

SCAJAQUADA CREEK

UNCOVERED



B/a+p

**UB** University at Buffalo  
The State University of New York



# SCAJAQUADA CREEK UNCOVERED

A GRADUATE PRESERVATION STUDIO

University at Buffalo, School of Architecture & Planning

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# EXECUTIVE SUMMARY

Dear Reader,

Our SUNY Buffalo School of Architecture & Planning Graduate Planning Studio produced this planning document to identify the Scajaquada Creek as a Cultural Landscape. This involved exploring the Creek's historical context, analyzing and overlaying maps, producing design guidelines, and suggesting interventions where appropriate.

Scajaquada Creek originates in the Town of Lancaster, New York and runs through the Town of Cheektowaga, and City of Buffalo, before terminating into the Niagara River. Scajaquada Creek is essentially unusable for recreational purposes due to contamination resulting from human sewage waste overflowing from the combined sewer system, contaminants from nearby industrial uses, and dirty rainwater from the Scajaquada Expressway. The modernization of the aforementioned municipalities' sewer systems, the subsequent cleaning by dredging of the Creek, and daylighting of the Creek is imperative to the mental, physical, and emotional health of City residents and visitors.

Despite its currently polluted nature, the Creek is a regional asset. Its historical significance for Native Americans in Western New York, the War of 1812, subsequent urbanization, industrialization, and transportation development along the Creek cannot be understated. Its potential for increased community value is compelling. Following cleanup potential interventions could add recreational uses through Delaware and Schiller Park, personal contemplation in Forest Lawn Cemetery, and the rectification of a tragic environmental justice mistake that involved burying the Creek through the City's predominantly impoverished East Side. Prior to a complete cleanup, interim design interventions could indicate the presence of the Creek through interpretive branding, added visibility with the removal of invasive species, and other interventions including signage, lighting and expanded pedestrian, and bicycle accessibility.

This document includes both collaborative approaches, visions for possible interventions, in addition to an individual Master Plan component submitted by each student. While the suggestions vary in terms of scope and cost we hope they serve as inspiration for future non-profits, community groups, and government entities, endeavoring to assist in the transformation of the Creek into the cultural asset that it once, was and has the potential to be again.

Respectfully Yours,

SUNY at Buffalo

Graduate Preservation Planning Studio



*"Thousands of Buffalonians cross a bridge on Main St. every day and don't know it. Other hundreds have a Creek in their backyards and don't know it. This is Scajaquada Creek which begins in the Town of Lancaster, takes a nose dive underground in Cheektowaga and comes to the surface in Forest Lawn Cemetery. The subterranean Creek is not one of nature's freaks, but a 4½ million dollar flood control and sanitation project. Although it was less than 30 years ago that the historic Creek was covered up, only a small segment of the population seems to remember much about it."*

- Buffalo Courier-Express, January 20, 1952

## INTRODUCTION

The namesake of a city street, state expressway, multi-use recreational trail, and sewer drain, Scajaquada Creek has left a significant imprint on the history and physical development of the City of Buffalo, New York. The Creek traverses several municipalities in the Western portion of New York State. Rising in the Town of Lancaster and passing through the Town of Cheektowaga, 6.7 miles of the Creek stretch through the heart of the City of Buffalo, flowing through Native American heritage sites, historic neighborhoods, pastoral landscapes, Olmsted-designed park systems, industrial zones, and a War of 1812 battlefield site, before finally emptying into the Niagara River. Governments and corporations have dammed, polluted, channelized, and buried the Creek, significantly diverting it from its original form. In the last decade, Scajaquada Creek has been the subject of academic theses, walking tours, photo projects, art exhibitions, neighborhood plans, ecological surveys, community cleanups, and more in the city.

While some recent studies have focused on the ecological condition of the Creek, the aim of this project is to uncover Scajaquada Creek as

a significant cultural landscape in Buffalo through identification and preservation of historic and cultural resources along the Creek. Our research team examined the history of Scajaquada Creek and events that occurred along its shores from prehistory to the present day. Our team conducted historic research to identify and interpret a battlefield site where the Battle of Scajaquada Creek Bridge occurred. Our team also studied the history of change at the Creek in order to identify historic contexts for shoreline restoration and to establish design guidelines, among other possible interventions, for daylighting portions of the Creek. This initial review of the Scajaquada Creek cultural landscape is not intended to be comprehensive. Instead, this project includes historical narratives and highlights cultural resources along the Creek aiming to promote greater awareness of and support for preserving and celebrating distinctive features of the Creek. This project is a complement to and converses with previous work products created by local non-profits, community groups, historical societies, and government agencies. It is our hope that the research, guidelines, and proposals contained herein will be utilized to support and advance the Scajaquada Creek's development as a significant cultural landscape in Buffalo.

## PRESERVATION PLANNING FOR CULTURAL LANDSCAPES

This study and analysis of Scajaquada Creek is organized around a preservation planning framework that establishes historic contexts for the identification, interpretation, and treatment of resources in an area. Historic contexts describe the significant patterns of development in an area, addressing pertinent environmental, economic, cultural, technological, architectural, and governmental factors that have influenced the development of an area. Unlike general background information, historic contexts are the lenses through which planning and design interventions are developed and justified. This planning framework is consistent with, and builds upon, guidelines established by the National Park Service for historic resources and cultural landscapes.<sup>2</sup>

Cultural landscapes have emerged as an important concept in preservation planning. While many guidelines are available for managing national parks, archaeological sites, and historic buildings, both practitioners and scholars have struggled to precisely define cultural landscapes and to articulate guidelines their preservation and treatment. National and global agencies engaged in historic preservation activities, including the National Park Service and the United Nations Educational, Scientific and Cultural Organization, have proposed definitions and classifications of cultural landscapes that emphasize human relationships with the natural world and the balance between natural and cultural heritage.

The National Park Service, a bureau of the U.S. Department of the Interior that develops standards and guidance on preserving and rehabilitating historically significant resources, defines a cultural landscape as “a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.”<sup>3</sup> The National Park Service outlines four general types of cultural landscapes that are not mutually exclusive: historic designed landscapes, historic vernacular landscapes, historic sites, and ethnographic landscapes.<sup>4</sup>

**Historic Designed Landscape:** “A landscape that was consciously designed or laid out by a landscape architect, master gardener, architect, or horticulturist according to design principles, or an amateur gardener working in a recognized style or tradition.”<sup>5</sup>

**Historic Vernacular Landscape:** “A landscape that evolved through use by the people whose activities or occupancy shaped that landscape. Through social or cultural attitudes of an individual, family or a community, the landscape reflects the physical, biological, and cultural character of those everyday lives. Function plays a significant role in vernacular landscapes.”<sup>6</sup>

**Historic Site:** “A landscape significant for its association with a historic event, activity, or person.”<sup>7</sup>

**Ethnographic Landscape:** “A landscape containing a variety of natural and cultural resources that associated people define as heritage resources.”<sup>8</sup>

The National Park Service issues technical briefs and compiles resources that provide guidance for identifying, documenting, evaluating and preserving cultural landscapes within the context of preservation planning. Guidance emphasizes the value of multidisciplinary approaches and community stewardship for the preservation of cultural landscapes.<sup>9</sup>

On a global scale, the World Heritage Centre of the United Nations Educational, Scientific and Cultural Organization defines World Heritage cultural landscapes as the “combined works of nature and of man... illustrative of the evolution of human society and settlement over time, under the influence of physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal.”<sup>10</sup> Similar to the U.S. National Park Service, the World Heritage Centre identifies several categories of cultural landscapes: landscape designed and created intentionally by man; organically evolved landscape; and associative cultural landscape.<sup>11</sup>

These organizations have established guidelines for identifying, documenting, evaluating and preserving cultural landscapes. Unlike traditional planning processes, preservation planning for cultural landscapes emphasizes historic research using primary sources in order to “read the landscape” in its context of place and time. In addition to the landscape’s existing conditions and future land use patterns, its ability to convey historic significance should also be considered when developing design guidelines and proposals. Successful approaches to preservation planning of cultural landscapes recognize cultural as well as natural values, sustain traditional connections to place, and engage people in stewardship where they live, work, and play. Case studies offer an opportunity to further understand and refine both the concept and method of a cultural landscape.

## MARITIME CULTURAL LANDSCAPE

The concept of a maritime cultural landscape (also known as seascape or waterscape) conveys the simple idea that the culture of water bodies is concentrated on land as well as underwater, both of which have been transformed by human activity.<sup>12</sup> Archaeologist Christer Westerdahl developed the term in the late 1970s during a maritime archaeological survey of the coast of Swedish Northland to describe the presence of cultural remnants both on land as well as underwater.<sup>13</sup> While underwater remains were the focal point of the survey, important features of maritime culture were also identified on the land adjacent to the water. Westerdahl emphasizes that while material remains are the focus in studies of maritime cultural landscapes, character-defining features can also be “immaterial, cognitive or indicator” such as place names.<sup>14</sup> In this way, the concept of the maritime cultural landscape reinforces the underlying notion that cultural landscapes are marked by an array of physical features, human relationships, as well as the “presence of the absence.”

## BUFFALO'S BELT LINE AS A CULTURAL LANDSCAPE

The New York Central Railroad's Belt Line has been identified as an important cultural landscape in the City of Buffalo due to its impact on the social, cultural, and physical development on the city as a man-made structure that interfaced with the natural landscape and everyday lives of residents in significant ways over much of the city's history. This document aims to understand Scajaquada Creek as another cultural landscape in Buffalo with character-defining features and cultural zones that reveal historically significant aspects of the city's development over time and that should guide interpretation and treatment of areas in the city with vital natural, historic, and cultural resources for regional heritage and identity.

## SCAJAQUADA CREEK AS A CULTURAL LANDSCAPE

As a cultural landscape, Scajaquada Creek is a historic designed landscape, historic vernacular landscape, historic site, and ethnographic landscape, and to some extent, a maritime cultural landscape. The Creek's historic and current trajectory includes community parks, institutional grounds, cemeteries, battlefields, Olmsted-designed landscapes, industrial complexes, as well as historic buildings and historic neighborhoods. While our study and analysis focuses on topics such as fishing, canal infrastructure, shipbuilding industry, and chemical dumping that have direct implications for the characteristics of the water, the project also takes seriously events that occurred along the shores of the Creek and the surrounding land use context. The close relationship between the character of the Creek and the surrounding context is at the crux of decision-making in the later stages of this project.

Scajaquada Creek offers insights into the assets and challenges that have guided the development of Buffalo over time and will continue to guide the future development of the city as articulated in its zoning and land use plan. Scajaquada Creek reflects the historical significance of water resources, industrial activity, park systems, and walkable neighborhoods in the physical development of the city as well as its sense of place and identity. Conditions along the Creek and its shores reflect the significant challenges of pollution, vacancy and abandonment, economic restructuring, and social inequality that threaten the existing and future prosperity and sustainability of the city. The character-defining features of Scajaquada Creek provide “clues” as to how the city has and continues to change over time and how residents and industry have interacted with nature and organized urban space.

## SCAJAQUADA CREEK UNCOVERED

### ENDNOTES

1. Margaret Fess, "Thousands Cross Main St. Bridge and Never Know It," Buffalo Courier-Express, January 20, 1952. Accessed December 4, 2016. [http://fultonhistory.com/Newspapers 21/ Buffalo NY Courier Express/ Buffalo NY Courier Express 1952/ Buffalo NY Courier Express 1952 - 0711.pdf](http://fultonhistory.com/Newspapers%20Buffalo%20NY%20Courier%20Express/1952/1952-0711.pdf).

2. Secretary of the Interior's Standards for Preservation Planning. Accessed December 4, 2016. [https://www.nps.gov/history/local-law/arch\\_stnds\\_1.htm](https://www.nps.gov/history/local-law/arch_stnds_1.htm).

3. Charles A. Birnbaum, *Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes*. Preservation Briefs 36. Washington, D.C.: National Park Service, 1994. 1-20. Accessed December 5, 2016. <https://www.nps.gov/tps/how-to-preserve/preservedocs/preservation-briefs/36Preserve-Brief-Landscapes.pdf>.

4. Ibid.

5. Ibid.

6. Ibid.

7. Ibid.

8. Ibid.

9. Ibid.

10. Nora Mitchell, Mechtild Rossler, and Pierre-Marie Tricaud. 2009. World Heritage paper No. 26. World Heritage Cultural Landscapes. A hand book for conservation and management: 4/2/UNESCO/Cult/09/E.

11. Ibid.

12. Christer Westerdahl, "The Maritime Cultural Landscape," *The International Journal of Nautical Archaeology* 21, no. 1 (1992): 5-14. Accessed December 5, 2016. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.578.9411&rep1&type=pdf.com>

13. Ibid.

14. Ibid.

the Buffalo-Cheektowaga border.

## PLAN ANALYSIS

To better understand how Scajaquada Creek fits into local, already existing plans, our research groups looked at a collection of local plans and community initiatives that address the Scajaquada Creek corridor and its surrounding ecology and community. The most significant plan that will affect the Scajaquada Creek zone is the upcoming Buffalo Green Code, particularly the land use plan component. Other plans were found to be relevant to the project area, including the Master Facilities Plan for Buffalo State College, the War of 1812 Bicentennial Community Plan, and the Niagara River Greenway Plan. All plans were evaluated for their impact on the Scajaquada Creek and possible design ideas that could be used to guide the studio's work direction.

