstration of adequate erosion and sediment controls. Should it apply, the project would also need to be in compliance with the NYSDEC SPDES General Permit for a Stormwater Discharge from Construction Activity (Permit No. GP-0-10-001) or with the local Municipal Separate Storm Sewer Systems (MS4) requirements. Coverage under this permit is required for projects that disturb more than one acre of land. It is likely that Phase 1b would require coverage under this permit. Obtaining this coverage would require preparation of a Stormwater Pollution Protection Plan (SWPPP) which will include an erosion and sediment control plan. Treatment for water quality is not anticipated since the work would not involve any new impervious area. Consideration for water quantity control would be waived for this project since the project would result in changes to hydrology that increase discharge rates.

Another requirement for NYSDEC permits is completion of SEQRA compliance (see below).

New York State Department of State (NYSDOS)
At this time, the project area is not within an approved Local Waterfront Revitalization Program (LWRP) area. Therefore, a Federal consistency determination would not be required for the USACE permitting or for any potential Federal funding.

Office of General Services (OGS)
Title to the bed of numerous bodies of water is held in trust for the people of the State of New York under the jurisdiction of the OGS. Structures, including fill, located in, on, or above state-owned lands under water are regulated under the Public Lands Law and may require authorization from the OGS. Coordination with OGS would be required for features such as docks identified in the master plan; however, for Phase 1b, it is anticipated that coordination with OGS, if any, would be handled by NYSDEC.

New York State Canal Corporation (NYSCC)
The State of New York under the jurisdiction of the NYSCC owns the existing West River Wall and a varying width of land behind the wall. In most places the NYSCC has jurisdiction over 15 feet of the land behind the wall. Near Ford Street, this amount is approximately 50 feet. Assuming that the City would own and maintain the reconstructed wall and berms of Phase 1b, the work would require an "Occupancy and Work Permit" from the NYSCC. An Occupancy Permit is a revocable instrument that authorizes the temporary, restricted use of a specific site of real property under the jurisdiction of the NYSCC. In the case of a permanent structure like this, the permit would be a perpetual permit. A Work Permit is a revocable instrument that authorizes construction, maintenance, inspection, survey or other type of work or short term activity on a specific site of real property under the jurisdiction of the NYSCC.

Application requires a small fee and insurance certifications, along with plans and specifications pertaining to the proposed work. All of the requirements of SEQR must be met (see below).

The NYSCC owns the Court Street Dam, which is downstream of the West River Wall. This dam controls the water surface elevation at the West River Wall. It is operated for Rochester Gas & Electric (RG&E) for power generation as well as for navigation and flood control. It would be desirable to coordinate with dam operators to adjust water surface elevations to expedite construction. This consideration should be discussed with the NYSCC, and may be included in the Occupancy and Work Permit application. Coordination with RG&E would also be necessary.

National Environmental Protection Act (NEPA)
Any Federal agency providing funding, or making a discretionary decision regarding a project (such as the decision to issue a permit) is required to comply with NEPA. This includes funding from a federal agency that is administered by a State agency. Each federal agency has issued its own regulations for the implementation of NEPA and the details of their procedures do vary. In general, the work identified for Phase 1b should be a Class II, Categorical Exclusion under NEPA. Documentation will be required by the funding/permitting agency to confirm this classification. In the case of the USACE, the Joint Application for Permit would provide this agency the documentation needed for their compliance with NEPA. Specific procedures and information required by a funding agency would be investigated at the time of project funding.

Besides NEPA itself, Federal agencies must comply with a number of other Federal laws, regulations and Executive Orders (EO). For example, Federal laws and EOs that would apply to Phase 1b include:

- National Historic Preservation Act
- Clean Water Act
- Endangered Species Act
- EO 11990 Protection of Wetland
- EO 11988 Floodplain Management
- EO 13112 Invasive Species

State Environmental Quality Review Act (SEQRA)
Phase 1b is an action subject to review under SEQRA. Depending on the ownership/roles agreed to between the City and the NYSCC, it is assumed that the City of Rochester would be the lead agency. Under SEQRA, a Type II project is a class of projects where no environmental impact would be expected. The SEQRA regulations describe these kinds of projects in 6 NYCRR Part 617.5. One of these that may be appropriate to the Phase 1b is "replacement, rehabilitation or reconstruction of a structure or facility, in kind, on the same site, including upgrading buildings to meet building or fire codes, unless such action meets or exceeds any of the thresholds in section 617.4 of this Part (6 NYCRR Part 617.5(c)(1)). It could be reasoned that the berms would be a replacement for the river wall. As the lead agency, the City could determine the work to be a Type II project, in which there would be no further SEQR compliance.