## SITE VISITS

In order to understand the current situation of the Scajaquada Creek and the urban setting of the project area, three site visits were made to cover the entire length of Scajaquada Creek from where the waterway is first buried at the city limits to the Black Rock Canal. The first visit was on September 1, 2016, walking along the Scajaquada Bike Path from Grant Street to the Black Rock Canal. On September 6, the visit was from Grant Street to Forest Lawn following the bike path, Delaware Park path, city streets and walking alongside the Scajaquada Creek bank inside of Forest Lawn Cemetery. On September 13, the visit started at the corner of Delavan Avenue and Main Street and progressed through small city parks and along streets in the East Side of Buffalo until reaching Schiller Park. The final visit was on September 20 covered Schiller Park to the Scajaquada Drain beginning in Cheektowaga. During each visit, interactions between the Scajaquada Creek and its surroundings were observed and noted, as well as the characteristics of the land surrounding the waterway.

## METHODOLOGY

### RESEARCH STRATEGIES

#### HISTORICAL RESEARCH

To develop the historical context, our research groups visited a variety of libraries and museums, including: The Buffalo and Erie County Public Library (including the rare book room), UB libraries, the Karpeles Manuscript Library, the Black Rock Historical Society, the Buffalo History Museum, Fort Erie, Fort George, and the Erie County Clerk's Office. We examined a variety of primary sources, including: letters between British and American soldiers, newspaper articles, city business directories, Buffalo maps and atlases, and historic photos.

In addition to the primary sources, the studio used many secondary sources, both web based and books borrowed from the visited libraries. All of the information collected from these sources were then used as a basis of our understanding of the history of Scajaquada Creek, Black Rock village, and the rest of the land surrounding the Creek corridor through to

## MAP ANALYSIS

To help discover the original context of the land, physical properties and land usage, of areas surrounding the Scajaquada Creek, the studio looked at many historic maps and charts. A series of maps were used including, but not limited to: the 1866 Stone and Stewart New Topographical Atlas of Erie County, the 1880 Beers Illustrated Historical Atlas of Erie County, New York, the 1894 American Atlas Company Atlas of the City of Buffalo, Erie County, New York, Sanborn Map Company Fire Insurance Map of Buffalo, New York (various years), and a 2012 NOAA Buffalo Harbor navigational chart of local waters. By viewing these maps, the context at any single time became visible and helped to build a picture of the historical and modern cultural landscape of Scajaquada Creek. That context also provided clues on where to start looking for additional information about the creek for historical research, by providing actual information on development and contemporary conditions alongside the waterway at a specific time.

In addition to viewing the maps to understand the context of the Scajaquada Creek during individual time periods, data from period sources were combined to help show change over time. The main tool for this was the of map overlays, where information from different sources were combined into a new map, which shows data from both time periods. This technique was for several different purposes, including to view the change in the shoreline of the waterway over time, as well as a series of maps that show the development and expansion of the City of Buffalo along the Scajaquada Creek by covering the expansion of the city road network.



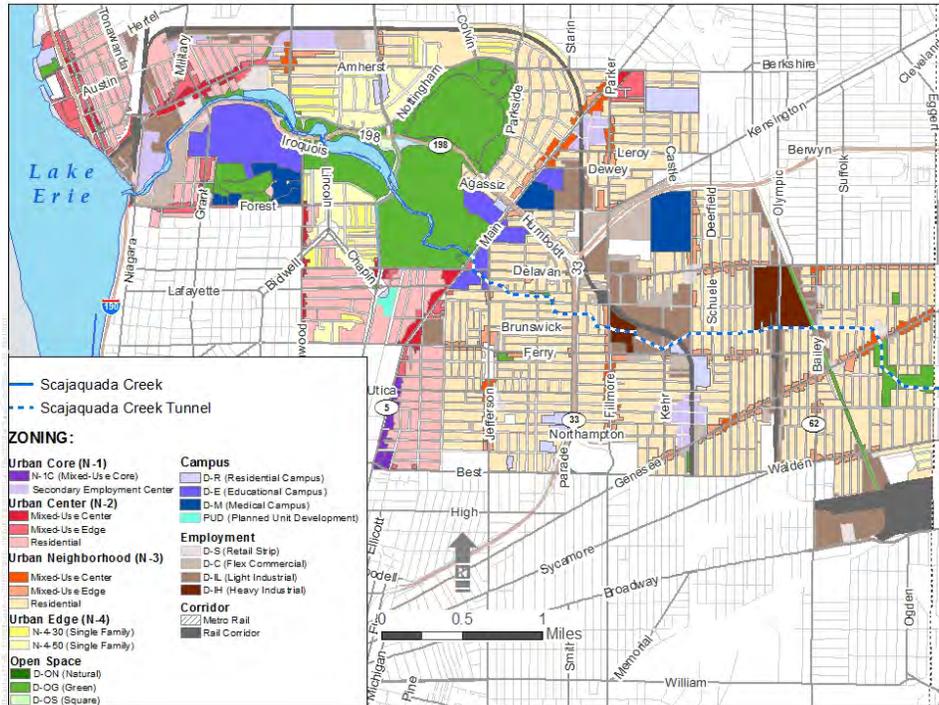
Studio Site Visit  
Source: UB Architecture Archives



Studio Presentations  
Source: UB Architecture Archives



Studio Presentations  
Source: UB Architecture Archives



Buffalo Green Code Zoning for Areas Along the Scajaquada Creek  
 Source: Buffalo Green Code

Green Code Evaluation Takeaways

Grow the Economy	Strengthen Neighborhoods	Repair the Environment
Accelerate downtown’s momentum	Promote diversity and affordability	Protect natural assets
Strengthen anchors along the Knowledge Corridor	Reinforce neighborhood centers	Enhance open spaces
Create great places on the waterfront	Encourage transportation choice	Conserve energy and water
Leverage and repurpose former industrial assets	Reclaim vacant buildings and land	

## LOCAL PLAN REVIEW

Many plans from Buffalo, surrounding communities, and local community organizations were also ready to assist the studio in realizing the current state of Scajaquada Creek in the local planning landscape. The most significant plan considered and the one that will potentially affect the Scajaquada Creek zone the most is the upcoming Buffalo Green Code, particularly the land use plan component. The Green Code provides a strategic narrative for how Buffalo has changed over time and defines what the city’s historic assets and contemporary challenges are in light of its evolution. The Green Code also

provides a vision of the city in the form of key objectives and principles that reflect the needs and aspirations of residents throughout the city.

The natural, physical, historic, and cultural resources found along Scajaquada Creek are relevant to all of the objectives and principles laid out in the Green Code. Many other plans produced in recent years also draw upon the varied resources of Scajaquada Creek for inspiration and opportunity to serve the ecological, educational, and recreational needs of diverse and increasingly mixed-use and mixed-income communities, particularly near the western terminus of the creek. Additionally, the Green Code is further influenced by specific

## Existing Plan Evaluation / Summary

Plan	Year	Prepared By	Description
Buffalo Green Code Land Use Plan	2016	City of Buffalo	Provides framework for decision-making about city’s physical development. Outlines the community’s expectations and preferences regarding future development. Serves as a bridge between city’s comprehensive plan and zoning code by recommending the appropriate type, intensity, and character of development.
Unified Development Ordinance	2016	City of Buffalo	Form-based zoning code that sets standards for land use, subdivision, and public realm
Local Waterfront Revitalization Plan	2015	City of Buffalo	Includes land and water use plans, as well as proposed projects, to guide development along the city’s coastal areas, including Scajaquada Creek  The plan encompasses both lake and river adjacent properties as well as in-land waterways—including Scajaquada Creek. The plan emphasizes protecting waterfront economic, social and environmental interest while promoting and safeguarding public access, coastal resilience and building great, vibrant waterfront places. The plan also explicitly calls for minimizing NYS Route 198 and I-190’s impact on Scajaquada Creek, while promoting a “Water Enhanced Mixed Use Development Zone with ample open space” along Tonawanda and Niagara Streets and Forest Avenue, connecting development along the Buffalo State Campus all the way to Black Rock Harbor. Though the LWRP identifies the need to address the entire NYS-198 corridor, the scope of the DOT’s current project does not consider the focus area of this vision plan from Grant Street to the Niagara River.  Scajaquada Expressway Boulevard Project: The project goal is to convert the Scajaquada Expressway into an at-grade, landscaped boulevard. Other project objectives include making the expressway a complete-street through the installation of bike and pedestrian accommodations, and overhauling the streetscape of the corridor to traffic calm the roadway. The expressway, which currently divides Delaware Park and rich cultural resources north and south of the road, would become a multi-modal corridor that enhances, rather than detracts from, the surrounding areas.
Tonawanda Street Corridor Brownfield Opportunity Area (Step 2 Nomination Document)	2015	City of Buffalo	Provides analysis, inventory, and strategies to guide future brownfield redevelopment based on Green Code land use and zoning recommendations and community feedback

plans for the waterfront, (particularly Local Waterfront Revitalization Plans) and brownfield areas in the city, both of which are relevant to areas along Scajaquada Creek. These other plans offer guidelines, ideas, and proposals for future development of areas along the creek. The relevant reviewed plans are summarized with their connection to the Creek in the following table.

## MAP ANALYSIS & OVERLAYS

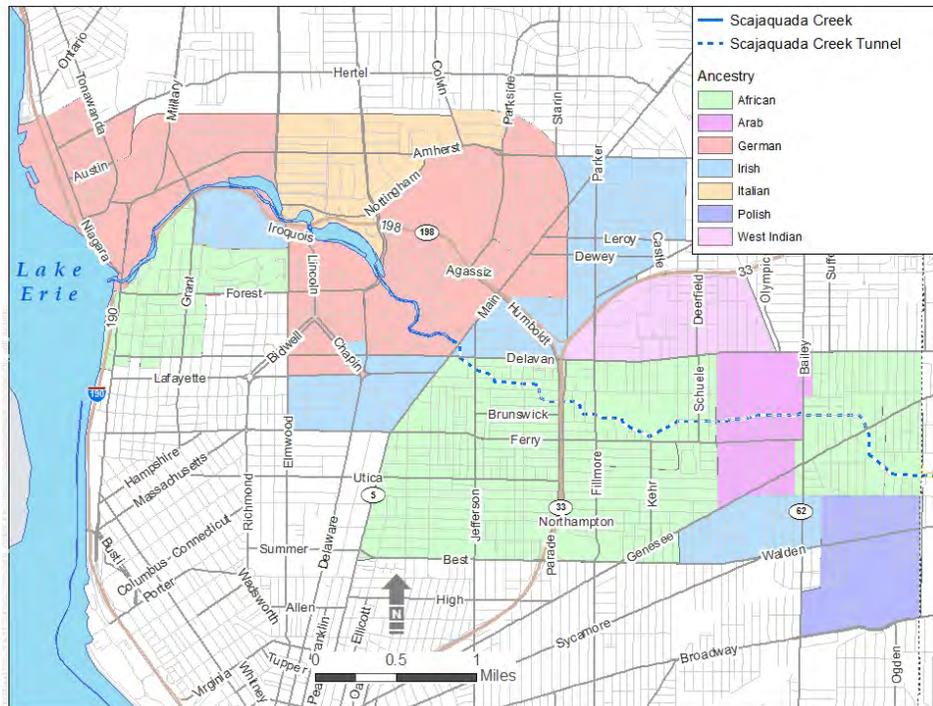
For additional context and to better understand the written descriptions of the Scajaquada Creek project area, the studio looked at many historic maps and created new maps sourced from the information learned from the original documents. One of the main ways that the studio evaluated the information maps contained was through making map overlays, taking details from the old maps, placing it into GIS, and combining that information with other sources to compare multiple datasets or maps at one time. Several of these overlays and created maps are located below in this section, along with a brief description of the map, the original map sources, and important take away information from each map.

The three maps below cover the demography of the Scajaquada Creek Uncovered project area. They were created using 2015 US Census Data in GIS. The ancestry map displays the varied backgrounds of the residents alongside the Scajaquada Creek corridor, the result of decades worth of inner-city migration. The ancestry map can be compared to the race map of the project area; this shows that the ancestry of residents is predominantly separated by race within the Scajaquada Creek corridor. Main Street in Buffalo is the clear separation between white, Irish, Italian, and Polish backgrounds west of Main Street, and the predominantly black, and of African heritage, residents living east of Main Street.

The third map displays household income for neighborhoods surrounding the Creek. Main Street is again a clear physical divider, with wealthier neighborhoods being located west of Main Street and the poorer neighborhoods located mostly to the east of Main Street. Of note, the east side of Main Street is the location of the Scajaquada Drain project, while west of Main Street the Creek travels on the surface through predominantly park land.

This Transportation Over Time map below was formed by reviewing historic maps as a source of information about the road and transportation network in Buffalo over the years, which were then digitized to create new maps to

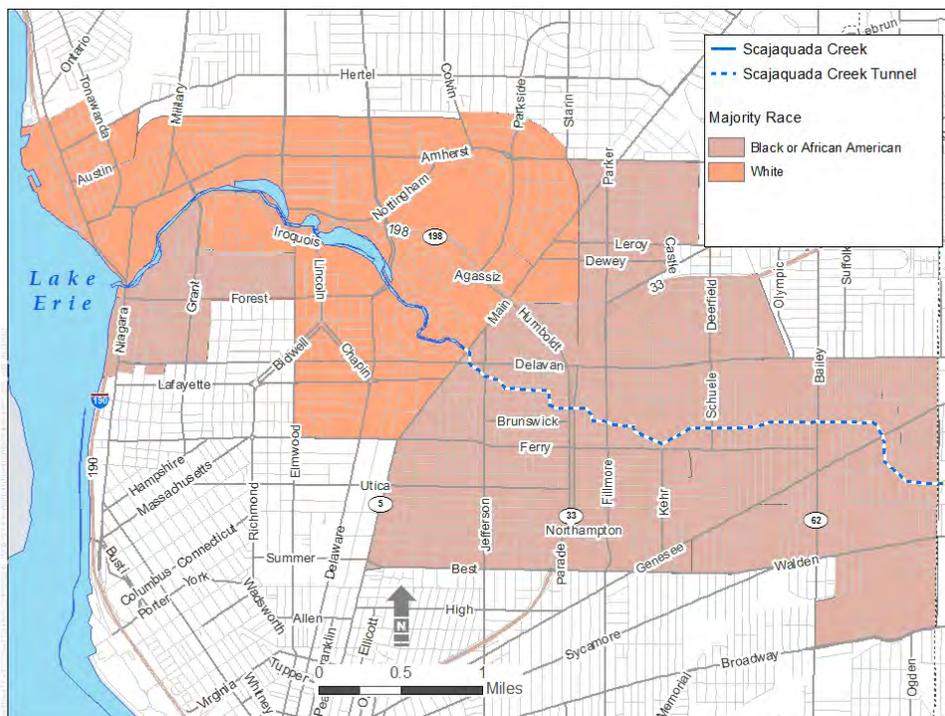
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## Ancestry in Census Tracts Along Scajaquada Creek in 2015

Description: Area Map showing Census tracts along scajaquada in shapefile was joined, clipped, and queried with demographic data of ancestry from U.S Census Data 2015 into the map.

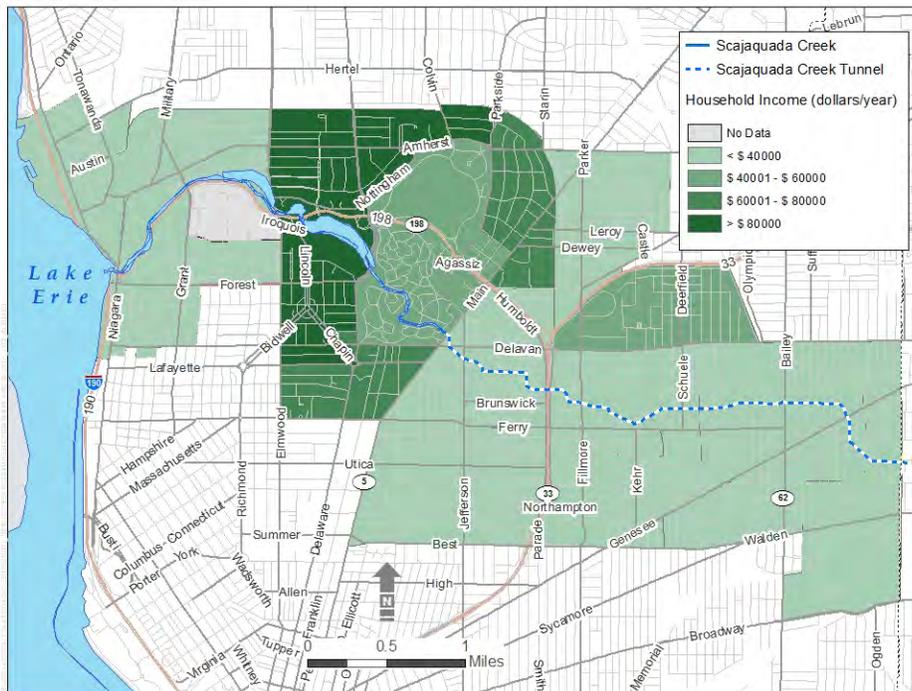
Author: Ninuk Dwi Agustiningrum Setyowati



## Majority Race in Census Tracts Along Scajaquada Creek in 2015

Description: Area Map showing Census tracts along scajaquada in shapefile was joined, clipped, queried, and classified with demographic data of race from U.S. Census Data 2015 into the map. The Map was also constructed by analyzing majority race for each census tract along Scajaquada Creek.

Author: Ninuk Dwi Agustiningrum Setyowati



Household Income in Census Tracts Along Scajaquada Creek in 2015

Description: Area Map showing Census tracts along scajaquada in shapefile was joined, clipped, queried, and classified with demographic data of household income per year (dollars) from U.S Census Data 2015 into the map.

Author: Ninuk Dwi Agustiningrum Setyowati

show the change over time between these historic maps. The selected maps compare the 1894 Map of Erie County by Samuel Geil and Robert Pearsall, a 1940 Map of Buffalo, from the City of Buffalo, a 1973 Map of Buffalo from the United States Geological Survey, and a contemporary 2016 map of Buffalo from Open Street Map.

The first comparison shown is the changes in the road network between 1894 and 1940. Many roads were constructed along the Scajaquada Creek corridor to serve the needs of the increasing residents and industry in the region, which is an example of the urbanization of Buffalo as it expanded to fit the original road grid that was previously laid out in the late 1800s. In a change from expansion, some roads along the Scajaquada Creek, east of Main Street, were closed as a result of the burying of the Creek in the 1920s.

Between the 1940 and 1973 map, the most obvious and major change seen in the Buffalo road network is the construction of the highway system in Buffalo, NY. The three highways in the project area are the NY Route 33 Kensington

Expressway, in the east, Interstate 190 Niagara Expressway on the west, and the NY Route 198 Scajaquada Expressway which connects the other two highways. The rest of the road network remains intact and essentially unchanged from the 1970s through the present.

Shoreline changes of Scajaquada Creek were analyzed by looking at the western portion of Scajaquada Creek from around Delaware Avenue and Forest Lawn Cemetery to the mouth of the creek at the Black Rock Canal. Historic maps showing Scajaquada Creek shoreline were collected and georeferenced in GIS, then digitized to compare shoreline changes over time. Specific years were highlighted and then broken out for better comparison, as seen above. The maps used for this overlay breakout were the 1836 Village of Black Rock map, the 1855 Geil Buffalo Atlas, the 1872 Hopkins Atlas map, 1935 War Department Buffalo Harbor map, and a 1977 NOAA Buffalo Harbor map, all of which showed the shoreline from when they were created.

Major shoreline changes are noted at several time periods. Highlighted in this breakout

## SCAJAQUADA CREEK UNCOVERED

Historic maps were used from different time periods, showing the transportation network near Scajaquada Creek, then digitized to compare transportation network changes over time.

### 2016 vs. 1973:

No notable major changes on the creek occurred.

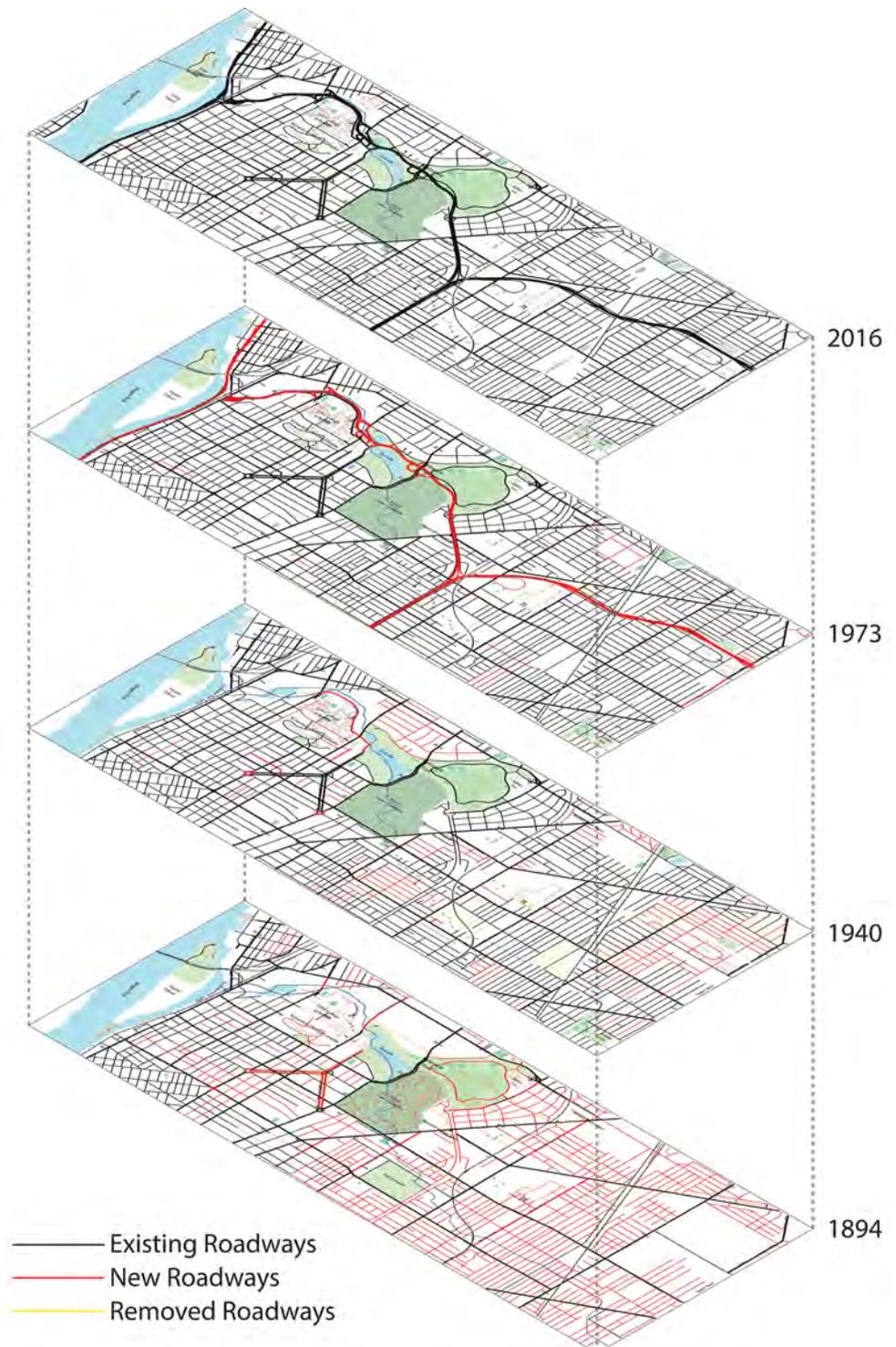
### 1973 vs. 1940:

The map showing the comparison of the road network between 1973 and 1940. The construction of the highway system is the major changes of the road system.

### 1894 vs. 1940:

The map showing the comparison of the road network between 1940 and 1894. Many roads added due to increased urbanization. Some road sections in several neighborhoods were closed in the east side of the map to facilitate the construction of the Scajaquada Drain project 1920's.

Maps Used as Reference Include: 1894 Map of Erie County, New York (Geil, Samuel, Robert Pearsall); 1940 Map of Buffalo, NY (History of Buffalo); 1973 Map of Buffalo, NY (U.S. Geological Survey Historical Topographic Map Collection), 2016 Map of Buffalo, NY (Open Street Map)



## Transportation Over Time

Author: Hongkai Li & Corey Winters

### 1935 vs. 1977

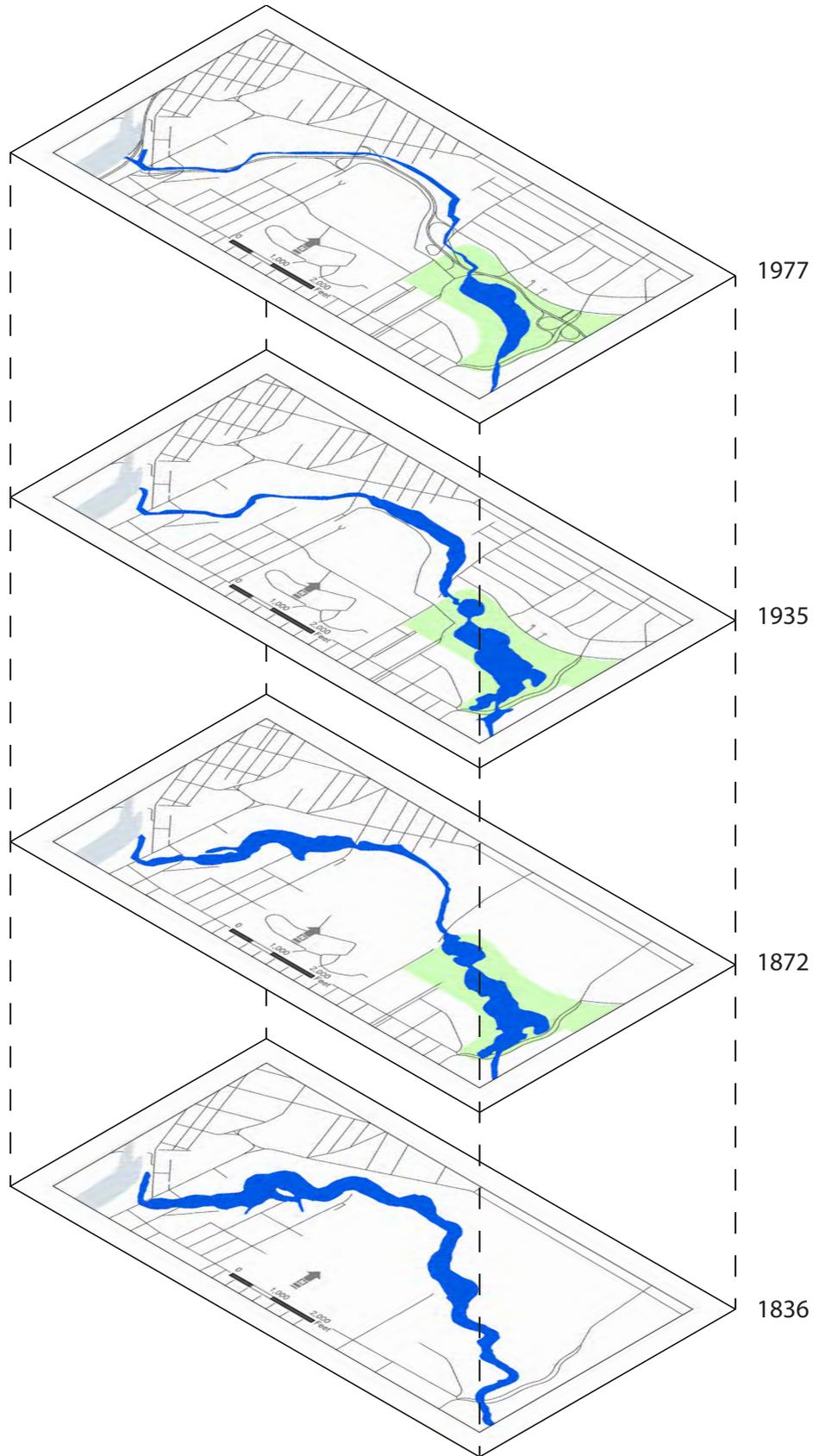
Construction of the Scajaquada Expressway during the 1960s leads to further narrowing of the shoreline.