A more conservative approach would be for the City to classify Phase 1b as an "Unlisted Action" under SEQRA. This will involve

preparation of a short or long Environmental Assessment Form (EAF). The NYSDEC has recently developed new EAF's for use under 6 NYCRR Part 617. The City of Rochester had previously developed its own SEQRA Long EAF; however, in light of NYSDEC's new forms, has decided to utilize the NYSDEC forms. In its revision the NYSDEC has added more information to the Short EAF, and has recommended its use for most projects, leaving the Long EAF for more complicated projects. Use of the current NYSDEC Short EAF is recommended for Phase 1b.

Part 1 of the Short EAF will provide a description of the proposed work and the project site. This includes environmental resources that are or may be present that could be impacted, such as wetlands, threatened and endangered species, hazardous waste and contaminated materials, and historic resources. Part 1 also identifies all State permits and State agency approvals needed for the project. The completed Part 1 of the Short EAF should be sent by the City to all of the identified involved agencies and any interested state agencies. Involved agencies for the project include the NYSDEC and the New York State Canal Corporation. The letters to involved and interested agencies should state The City's intent to be the lead agency for the project. The letters should also solicit comments with regard to knowledge of environmental resources present and any concerns with regard to potential environmental impact. Agencies must be allowed 30 days to react to this letter. After taking into account any public and agency comments, Part 2 of the EAF should be completed. Part 2 is a documentation of project impacts and their magnitude. It is anticipated that the SEQR process will then culminate with a decision document that concludes that there will be no significant impacts as a result of the project. This document is a "Negative Declaration."

Threatened and Endangered Species
One of the requirements of permitting agencies and SEQRA is the potential to affect threatened and endangered species. This involves a review of State-listed species from the Natural Heritage Program of the NYSDEC and federally-listed species from the U. S. Fish and Wildlife Service (FWS). The lists of species and reports of known locations do change over time, so a check with these agencies should be done every 6-12 months during project development. Of particular note is that in November 2013, the USFWS announced the proposed listing of the Northern long-eared bat (Myotis septentrionalis), which will require the review of any tree removals greater than 3" diameter breast height (dbh) as suitable roosting habitat. Suitable habitat includes gaps underneath bark, in cavities, or in crevices of both live and dead trees. In order to reduce the potential to impact this species, it is recommended that any tree removals occur during the approved winter cutting window of October 1 to March 31 when the bats are located in hibernacula. A determination of effect under the Endangered Species Act will need to be made by the USACE in consultation with the USFWS before they can authorize a project involving the removal of trees greater than 3" dbh.

New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP)
Any Federal agency involved in the project will need to make a determination under Section 106 of the National Historic Preservation Act of 1966 in consultation with the State Historic Preservation Officer. The Commissioner of NYSOPRHP is the State Historic Preservation Officer for New York, and the State Historic Preservation Office (SHPO) handles project reviews and consultation for the State Historic Preservation Officer. Review is also required for SEQRA unlisted actions under Section 14.09 of the New York State Parks, Recreation and Historic Preservation Law of 1980.

Contact has been made with the SHPO regarding this project; however, the project concepts were not specific enough for a formal review. Screening of the project area using the SHPO GIS does indicate two things: There are no listings on the National or State Registers of Historic Preservation and the entire area is considered to be "archaeologically sensitive." Areas where excavation may be required may therefore need review by a professional archaeologist. The National Register of Historic Places Nomination Document for the Erie Canalway National Heritage Corridor, Genesee Arm Section, was reviewed and the West River Wall is not listed as a contributing or non-contributing factor. Besides structures or properties that are listed on the National Register of Historic Places, Section 106 affords protection to those structures and properties that are *eligible* for listing on the National Register. Further coordination with SHPO is recommended to determine the eligibility of the West River Wall for the National Register. If needed, a final determination of eligibility would be made by the National Park Service.

Follow On Tasks

As part of the project implementation process, the following tasks will need to be performed prior to the construction of Phases 1b to 3 of the West River Wall Master Plan vision

- Conduct Phase 1a Literature Search and Sensitivity Study and likely a Phase 1b Field Investigation for the proposed disturbed areas within the project area.
- Perform Hazardous Materials survey and prepare abatement plan if necessary.
- Coordinate with other agencies involved with the project in addition to The City of Rochester and Canal Corporation. These may include;
  - o Office of General Services (OGS)
  - o New York State Department of State (DOS)
  - o New York State Power Authority
  - o New York State Department of Transportation (NYSDOT)
  - o Monroe County Department of Transportation (MCDOT)
  - o Rochester Gas and Electric (RG&E)
- Complete the New York State Environmental Quality Review Act (SEQRA) Environmental Assessment Form (if unlisted action is selected).
- Prepare Final Design Documents for the wall / berm construction including updates to the Engineer's Opinion of Probable Costs.
- Prepare a signage and wayfinding plan.
- Prepare Construction Documents for public bidding, including Final Engineer's Opinion of Probable Costs.
- Submit permit applications to the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Army Corps of Engineers (USACE).
- Complete NYSDEC SWPP Stormwater permitting process.