### 1872 vs. 1935

Growth of industry and urbanization along the Creek leads to narrowing of the shoreline.

### 1836 vs. 1872

The development and design of Delaware Park leads to the Creek being dammed up to create Hoyt and Mirror Lakes.



## Shoreline Changes Over Time

Authors: Jenna Hart & Corey Winters

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## 1890s vs. 1930s

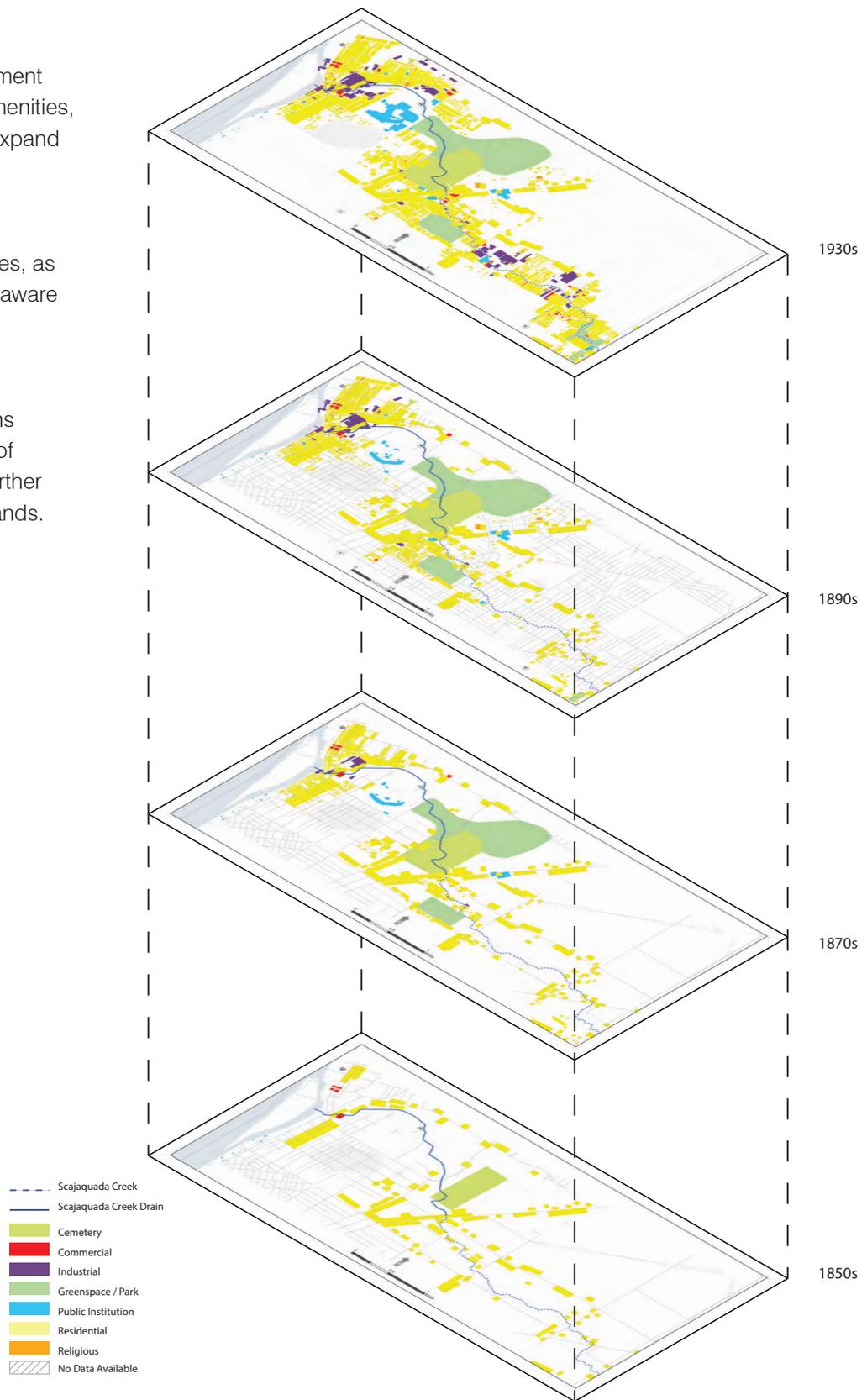
Industry on the East Side spurs residential development surrounding it. Cultural amenities, residential, and industry expand on West Side as well.

## 1870s vs. 1890s

Black Rock further densifies, as well as areas south of Delaware Park.

## 1850s vs. 1870s

Black Rock industry begins to expand. Development of Delaware Park leads to further densifying of residential lands.



## Urbanization Over Time

Authors: Jenna Hart & Corey Winters

are years which display some of the largest changes made to the Creek shoreline. Between 1836 and 1872, the Creek was dammed to form the lake in Delaware Park. Between 1872 and 1935, industrial development of the 19th Century near Black Rock led to the extensive narrowing and channelization of the lower creek. Seen in the 1977 map, the Creek is exceptionally narrow compared to 1836 and the lake in Delaware park has been reduced in size. These changes to the shoreline were caused by the construction of the NY 198 Expressway during the 1960s. Since this last change, the shoreline has remained essentially the same as seen in the 1977 map.

Historic maps were analyzed for urbanization and development along Scajaquada Creek at different time periods. These historic map sources included the Village of Black Rock map from 1836, the Geil atlas from 1855, Hopkins Atlas maps from 1872 and 1884, and Sanborn maps from 1889, 1900, 1916, and 1935. These maps were georeferenced in GIS and then digitized to compare land uses changes over time.

The major urbanization pattern noticed is development beginning in the western part of the project area, and later moving eastward as time went on and the city grew. Of interest is the construction of Delaware Park, as it spurred residential development west of Black Rock, expanding city neighborhoods. Also of note, industry was originally centered in the village of Black Rock in the late Nineteenth Century, but by the 1930s, industrial pockets sprouted up on the east side of the project area. Residential development of the east side appears to be linked to this industrial development.



beyond basic industrial and transshipment processes. These designed landscapes include Forest Lawn Cemetery, Delaware Park, and the Richardson Complex. International expositions at the turn of the century including the 1901 Pan-American Exposition showcased the City's prominence as a global center for trade and manufacturing while highlighting its water bodies as key natural resources and design assets.

By the early 1900s, the shift from the waterways to the railways was evident in the City's physical and cultural landscape. The technological advancement of rail and related infrastructure rendered Scajaquada Creek and other waterways in the City obsolete for navigation and industrial processes, which limited their continued potential as driving factors of development.

Railways, particularly the New York Central Belt Line, encouraged rapid industrialization and urbanization to the north and east of the City's original center, fleshing out the City to its current boundaries. The new rail infrastructure attracted new companies and diverse industries to the City, particularly automotive and airplane part manufacturers. Newly accessible neighborhoods on the City's East Side were diverse ethnic enclaves comprised of Eastern European immigrants and African American migrants who often worked in the large factories that sprung up along the rail lines. While the Creek flows in an east to west direction, the City developed in a west to east direction. The development of areas along Scajaquada Creek reflect this settlement pattern, which is evident through the historic nature of neighborhoods and industrial zones including Grant-Amherst, Hamlin Park, and Delavan-Grider neighborhoods. By the 1920s, new modes of public and private transportation facilitated denser urban development throughout the City.

Increasing urbanization posed new challenges to quality of life and urban

## HISTORICAL CONTEXTS

### OVERVIEW

Through its 6.7 miles of channels and culverts from Schiller Park to the Black Rock Canal, Scajaquada Creek tells the story of Buffalo, highlighting major influences and patterns of the City's physical growth and development, from prehistory to the present day. Native American inhabitants and early European settlers of the City concentrated along the confluence of waterways at the mouth of the Creek and Black Rock Harbor. An important battle in the War of 1812 took place near the banks of the western end of the Creek. The first large-scale infrastructure project of the region and the country, the Erie Canal, fostered the growth of a manufacturing center at the mouth of the Creek and industrial processes utilized the Creek for various purposes.

However, the Creek was an active design feature of designed landscapes that demonstrate the City's early growth and development

development. A major challenge in Buffalo at the beginning of the twentieth century, not unlike other rapidly growing American cities, was pollution and demand for improved sewer infrastructure and wastewater management. The Scajaquada Drain project was an attempt to respond to these demands. Beginning in the 1920s, public health and public opinion converged to push for solutions to remedy increased pollution and dumping of waste in the portion of the Creek that flowed through residential neighborhoods on the City's East Side. The resulting strategy featured a burial of this portion of the Creek. However, the burial only created new challenges for downstream sections of the Creek, resulting in additional infrastructure projects over the following decades.

Despite a seemingly vibrant, diversified economy in the 1940s as epitomized by industrial giants such as Curtiss-Wright and American Axle located along the Creek, economic and urban decline was underway by the end of World War II. Beginning in the 1950s, a series of large-scale public infrastructure projects, particularly the Scajaquada Expressway, drastically reshaped the physical and economic networks of Buffalo and the Western New York region. The dominance of automobiles and abundant federal funding for highway construction and public housing programs, paved the way for massive shifts of residents, industries, and retail establishments from the City to the suburbs during the late twentieth century.

In the 1980s, community-led activism resulted in the construction of the Scajaquada Pathway, a multi-use recreational trail along the Creek from Delaware Park to Black Rock Canal. The pathway suggested the possibility of a new chapter in the history of Scajaquada Creek focused on increased public access and engagement with the Creek for recreational and other community uses.

## OUTLINE

- I. Native American Settlements along Scajaquada Creek (Pre-1700s)
- II. War of 1812 on the Niagara Frontier: Battle of Scajaquada Creek Bridge (1814)
- III. Buffalo's Beginnings around Waterways: Early Settlements and Industry at the Mouth of Scajaquada Creek (1700s - 1830s)
- IV. Waterways as Urban Design Features: Scajaquada Creek in the Designed Landscapes of Forest Lawn Cemetery, Delaware Park, and the Pan-American Exposition (1860s - 1900s)
- V. From the Waterways to the Railways: The Expansion of Neighborhoods and Industrial Zones along Scajaquada Creek (1880s - 1920s)
- VI. Urban Development Pressures and Public Health Crises: Scajaquada Drain Project and Sewer Infrastructure (1920s - 1950s)
- VII. The Rise of the Highways and the Decline of the City: Scajaquada Expressway and Post-War Suburbanization (1950s - 1980s)
- VIII. Community Activism for Creek Revitalization: Scajaquada Pathway and Public Access to Waterways in the Twenty-First Century (1980s – Present)



Chief Skendyoughwatti  
Source: buffaloah.com

## WHAT'S IN A NAME?

A difficult aspect of researching the Scajaquada Creek is identifying references to the Creek in various publications as the name has taken many forms and spellings over time. In our research we have encountered over 25 spellings of the name, with the most common variations including: Conjocta, Conjockety, Scajoquady, and Conjuncta.

The Creek is named after the Seneca “Conjockety” family, who resided near the mouth of the Creek.<sup>1</sup> “Skendyoughwatti,” (or “Conjockety”) who was a “man of influence” among the Senecas in Buffalo.<sup>2</sup> Skendyoughwatti was also known as Owen Blacksnake and was referred to as a Chief according to the journal of Samuel Kirkland in his negotiations with the Native American tribes on behalf of the State of New York.<sup>3</sup>

Accounts from 1802 and 1803 note the courage and calm demeanor of “Phillip Conjockety.”<sup>4</sup> Phillip Conjockety was the son of Skendyoughwatti. Major Perry recounted a story where Phillip Conjockety assisted him in tracking panthers that had killed at least one of his hogs.<sup>5</sup> Phillip Conjockety found one panther in a tree, eating a piece of the flesh from the hog.<sup>6</sup> Phillip Conjockety shot it dead and as he was reloading a second panther emerged. Phillip Conjockety urgently fired, killing the second panther as it leapt towards him. “Ugh! Some scare me” he exclaimed.<sup>7</sup>

Little else has been published about the Conjockety family but they were certain a family of prominence among the Senecas and were involved in the negotiations informing the treaty of Big Tree.

### REFERENCES

1. Crisfield Johnson, *The History of Erie County, New York; Being its Annals from the Earliest Recorded events to the Hundredth Year of American Independence*, 117 (Buffalo, NY: Matthews & Warren), 1876.
2. *Ibid.*, 83.
3. William Ketchum, *An Authentic and Comprehensive History of Buffalo: With Some Account of its Earliest Inhabitants Both Savage and Civilized*, (Buffalo, NY: Rockwell, Baker and Hill), 1865.
4. Johnson, *The History of Erie County*, 117.
5. *Ibid.*
6. *Ibid.*
7. *Ibid.*

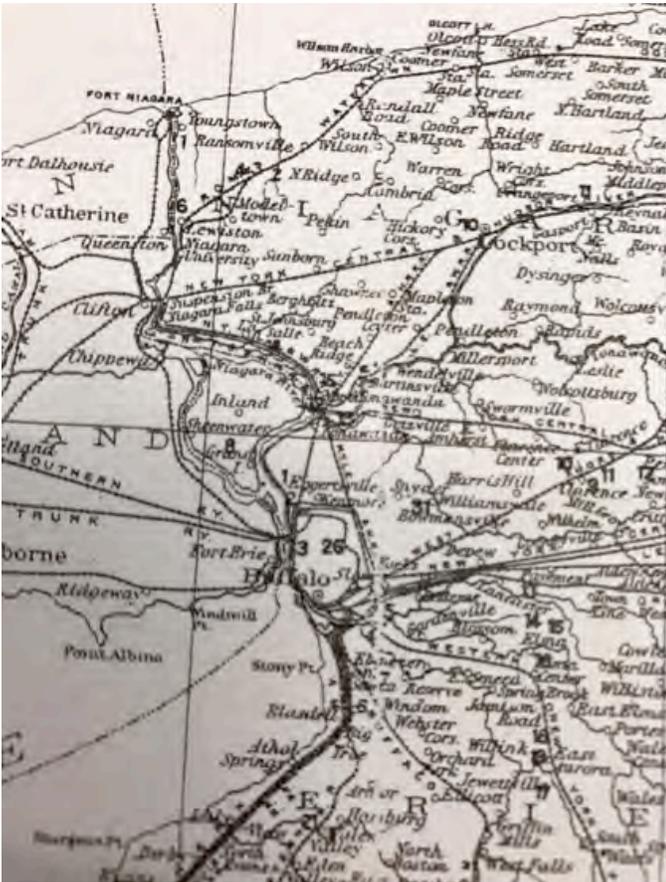
# I. NATIVE AMERICAN SETTLEMENTS ALONG SCAJAQUADA CREEK

## NATIVE AMERICAN SETTLEMENTS

Native American tribes occupied what is now Western New York prior to the arrival of European settlers. The major tribes were the Seneca, Eries, Wenro and Neutral Indians.<sup>1</sup> The tribes were predominantly located near waterways, such as Scajaquada Creek, which provided access to fish, fertile land, and opportunities to transport goods to other tribes in the area.

Settlements existed along Scajaquada Creek prior to the arrival of European settlers to the Niagara Frontier in the late 1700s. In fact, the name Scajaquada Creek comes from the name of a Native American that was living on the north bank of the Creek, slightly east of where the Creek intersects with present-day Niagara Street.<sup>2</sup> Archaeological Sites are crucial to understanding the history and settlement patterns of Native Americans along Scajaquada Creek. Some artifacts already recovered within this area include formal tools, informal tools, chert flakes, burnt remains and animal bones both machine cut and uncut. These artifacts indicate a pattern of settlements on and near the shoreline of the Creek. The Creek was used for transportation, fishing, trapping and eventually for providing energy to factories.

Historic maps and archival research provide a mechanism to track the settlements. Evidence found in archaeological sites near the Creek indicate the presence of chert and chert-flakes, animal bones, formal tools, informal tools, expedient tools, prehistoric projectile points and saw cut and uncut animal bones. These sites indicate that natural resources important to Native Americans were present at the site, but due to the fact that the sites contain remains from not



“Aboriginal Occupation of New York Map”

Source: University of Buffalo Department of Archaeology



Map Showing a Burial Site at Mouth of Scajaquada Creek and in Forest Lawn Cemetery

Source: University of Buffalo Department of Archaeology

only Native Americans, but also from early 1800 European residents, it is difficult to determine if more permanent Native American settlements were located in these areas. Additionally, historic texts and maps also indicate the presence of sacred burial sites close to Scajaquada Creek, particularly in Forest Lawn and near the Niagara River.

### NATIVE AMERICAN BURIAL SITES ALONG SCAJAQUADA CREEK

According to the Aboriginal Occupation of New York map, published by William M. Beauchamp, a site (labeled #3) existed at the mouth of the Scajaquada Creek corridor. This site was described as “a large grave [found at] the river near Black Rock. The skeletons were laid out in a circle with their heads radiating from

a large copper kettle which was placed in the center and filled with bones.”<sup>3</sup> While Beauchamp documented his information in a book published over one hundred years ago, modern archaeologists reveal similar results among the same sites. The findings resemble the practices of Native American Tribes in this area.

The book titled Indian Village, Camp and Burial Sites on the Niagara Frontier by Frederick Houghton placed the location of a burial site close to Scajaquada Creek. The Buffalo Society of Natural Sciences invited Houghton to Buffalo in 1907 to prepare a list of the Indian village sites in Erie County.<sup>4</sup> Frederick Houghton’s map, The Indian Occupancy of the Niagara Frontier marks culturally significant sites in Western New York. The map indicates a cemetery location where Scajaquada Creek empties into the Niagara

## SURVEYING THE LAND

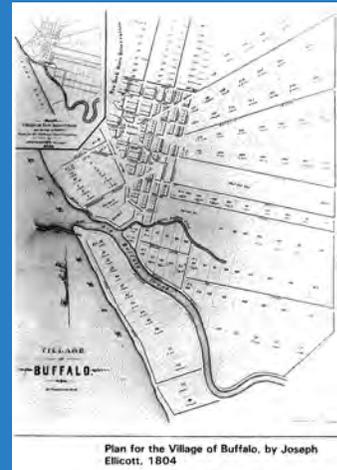
ROBERT MORRIS



Map of Morris's Purchase  
Source: bostonraremaps.com

At the time of the Holland Purchase Robert Morris was the wealthiest person in the United States.<sup>1</sup> He was born in England in the early 1730's and emigrated to the United States as a teenager.<sup>2</sup> Later in life he became a congressman where he specialized in financial affairs and military procurement.<sup>3</sup> Morris founded several companies and at the time of the purchase, it is said that he funded the Revolutionary War by donating six hundred fifty thousand dollars, which is approximately equal to eight billion eight hundred million dollars (\$8,800,000,000) when adjusted for inflation.<sup>4</sup>

JOSEPH ELLICOTT



Ellicott's Plan for the Village of Buffalo, 1804  
Source: columbia.edu

Joseph Ellicott was hired as the Chief Surveyor for the Western New York area following the Treaty of Big Tree. His task was to survey the millions of acres that were recently acquired during the Treaty of Big Tree. Ellicott would later lay out the first plan for the Village of Buffalo.

### REFERENCES

1. John Kennedy, Robert Morris and the Holland Land Purchase, 121 (Batavia, NY: J.F. Hall), 1894.
2. Ibid.
3. "A Biography of Robert Morris 1734-1806 < Biographies < American History From Revolution to Reconstruction and Beyond." Faculty of Arts | About Us | University of Groningen. Last Modified 2012. <http://www.let.rug.nl/usa/biographies/robert-morris/>.
4. Charles Rappleye, Robert Morris: Financier of the American Revolution, 4 (New York, NY: Simon & Schuster), 2010.

River. This site is labeled by a small cross on the map (Figure 2). The Houghton reading does not provide any additional information about this site. However, Beauchamp argues and supports the claim that a cemetery/burial site existed at this location. Other sites Houghton identified include several locations within Forest Lawn. He calls this site, the "Forest Lawn Group,"<sup>5</sup> which he believes was located on Scajaquada Creek.

In 1920, Parker's literature suggested a large ossuary existing near the river in Black Rock.<sup>6</sup> This reinforces Houghton's claim that a burial ground existed in Black Rock. Parker documented a camp in Buffalo located in Forest Lawn Cemetery.<sup>7</sup> By cross-referencing different archaeological maps, sufficient evidence exists to support what Frederick Houghton called the "Forest Lawn Group."

## THE HOLLAND LAND PURCHASE

Thirteen Dutch investors purchased roughly three million (3,000,000) acres in Western New York in ca. 1790.<sup>8</sup> As foreign companies were not permitted to own land in the United States the investors utilized the Holland Land Company, incorporated in 1796, as a holding mechanism. The Holland Land Company hoped to sell land after it appreciated in value to generate a massive profit. Over the years, the company made more investments into the land purchased in Western New York, including portions of the Scajaquada Creek. These investments included, inter alia, the platting, surveying and construction of infrastructure. Infrastructure predominantly included roads and other means of transportation. The Holland Land Company hoped these improvements would make the land



Treaty with Five Nations.

Source: Frost (2), John. Frost's Pictorial History of Indian Wars and Captivities. New York: Wells Publishing Company, 1873

more attractive to settlers considering a move into the area. The Holland Land Company sold their last piece of land in ca.1840 just prior to the company's dissolution.<sup>9</sup>

Joseph Ellicott surveyed the area before the land could be purchased, however many of the surveys were inaccurate.<sup>10</sup> Given the size of the land acquired from the Treaty of Big Tree, a more accurate survey was necessary. Without a proper survey, there could be no settlement. The survey was finished in October of 1800, at a cost of seventy thousand dollars. Along with the survey, Joseph Ellicott carefully organized a report that included notes and the quality of land. Following the survey, Joseph Ellicott was hired by the Holland Land Company to develop a plan for the City of Buffalo.

## II. WAR OF 1812 ON THE NIAGARA FRONTIER: BATTLE OF SCAJAQUADA CREEK BRIDGE (1814)

### THE WAR OF 1812 AND THE SCAJAQUADA CREEK

The War of 1812 is an often-overlooked event in the military history of the United States. The War was between the United States and the British. While much of the fighting occurred in Canada and the Northeastern United States other military engagements occurred in Louisiana and Washington, DC, among other locations throughout the country. The following discussion of the War of 1812 is not intended to be comprehensive, but rather to provide information about a specific battle, the Battle of the Scajaquada Creek Bridge, which occurred on and around the Creek itself. Notable events in the "Niagara Frontier" theatre (Western New York and Southern Ontario), particularly the Burning of Black Rock and Buffalo and the Siege of Fort Erie leading up to and resulting from the battle are included to provide context.

Despite being a relatively short and small battle, the Battle of the Scajaquada Creek Bridge was crucial to the United States victory in the war. Despite being an important event the location of the battle is unknown and unmarked. Researchers will need to make additional efforts, including excavations, to determine the exact location of the battle as the only maps, which would provide this information unfortunately no longer exist.

Extensive Background information on the War of 1812, including motivations, prior events and following events can be found in Appendix A.

## BURNING OF BUFFALO AND BLACK ROCK

In the late night hours of December 29-30, 1813, British forces invaded Black Rock by surprise, burning the village while in route to burn Buffalo. British forces landed just north of Scajaquada Creek (then Conjockety Creek), crossing a bridge near the sailor's battery at the mouth of the Creek and commenced the attack.<sup>11</sup> The account explaining the British route taken during the campaign to destroy Black Rock and Buffalo, would be the first to identify the bridge location for the Battle of Scajaquada Creek in August 1814. The British devastation and destruction resulted in significant civilian casualties including women and children.

Following the burning of Black Rock and Buffalo, military action would not commence until the following summer. On July 3<sup>rd</sup>, 1814, under the cover of night, General Jacob Brown led a party of 4,000 soldiers across the mouth of the Niagara River with the intent to capture Fort Erie. Advancing on the Fort from the north and south, British forces surrendered quickly to the attack. This resulted in a court martial of the British leader at the fort and the capture of Fort Erie, a pivotal moment in the war on the Niagara Frontier.<sup>12</sup>

General Gordon Drummond of the British army who was also Lieutenant Governor of Canada was frustrated with defeat and set his eyes on recapturing Fort Erie. Fort Erie was important because whoever controlled the Forts also controlled naval supply lines, in this case, on the southern confluence of the Niagara River. The British would remain as long as they had control of one important Fort. This enabled them some control of the water routes. If the Americans at Fort Erie surrendered or were defeated, it may have led to an invasion.



American Rifleman (Left) & British Soldier (Right), War of 1812

Source: [https://www.pinterest.com/christian\\_histo/war-of-1812](https://www.pinterest.com/christian_histo/war-of-1812)

## BATTLE OF THE SCAJAQUADA CREEK BRIDGE SETTING

While the actual fighting during the Battle of the Scajaquada Creek Bridge lasted only about 2 ½ hours it was a “spirited moment” and a pivotal victory for the United States, due to the significantly smaller U.S. force prevailing against the larger British army and because the supply lines remained intact to maintain the siege on Fort Erie.<sup>13</sup>

In early July 1814, the tide of the war was shifting as the United States military had recently conducted a successful siege on Fort Erie and won several subsequent battles on Canadian soil. British Lieutenant General Drummond was enraged with this turn of events and began preparations for a retaliatory attack on the villages of Buffalo and Black Rock.