Roles and Funding

Possible funding and implementation options have been discussed by the City of Rochester and the NYS Canal Corporation, including a collaborative interagency partnership through which the City and NYS Canal Corporation would prepare and submit a joint CFA grant application. Both agencies would be required to contribute towards a match (through dollars or in-kind services).

Implementation will be driven, in part, by the Master Plan design and the available sources of funding. The following list includes additional possible funding sources based on awards for similar projects from previous years.

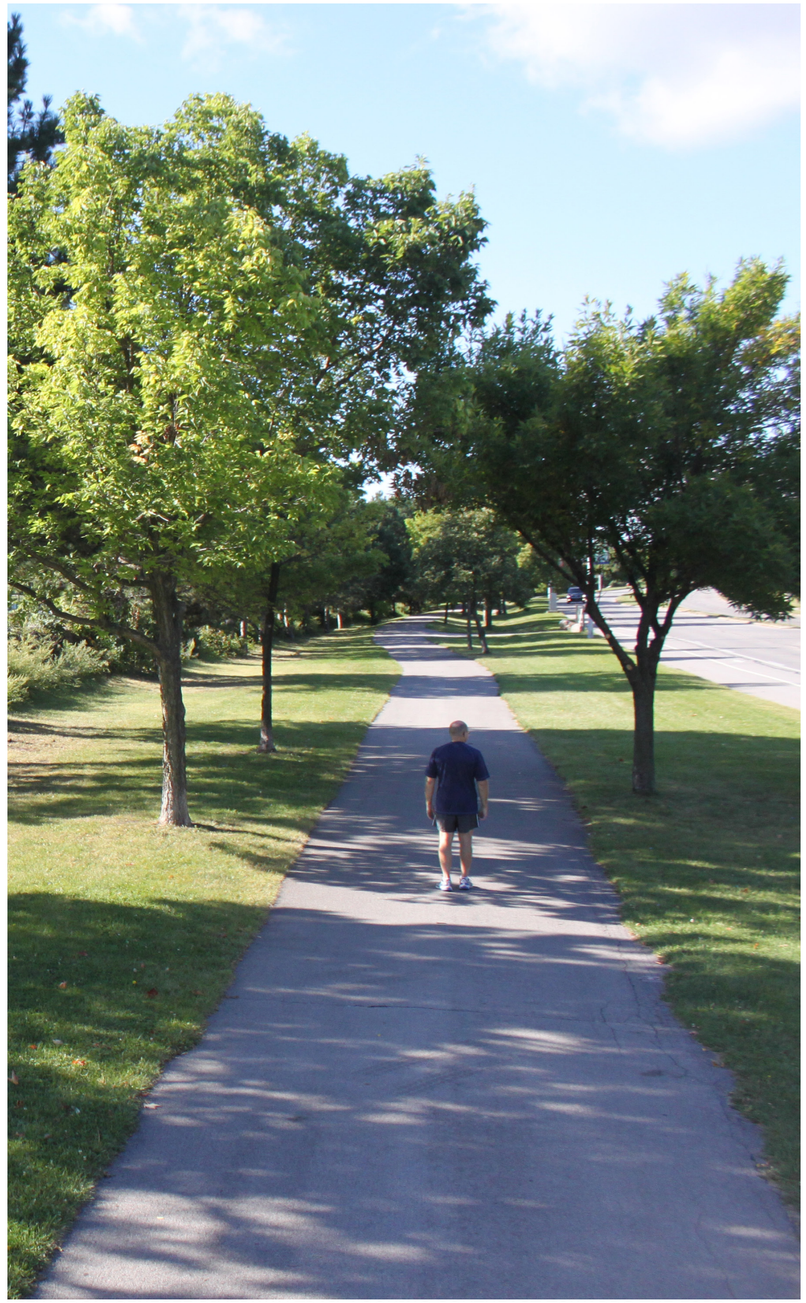
- **New York State Parks RTP:** The Recreational Trails Program provides funds to develop and maintain recreational trails for both motorized and non-motorized recreational trail use. Funding is available for the maintenance and restoration of existing recreational trails, development and rehabilitation of trailside and trailhead facilities, and trail linkages for recreational trails. Funding is also available for the purchase and lease of recreational trail construction and maintenance equipment, construction of new recreational trails, and acquisition of easements and fee simple title to property for recreational trails or recreational trail corridors.