American Commodore Isaac Chauncey sailed to the Niagara Frontier on August 1, 1814 and delivered a battalion of the First Rifle Regiment under the Command of Major Ludowick Morgan to further secure American holdings as tensions rose on the Niagara Frontier.<sup>14</sup> The Regiment, wearing green coats, marched directly to Buffalo and Morgan dispatched them to guard critical supplies and facilities in Buffalo and Black Rock.<sup>15</sup>

## THE BATTLE OF THE SCAJAQUADA CREEK BRIDGE EVENTS

While stationed at Black Rock on the evening of August 2<sup>nd</sup>, 1814 General Morgan observed the British moving on the Canadian shore from South to North across the Niagara River.<sup>16</sup> He directed his men to remove planks from the center portion<sup>17</sup> of the only bridge over Scajaquada Creek and to use nearby logs to build breastworks (defenses).<sup>18</sup> Given that the British had relied on the bridge in their previous attack (8 months earlier) preceding the burning of Buffalo this was a clever strategy. Around 10 PM the British forces under Lieutenant Colonel Tucker began crossing the Niagara River, departing Fisherman's Creek in Canada. They landed about 2 miles north of Black Rock and roughly ½ mile north of Morgan's forces at the Creek (in line with the northern tip of "Squaw" Island).<sup>19</sup> By 2 AM roughly 9 boats full of men (about 250) had landed.<sup>20</sup> Tucker's men then marched south from their landing point down the "only road from the falls" (Military Road) until reaching the bridge over the Creek which had been "partially destroyed" by Morgan's troops.<sup>21</sup>

After receiving word from his men stationed in the Northmost defences of Tucker's landing, Morgan dispatched the remainder of his 240 riflemen along the breastworks<sup>22</sup> and awaited Tucker's approach.<sup>23</sup> At 4:15 AM on August 3<sup>rd</sup>, 1814, Tucker's forces advanced on the bridge over the Creek, however they were surprised to find that planks had been removed from the bridge, rendering it impassable.<sup>24</sup> Lieutenant John Le Couteur from the 104<sup>th</sup> Foot British-Canadian Army noted that "When we were here last (Battle of Black Rock), there was a bridge between us and the town over a small Creek, but the enemy had destroyed it." As the British approached, surprised by the disassembled bridge, Morgan's troops opened fire.<sup>25</sup> The British subsequently withdrew and gathered materials (likely wood from the trees) to attempt to repair the bridge.<sup>26</sup>



General Sir Gordon Drummond, GCB  
Source: archives.gov.on.ca

## BATTLE OF SCAJAQUADA Creek ORDERS

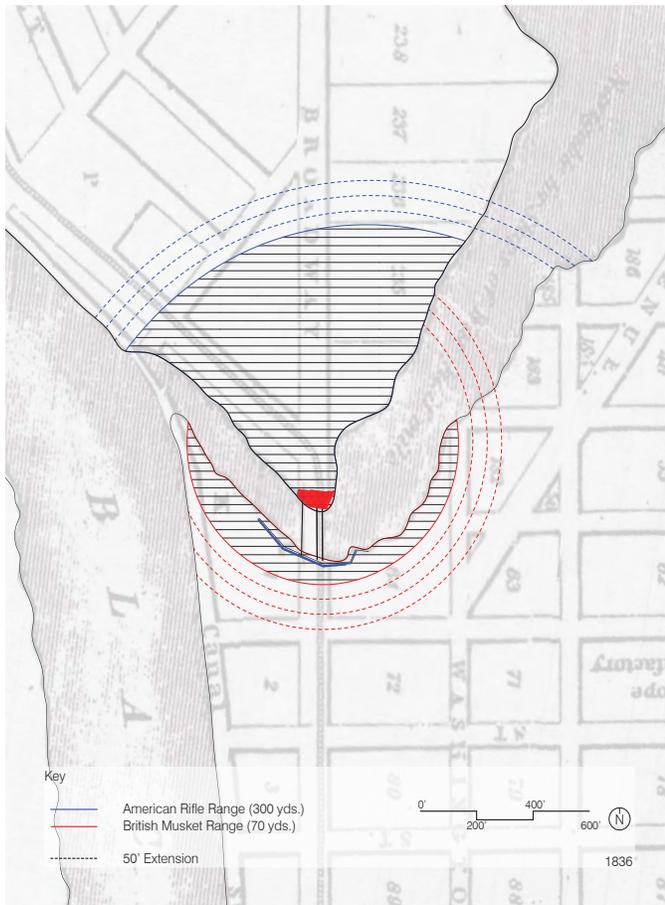
### Battle of Scajaquada Creek Orders

On August 2, 1814 Lieutenant General Drummond implemented his retaliatory attack plans as he ordered Major General Conran<sup>1</sup> to place 600 troops under the command of Lieutenant Colonel Tucker.<sup>2</sup> These troops were comprised of members of the 41<sup>st</sup>, 89<sup>th</sup>, 100<sup>th</sup>, 104<sup>th</sup> Regiments of the British Army and 10 artillery units were also dispatched.<sup>3</sup> Lieutenant Colonel Tucker was to depart Canada with the entirety of the combined regiments from a location near Frenchman's Creek at 10 o'clock on August 3<sup>rd</sup> and cross the Niagara River in boats, ideally landing near the foot of "Squaw" Island (in line with the island's northern tip). He was instructed to command the combined regiments to attempt to secretly and quickly proceed to Buffalo with the goal of destroying provisions and stores to cut off supply lines to the (then) U.S. occupied Fort Erie. He was also instructed to destroy and/or capture the boats and other military supplies there. An additional motivation for the battle was Lieutenant General Drummond's desire to rescue General Riall<sup>4</sup> and additional British soldiers who had been previously captured and were being held prisoner in Buffalo.<sup>5</sup>

Once those tasks were completed, Tucker's men were to then quickly advance to Black Rock to attack any forces stationed there and then to seize and/or destroy any cannons as appropriate.<sup>6</sup> Ideally, Tucker was to arrive north of Buffalo an hour before daybreak and reach Black Rock at sunrise.<sup>7</sup> If discovered upon landing Tucker was authorized to change his plan and attack Black Rock first and then accomplish his goals in Buffalo afterwards.<sup>8</sup>

#### REFERENCES

1. Major General Conran was not a key actor per se, his only relevance to the battle is that he was an intermediary in rank and passed along orders between Drummond and Tucker.
2. Cruikshank, ed., *The First American Frontier*, 118.
3. *Ibid.*
4. General Phineas Riall was a British military General who led several campaigns as the "commanding officer of the Niagara Peninsula" in "Upper Canada" during the War of 1812. He participated in the burning of Black Rock and Buffalo in 1813 before being injured and captured at Lundy's Lane.
5. W.M. McCarty, ed, *History of the American War of 1812, from the Commencement, Unit the Final Termination Thereof, on the Memorable Eighth of January, 1815, at New Orleans. Embellished with a Striking Likeness of General Pike, and Six Other Engravings.*, Second ed. (Freeport: New York: Books for Libraries Press, 1970), 157.
6. *Ibid.*
7. Cruikshank, ed., *The First American Frontier*, 119.
8. *Ibid.*



Map Illustration of Accuracy Range of Fire from British and American Guns During the Battle.

Source: Brad Everdyke

The British advanced again, with some of their troops providing “cover fire” as others attempted to repair the bridge.<sup>27</sup> The British then continued firing from the cover of the woods on the North side of the Creek.<sup>28</sup> While firing the troops were continually reinforced by an additional 13 boats from Canada, meaning the British forces eventually totaled “22 boat loads” of (around 600) soldiers.<sup>29</sup>

Having little success attacking at the bridge location, Tucker dispatched many of his troops roughly half a mile to the east<sup>30</sup> to attempt to find a place to ford the river.<sup>31</sup> Morgan had anticipated this move and had dispatched three of his Lieutenants: Ryan, Smith and Armstrong with 60 troops to the East (on the South Side of the Creek) who were effective in fending off the larger British force.<sup>32</sup> Following this failed

flanking attempt, Tucker abandoned the military engagement and retreated, leaving six boat loads of troops on nearby “Squaw” Island to continue to fire on Morgan’s troops, effectively covering Tucker’s retreat, and preventing Morgan from pursuing the British.<sup>33</sup> Following the retreat across the Niagara these troops on “Squaw” Island also retreated. The fighting lasted about two and a half hours.<sup>34</sup>

## AFTERMATH

One of the important battles fought in the Niagara Frontier was the Battle of Scajaquada Creek. This battle was part of the larger siege on Fort Erie to maintain control of the Niagara River. Given that Morgan’s smaller force was able to repulse Tucker’s much larger force with minimal casualties, the relatively small battle was pivotal in maintaining the United States upper hand in the Niagara Frontier Theater.

The Americans had two troops die in the combat and eight additional wounded, three of whom were officers.<sup>35</sup> They took six British prisoners who claimed their intention in the battle was to recapture General Riall among other British prisoners and to destroy the “public stores” at Buffalo.<sup>36</sup> The prisoners gave varying accounts of the total number of attacking British troops, ranging from 12 to 1500 men (the actual number was 600).<sup>37</sup>

Tucker reported thirty three casualties to his superior General Drummond, none of whom were officers.<sup>38</sup> Eleven of these were actually left on the battlefield along with at least five Native Americans who had been fighting on the British side.<sup>39</sup> This differential in officer casualties, despite the discrepancy in total casualties, may indicate that many of the British officers were stationed in the rear of the fight while the American officers were on the front lines.<sup>40</sup>

# BATTLE OF SCAJAQUADA Creek, BATTLE SEQUENCE

Soldiers Key:  
British Forces - Orange (First Advance), Red (Second Advance)  
American Forces - Blue

Map Source: Bradley Everdyke



4 - 5 AM, August 3, 1814



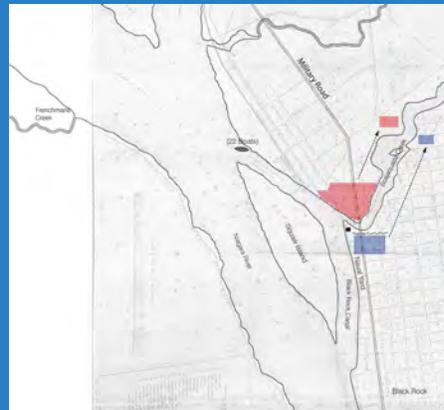
10 PM, August 2, 1814



4 - 5 AM, August 3, 1814



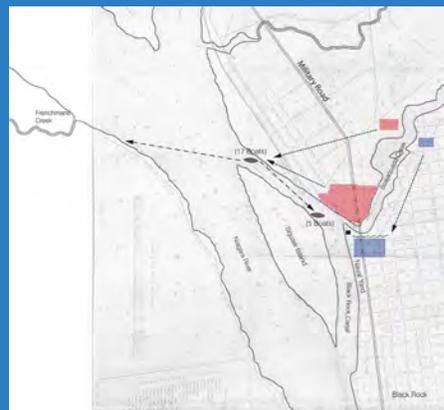
11 PM - 1 AM, August 2 - 3, 1814



5 - 6 AM, August 3, 1814



1 AM - 3 AM, August 3, 1814



6 - 7 AM, August 3, 1814

## RETURN TO FORT ERIE AND END OF THE WAR

Drummond was not happy since his forces were not able to carry out his orders and according to accounts he let it known to his men that the defeat was their fault. He stated that “crouching, ducking, or laying down when advancing under fire are bad habits, and must be corrected.”<sup>41</sup> He goes on to also state to officers “to punish with death on the spot any man who may be found guilty of misbehavior before the enemy.” Drummond’s strong response to the loss at the Battle of Scajaquada Creek was a result of the resulting poor status of the British army.<sup>42</sup>

Drummond’s motivations were correct as the Americans moved their supplies from Black Rock to Buffalo, where they could quickly supply Fort Erie by boat.<sup>43</sup> This supply relocation was significant, because reinforced supplies are imperative for armies to continue combat. American troops in Fort Erie were fortunate to have tents and receive regular rounds of food from the boats that were now crossing from the new supply point.<sup>44</sup> The Americans even baked the bread at the new supply area every day.<sup>45</sup> This difference in the delivery of supplies was significant and if the British had taken Buffalo the movement of American supplies would have ended and forced the Americans at fort Erie to surrender.<sup>46</sup>

American soldiers also requested axes and shovels to help with construction and the ongoing improvements to the Fort.<sup>47</sup> Additionally, in September they requested planks to improve shelter. The Battle of Scajaquada Creek was a major victory for the United States since the troops at Fort Erie could endure the conflict due to control of the waters from Buffalo.<sup>48</sup>

Drummond’s only option was to return his attention to Fort Erie.<sup>49</sup> When he did, he saw a strengthened fort. This included entrenchments that had been added to both the lake and Snake

Hill battery side as well as abattis, which were tree branches with sharp points facing out, to the front of the entrenchments which was another tactic to deter opponents. Two bastions on the west side of the fort were also improved, as were embrasures for the batteries.<sup>50</sup>

The Battle of Scajaquada Creek gave the United States soldiers occupying Fort Erie a few days to reinforce the fort itself. The battle, coupled with Drummond’s hesitation to attack the Fort, allowed the completion of improvements without harassment. He did not attack until August 15 as he was waiting for guns from Fort George. This allowed Americans more time to continue constructing improvements, without which Drummond may have been able to take Fort Erie.<sup>51</sup> Americans now had both supplies and a reinforced fort on their side.<sup>52</sup>

Following the American victory at Scajaquada Creek, British forces made their last attempts to seize Fort Erie.<sup>53</sup> In failure, the British suffered mass casualties due to an explosion of an ammunition reserve, crippling Drummond’s forces.<sup>54</sup> Colonel Drummond ended his attempt to take the Fort on September 2, 1814, returning British forces to Fort George. American forces blew up Fort Erie, and returned to the American front in November 1814. This would mark the last military engagement on the Niagara frontier during the War of 1812.<sup>55</sup>

All of these Niagara Frontier Battles saw large losses of men on both sides. The U.S. had forces remain at Fort Erie through October and they finally left the fort by burning it in early November. Roughly 1,800 Americans and 2,400 British were killed or wounded during battles on the Niagara Frontier from August to November of 1814.<sup>56</sup> This ended the Niagara region’s bloodiest campaign.<sup>57</sup>

The failure of British forces to achieve a significant victory in 1814 was determinative in their willingness to “settle for peace.”<sup>58</sup> The British

## LOCATING THE BRIDGE

On July 10, 1801 Secretary of War Henry Dearborn wished to construct a Fort at Black Rock and requested details from Joseph Ellicott, surveyor for the Holland Land Company, about the land ownership boundary with the Native Americans, the New York State Reserve: a mile wide strip of land that followed the shore of the Niagara River north from south of Buffalo to Lake Ontario.<sup>1</sup> Mr. Ellicott sent a letter in response in which he stated the following:

*"[Y]ou will find enclosed "A Map or Military Prospective of [the] Niagara River and the Lands adjoining thereon," comprehending Part of that Tract of Country between the Lakes Ontario and Erie laid down from a correct survey, exhibiting that Part of the Boundary "Line between the United States and the Seneca Nation of Indians," extending from Johnston's Landing on Lake Ontario to the Niagara River, and bounding on said River to the Shore of Lake Erie, as confirmed and more particularly explained by the Treaty held at Konondaigua on the 11th Day of November 1794; likewise the Boundary Line of the Lands reserved to the State of New York [by the Hartford Compact] along said River" also showing the precise and local Situation of Black Rock, the principal object of your Inquiry ....The enclosed Map shows what part of the Lands contained in the New York Reservation has been ceded by the Seneca Nation of Indians to the King of Great Britain, and by him relinquished by Treaty to the United States, and what Part of said Reservation the Seneca Nation of Indians yet retain. And as the Part retained included Black Rock it follows of course that the Scite [sic] intended by the Commander in Chief for the Erection of a Fortification (and probably the most eligible on the River) is yet the Property of the Seneca Nation of Indians."*<sup>2</sup>

Unfortunately, the map referenced by Mr. Ellicott in this letter, which would potentially indicate the road location,

is "not known to have survived."<sup>3</sup> This letter also indicates that the proposed fort was outside of the "one-mile strip" explained below.

While the absence of this map means it may be impossible to definitively locate the point at which Military Road, in its initial alignment, crossed the Creek (and therefore the bridge location) such information could potentially be extracted from the Legal Description of land title deeds<sup>4</sup> from 1808 in the Niagara County Clerk's office.

An examination of maps and surveys of features on the "Parish Tract" and the "AP Stevens' Survey" through which Military Road ran, viewed in the "rare books collection" of the Buffalo and Erie County Public Library, are from several years later (1830s). They do indicate a bridge at Niagara Street, however they open up other questions as a road parallel to Niagara seemingly crosses into the water and a thin, diagonal parcel exists, indicating an area where another road may have previously existed.<sup>5</sup>

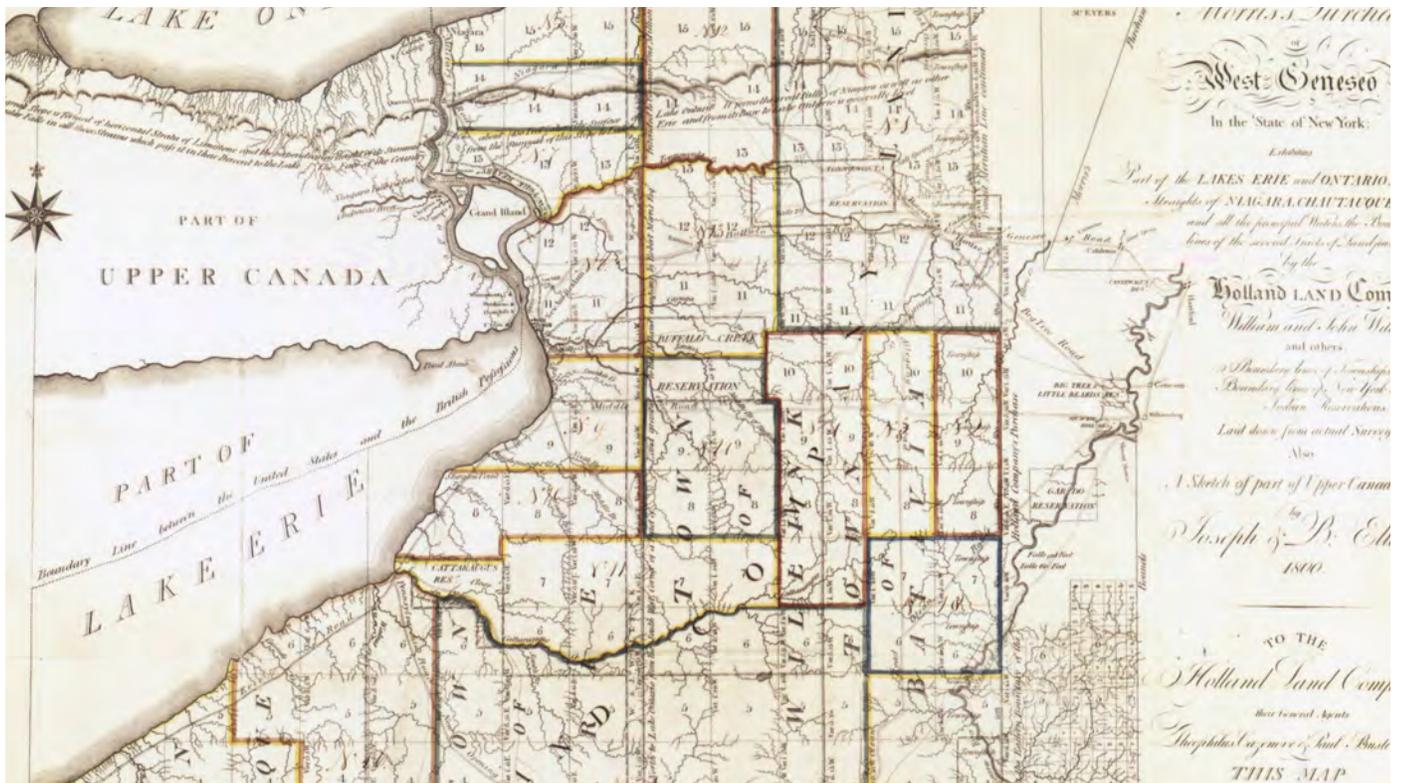
Based on a number of maps and accounts we believe the battle occurred roughly 16.5 feet West of the present day Niagara Street bridge and that the shipyard was in the same general location.<sup>6</sup>

## Differing Opinions

A number of Historians both locally and internationally have reasoned that rather than being located West of Niagara Street the bridge was more likely located between modern day Niagara and Grant Streets. In making this determination historians have relied heavily on Peter Porter's July 1813 map, an unidentified map of Military Road accessible at: <http://www.buffalohistorygazette.net/2010/08/why-is-it-called-road.html>, and the Henry Lovejoy, Map of the Village of Black Rock (Black Rock Land and Railroad Co., 1836) that has a note within the Creek stating "navigable for ships of war half mile." The historians reasoned that the bridge could not be east of this portion as it would be impractical to disassemble the bridge each time to allow ships to pass. They further noted the topography described in the battle accounts, particularly Kearsley's, which noted a sharp descent when approaching the bridge from the North, which is more similar to the topography between present day Niagara and Grant Street than it is West of Niagara Street.

### REFERENCES

1. *Seneca Nation of Indians v. N.Y.*, 209 F. Supp. 2d 448, 494 (W.D.N.Y. 2002), *aff'd*, 382 F.3d 245 (2d Cir. 2004).
2. *Id.* at 494-95.
3. *See id.*
4. If such records exist. At the time the entire area was part of "Niagara County" so it is unclear where such records would be kept.
5. Map of North Village of Black Rock (Buffalo: Holland Land Company, 1864).
6. George Emerson, *The Niagara Frontier Landmarks Association: 1900-1905*, (Ithaca, New York: Cornell University Press, 1906), 128. *See also* Map of the Straights of Niagara from Lake Erie to Lake Ontario 1814; Henry Lovejoy, *Map of the Village of Black Rock* (Black Rock Land and Railroad Co., 1836).



'Map of Genesee with Towns in the Counties;' Period Map Depicting Military Road from New Amsterdam (Buffalo) to Fort Niagara ca. 1813  
 Source:nyheritage.org

had been at war for 22 years at this point and the country's national debt was becoming a burden on its citizens.<sup>59</sup> After some disputes regarding who would hold Fort Niagara, Fort Macinac and parts of Northern Maine the countries agreed to a restoration of pre-war boundaries.<sup>60</sup> On December 24, 1814 the United States and Great Britain formally executed the Treaty of Ghent, marking an official end to the War and the beginning of a hundred years peace.<sup>61</sup>

### LOCATION OF THE BRIDGE & NAVAL YARD

While no definitive evidence exists precisely indicating the exact location of the bridge and the battle or the naval yard, there is significant contextual information indicating two potential sites along Scajaquada Creek as possible battle sites. The first, and more heavily supported site is roughly "one rod"<sup>62</sup> west of modern day Niagara Street.<sup>63</sup> However, other evidence exists and

modern historical commentary places the bridge at a location east of Niagara Street between Niagara and Grant Street.<sup>64</sup>

Based on primary source accounts of Johnathan Kearsley and others it is clear that at the time of battle only one bridge<sup>65</sup> crossed Scajaquada Creek.<sup>66</sup> It is noted that the bridge was where the "road from the falls" crossed the bridge and it can also be presumed that the bridge in question is the same bridge that the British crossed during the burning of Black Rock and Buffalo late the previous year.<sup>67</sup> This road (called "Military Road") was constructed to connect Fort Niagara to a proposed (but never built) Fort at Black Rock and Buffalo between 1802 and 1809.<sup>68</sup> The Bridge over Scajaquada Creek was constructed in 1802-03.<sup>69</sup> However, the road construction stalled in 1803 due to a dispute between the United States Government and New York State regarding who should fund the road.<sup>70</sup> The road was not completed until

1809 when New York State allocated \$1,500 raised by selling land within the “one mile tract” to Mr. Parrish, Mr. Stevens, Mr. Porter and others, for such purposes.<sup>71</sup>

Analysis of early nineteenth century maps of the region reveal a Native American trail and wagon path running between the village of New Amsterdam, what is today Buffalo, and Fort Niagara at the mouth of the Niagara River into Lake Ontario.<sup>72</sup> Maps at the start of the nineteenth century label this path as a Native American trail, however what appears to be the same path, is quickly relabeled as ‘Military Road’ in subsequent years, suggesting that the two are one in the same.<sup>73</sup> As maps from this era include the entire region, delineating exactly where this path crosses Scajaquada Creek cannot be exactly pinpointed. The path also changes slightly between maps of subsequent years at various locations including in its crossing of the Creek, making it more challenging to conclude the location of the bridge based solely on this evidence. It is clear however, that the Native American trail and wagon path, with some potential variation, became what was known as ‘Military Road,’ which would remain a principal route in the region for the majority of the early nineteenth century.

While it is clear that the Battle occurred at the Bridge where Military Road<sup>74</sup> crossed the Scajaquada Creek, the exact location of the bridge is unclear given conflicting historical reports. The road was designed to connect Fort Niagara and a future Fort in Black Rock and as an alternative to the “Portage Road” (further north near Niagara Falls) which was considered too close to the Niagara River.<sup>75</sup> Prior to this time, goods had to be transported either along the river (inconvenient in the winter) or across a road in Canada, seen as embarrassing and impractical, particularly for official U.S. Government (military and other) purposes.<sup>76</sup> The Fort at Black Rock was advocated for by General Wilkinson<sup>77</sup> because the “spot so well commanded the outlet at Lake Erie, [and in case of hostilities] would leave no

harbour for enemies.”<sup>78</sup> While stationed at Fort Niagara, and later Black Rock, he was tasked with completing the road.<sup>79</sup>

General Wilkinson commanded Major Peter to “open the road from Lewiston to Fort Schlosser” replacing the Portage Road,<sup>80</sup> which was too close to the Niagara River.<sup>81</sup> The new road, known as “Military Road,”<sup>82</sup> would be “cut through virgin forests” to Tonawanda Creek.<sup>83</sup> The “Military Road” ran through land not included in the Holland Purchase but belonging to the State Government, known as the Mile Strip or New York State Reserve.<sup>84</sup> The \$1,500 allocated by the State to finish the road was raised by selling land in the “Mile Strip.”<sup>85</sup>

As the Holland Land Company built roads for the Village of Buffalo, the “Southern end of Wilkinson’s Military Road was finally incorporated in the street system of Buffalo” in 1809.<sup>86</sup> However, the “many steps” by which the road was altered is unclear, indicating later alignments of the road are inconsistent with the original layout.<sup>87</sup>

We know from multiple primary and secondary sources that there was only one bridge, that the bridge was the crossing for Military Road and that the road and the bridge were within the “Mile Strip” Reservation which was owned by the State of New York and abutted the Holland Land Company property in Black Rock. The majority of our other evidence indicates that the bridge was just west of modern day Niagara Street however we do not have clear, irrefutable evidence to definitively determine this location (See “call-out” referencing debate between historians regarding the bridge location).



Launch of the Seabreeze Just East of the Mouth of Scajaquada Creek, c.a. 1907  
Source: buffaloah.com/

### III. BUFFALO'S EARLY BEGINNINGS AROUND WATERWAYS: EARLY SETTLEMENTS AND INDUSTRY AT THE MOUTH OF SCAJAQUADA CREEK (1600s - 1830s)

#### POST-WAR OF 1812 DEVELOPMENT OF BLACK ROCK AND ERIE CANAL

In the early 1800s, the Village of Buffalo, originally New Amsterdam, developed to the south of the Buffalo River as a small village heavily connected to and dependent on the area's waterways.<sup>88</sup> Buffalo developed at a relatively slow pace until the opening of the Erie Canal in 1825, when an influx of trade and people prompted rapid growth and development of residential and commercial activity.<sup>89</sup> The Village of Black Rock developed in a similar fashion,

with early residents living near the mouth of the Scajaquada Creek at the Niagara River. The two municipalities, primarily through wealthy landowners like Peter Porter, competed over the location of the western terminus of the Erie Canal.<sup>90</sup> New York State chose Buffalo, which effectively rendered the Village of Black Rock a footnote in the history of the area. The City of Buffalo eventually annexed the Village of Black Rock through special state legislation, one of the few examples of annexation in the history of New York State.<sup>91</sup> A once prominent village, Black Rock is now just another City of Buffalo neighborhood.