- **Office of Parks, Recreation and Historic Preservation (OPRHP) - EPF Municipal Grant Program** This program provides funding for the acquisition, development and planning of parks and recreational facilities to preserve, rehabilitate or restore lands, waters or structures for park, recreation or conservation purposes and for structural assessments and/or planning for such projects. Examples of eligible projects include: playgrounds, courts, rinks, community gardens, and facilities for swimming, boating, picnicking, hunting, fishing, camping or other recreational activities. OPRHP gives priority to projects that include green improvements, historic sites, enhancements to public access to environmental resources (including landscape and trail improvements), visual appeal, provide economic stimulus, health and vitality, and community support of the project.

- **NYSDOS LWRP:** The Local Waterfront Revitalization Program provides matching grants on a competitive basis to revitalize communities and waterfronts. An LWRP plan is prepared by a local community to address land and water use for the community's developed, natural, public, and working waterfronts. Completing a LWRP can increase a community's ability to attract development that is appropriate for a waterfront. Once approved by the New York State's Secretary of State, the LWRP can be used to coordinate implementation of the community's goals. An adopted LWRP can help communities leverage additional funding for implementation projects, such as grant funding for redevelopment, cleanup of brownfields, recreational uses, improvements to protect water quality, and rehabilitation of historic buildings. The City of Rochester is currently updating its LWRP with an expanded boundary that includes all of the city's waterfront areas along Lake Ontario, the Genesee River and the Erie Canal. The update will identify new waterfront policies and recommendations that will guide future development and help leverage future funding opportunities. It will be important for the West River Wall project to be incorporated into the LWRP to expand access to funding opportunities and ensure consistency with the city's plan.

- **NYSEFC GIGP:** Environmental Facilities Corporation's Green Innovation Grant Program (GIGP) provides grants on a competitive basis to projects that improve water quality and demonstrate green stormwater infrastructure in New York. GIGP is administered by NYS Environmental Facilities Corporation (EFC) through the Clean Water State Revolving Fund (CWSRF) and is funded with a grant from the US Environmental Protection Agency (EPA).

VIEW TO DOWNTOWN ROCHESTER FROM CORN HILL LANDING PLAZA



VIEW FROM GENESEE RIVERWAY TRAIL LOOKING SOUTHEAST TOWARDS THE FORD STREET BRIDGE

conclusion

The City of Rochester is actively working towards a fully accessible and connective waterfront experience for its residents and visitors. Several sections of the waterfront have been improved, providing greater visual and physical access to the waterfront in combination with a modernized trail system. The West River Wall Master Plan (Master Plan), made possible by a matching grant awarded to the City by the NYS Department of State, seeks to continue the focus on waterfront improvements, addressing one of the most complex remaining sections of the Genesee Riverfront. Embedded into the historic Corn Hill Neighborhood remains a 2,200 foot section of river wall erected in 1918 to protect residents and business owners from the frequent flooding along the Genesee River. This section of wall stretches from the Ford Street Bridge northward to Corn Hill Landing and was de-accredited in 2008 by FEMA as a flood protection structure due to multiple areas of erosion and structural concerns. This administrative action essentially placed several landowners into a floodplain requiring flood insurance.

The planning process included two parallel tracks: a comprehensive evaluation of the west river wall structure and a long term master plan to enhance visual and physical access to the Genesee River. The engineering study completed as part of the West River Wall Master Plan verified structural as well as stability concerns associated with the structure. The study indicated flood elevations set by FEMA may be incorrect, resulting in a higher base flood elevation within the study area than what really exists.

Using this information, the Master Plan evaluated potential alternatives that balanced the need for flood protection with the objective of increasing access to the riverfront in a manner consistent with the Corn Hill Neighborhood's waterfront vision. A combination of restored but shortened wall sections with a flood control berm between the retained wall sections was selected as the preferred alternative for the flood protection structure which serves as the spine for the entire Master Plan. This solution accomplishes the essential objectives of the project in the most cost effective manner while allowing for a logical progression of implementation that can begin immediately with small, community-based actions. Collaboration between the City and the NYS Canal Corporation will be required to move the wall/berm flood protection structure from plan to reality.

The recommended Master Plan is a direct result of close collaboration between the City and the Corn Hill community. The City drew from extensive feedback provided by members of the community at meetings of the Citizen Advisory Committee and at public open houses. Through this iterative process involving indispensable contributions from the community, the City developed technical solutions and a riverfront Master Plan designed to address the community's concerns and achieve its goals for a more vibrant, accessible riverfront.

The West River Wall Master Plan balances vision with reality, providing a clear and actionable strategy for creating a truly unique destination on the Genesee Riverfront. When complete, this section will allow a full range of users to watch water-based activities, explore naturalized shoreline habitats, learn about the history of the area, get inspired by public art, and just simply enjoy the view of our great city. Just as importantly, it will serve to improve the safety of the public in the event of a flood. Finally, it will provide Corn Hill with the waterfront it envisions, reconnecting it to the Genesee River in a modern and responsible manner.