New York State developed plans to create the Erie Canal in the late 1700s.<sup>92</sup> However, Canal construction was incomplete until around 1821.<sup>93</sup> In 1808, the State developed a number of official surveys, which allowed construction to commence.<sup>94</sup> While landowners and residents were acutely aware of the practicality and outright necessity of a canal, they likely did not envision the scope and magnitude of the Canal. With few dependable surface roadways, some of which



Launch of the Seabreeze Just East of the mouth of Scajaquada Creek

Source: buffaloah.com

were little more than unpaved trails at the time, ships were the only way to efficiently transport goods and people through the area. The early settlements along Lake Erie and the Niagara River, particularly Black Rock and Buffalo, were concentrated around waterways due to the transportation constraints of the time. While these settlements developed with European influences, it was not the Europeans who originally selected these sites as advantageous, but the Native Americans who already occupied these areas for many years.

Early industries in Buffalo and Black Rock relied on and reinforced the aforementioned water-based travel, particularly the shipbuilding industry which occupied the Niagara River and Black Rock Canal, across from the southern tip of Squaw (Unity) Island.<sup>95</sup> Much of the shipping industry may have moved to the mouth of Scajaquada Creek for shelter from storms and enemy fire during the War of 1812 (Unity Island provided cover from

enemy attacks).<sup>96</sup> One of the highlights of Black Rock's shipbuilding history was the construction of Walk-in-the-Water, the first steamer to navigate the Great Lakes above Niagara Falls. This ship regularly carried passengers and freight between Black Rock and Detroit, stopping in Cleveland and Erie, Pennsylvania along the way. The ship was constructed in the Black Rock shipyards near Scajaquada Creek, initially launched from Black Rock in 1818, and was named after a Wyandotte chief.<sup>97</sup>

Some of the earliest known maps of Scajaquada Creek indicate the development of fledgling industry. For example, a sawmill appears abutting Scajaquada Creek north of the villages of Black Rock and Buffalo in the 1804 Holland Land Company Map.<sup>98</sup> This map and other historic maps of the Villages of Black Rock and Buffalo indicate that the villages were the only established and substantial settlements in the area at the time so the sawmill was likely



Saw Mill Location on Scajaquada Creek, ca. 1804

Source: 1804 Holland Land Company Map

established to supply lumber to the villages for construction and industrial uses. The sawmill site was likely located just outside of the Village of Black Rock due to the predominantly tree-covered nature of the land, which provided a surplus of available lumber. The site likely also benefited from transportation opportunities provided by the Scajaquada Creek, and its connection to the Niagara River and Lake Erie. Beyond the obvious transportation advantages provided by these waterways, a constant supply of fast-moving water could have provided the sawmill with power. The sawmill's location well to the east of the mouth of the Creek as suggested in the 1804 Holland Land Company Map supports this hypothesis as the location increased the travel distance.<sup>99</sup> Such an increase would be illogical were it not for the elevation changes resulting in fast-moving waters at the sawmill location (present-day Forest Lawn Cemetery), where a 10-foot drop in elevation results in a waterfall and fast-moving waters with energy-producing potential.<sup>100</sup>

Unlike the area's Native residents, the European settlers were not willing to take up a transient, lightweight, and portable lifestyle. Instead, they constructed wooden-frame, permanent structures, of various sizes and scales, and other accommodations, causing the Village of Buffalo to grow slowly.<sup>101</sup> Early on in its development, sawmills, hardware stores, construction suppliers, among other construction-oriented industries developed to support the growth of residential settlements.<sup>102</sup> In the decades of settlement prior the construction of the Erie Canal, the villages of Black Rock and



Pratt & Letchworth 1855 City Directory Ad

Source: 1855 City of Buffalo Business Directory

Buffalo experienced slow but steady growth, necessitating further construction of housing and retail structures to accommodate new residents.<sup>103</sup>

The Western New York economy received a boost when New York State determined the western terminus of the Erie Canal would be located somewhere along Lake Erie. A desire to link the Hudson River and Lake Erie motivated the decision to build the Erie Canal.<sup>104</sup> Construction of the Erie Canal began in 1817 near what is now Rome, New York, despite the lack of a definitive location for the location of the western terminus.<sup>105</sup> The villages of Buffalo and Black Rock engaged in an intense five-year battle to be the site of the canal terminus, with each village completing extensive harbor improvements to entice the State commissioners.<sup>106</sup> Samuel Wilkeson organized the Buffalo Harbor Company in 1819 to improve harbor conditions. Wilkeson directed the construction of Buffalo harbor, which began in 1820 and continued through 1822.<sup>107</sup> Buffalo's harbor improvements centered on the connection between the Little Buffalo Creek, Big Buffalo Creek (now Buffalo River), and Lake Erie, including extensive work at the harbor mouth.<sup>108</sup> Black Rock's improvements included improving the connection between Scajaquada Creek and



Map of Erie Canal Across New York State 1825

Source: Laws of the State of New York, in relation to the Erie and Champlain canals / Published By authority, under the direction of the Secretary of State (E & E Hosford, printers, Albany, 1825)

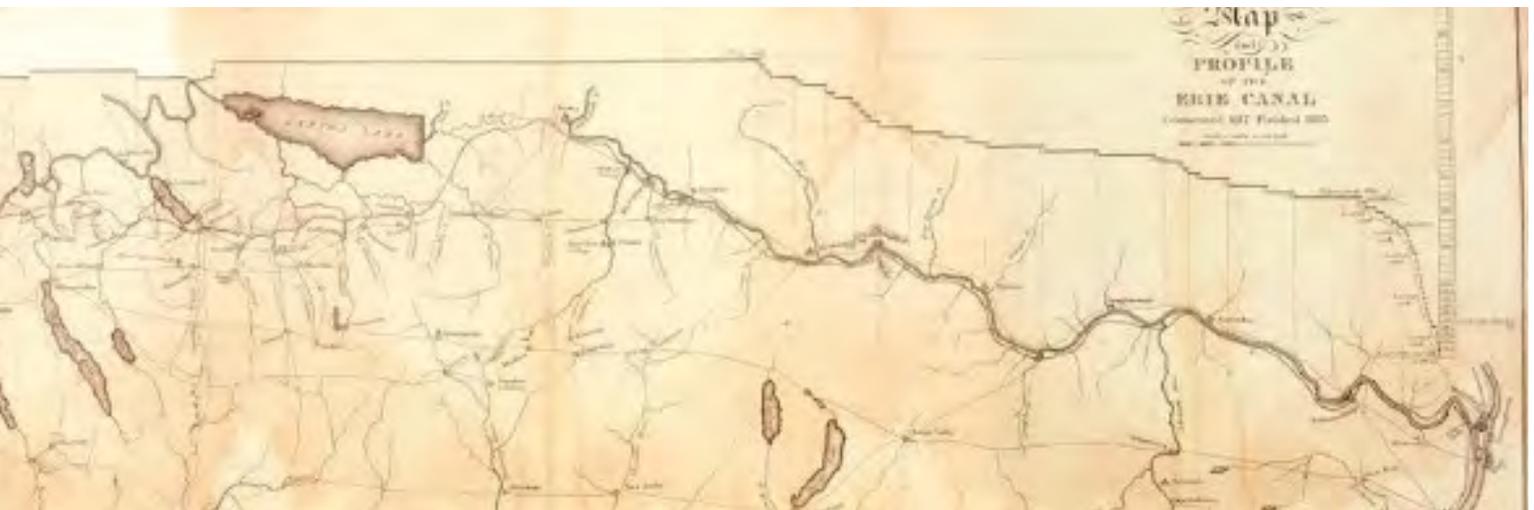
the Niagara River and creating a pier between Squaw Island and Bird Island.<sup>109</sup> In 1822, the canal commissioners decided to locate the western terminus of the canal at Buffalo.<sup>110</sup>

Despite favoring Buffalo, the commissioners expressed reservations about both harbors. After persistent lobbying by Peter Porter, the state legislature appropriated funds for construction harbor improvements at Black Rock in 1822.<sup>111</sup> These improvements included the partial damming of the Niagara River through the construction of a pier connecting Squaw Island to Bird Island to create a more useful channel.<sup>112</sup> The rivalry between Black Rock and Buffalo reached a climax in early 1825. The two villages compromised and agreed to construct the canal through Black Rock along the Niagara River's shore but to construct the canal's terminus into Lake Erie in Buffalo.<sup>113</sup>

Due to this compromise, Black Rock harbor lost shipping commerce and Buffalo's harbor gained commercial relevance and priority. The location of the terminus at Buffalo guaranteed its victory in its rivalry with Black Rock, and after the Erie Canal opened on October 26, 1825, Buffalo became the de facto transshipment point for goods, particularly grain, moving from the Midwest, through the Great Lakes, to New York

and eventually ocean trade.<sup>114</sup> The Erie Canal was a major economic gateway to the West, bringing thousands of settlers and economic prosperity to the region.<sup>115</sup> In 1825, the population of Buffalo (2,412) was more than twice the size of Black Rock's population (1,039).<sup>116</sup> Upper Black Rock lost its competition with Buffalo and was eventually absorbed into Buffalo's growing West Side.

The economic success of the Erie Canal and the resulting arrival of immigrants into Western New York dramatically accelerated Buffalo's development as a regional center of commerce and population. These events prompted the formation of new cities, towns, and villages. In 1832, the City of Buffalo was incorporated; its boundaries were North/York (now Porter) streets to the north, Jefferson Street to the east, and the Buffalo Creek reservation to the south.<sup>117</sup> Although largely vacant, Upper Black Rock, the area southeast of Squaw Island, was just north of the growing city and with trolley service established after 1834 became increasingly linked to Buffalo.<sup>118</sup> By 1850, Erie County had a population of more than 100,000, with nearly half of its residents located in the City of Buffalo (42,261).<sup>119</sup> In 1853, the City of Buffalo extended its boundaries further, annexing all of Black Rock through a special act of the State Legislature, and



adopting a new city charter.<sup>120</sup>

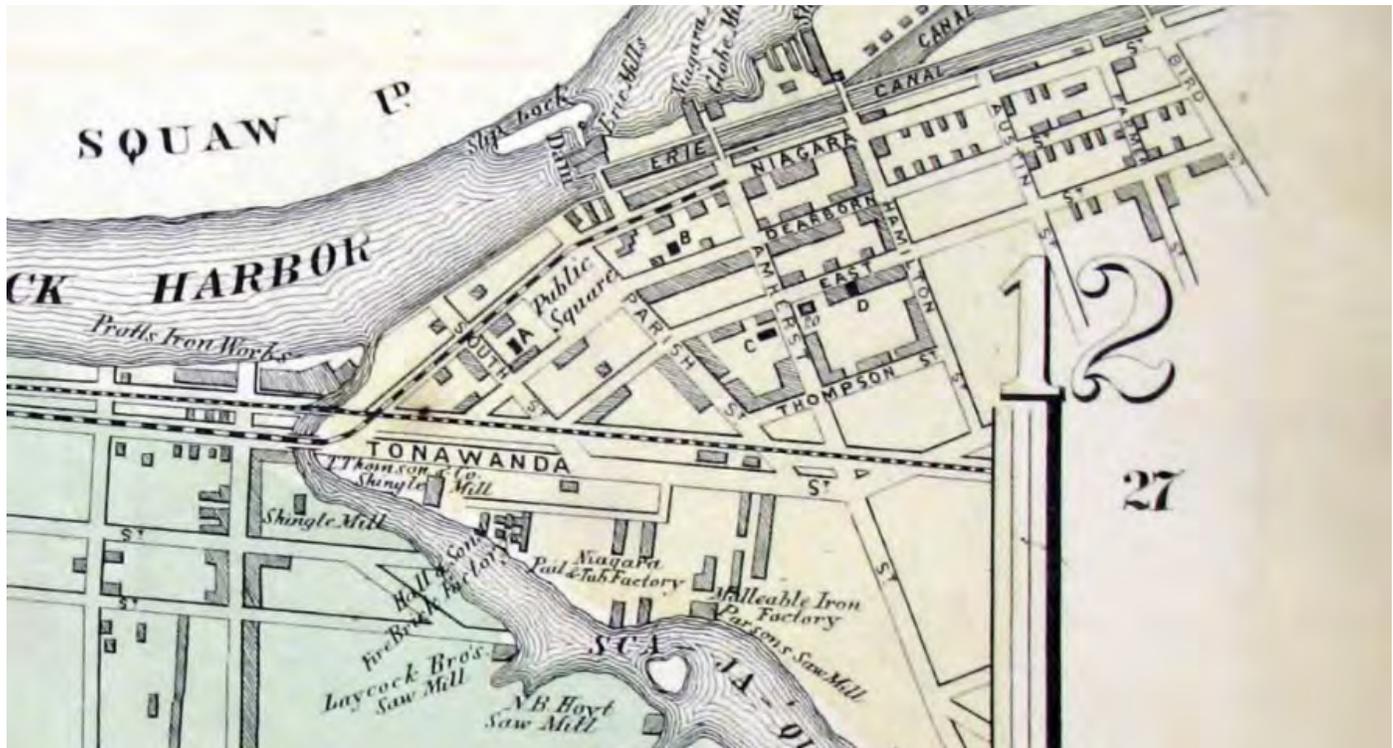
## THE GROWTH OF A MANUFACTURING CENTER AT BLACK ROCK

The completion of the Erie Canal transformed the villages of Black Rock and Buffalo from small trading communities to thriving commercial centers. The significant population increase necessitated the construction of upgraded and expanded infrastructure to accommodate new residential, industrial, and commercial development. The Erie Canal stimulated the already existing shipping and shipbuilding industries into an economic boom.<sup>121</sup> By the end of the Civil War, Black Rock had become one of the most heavily industrialized sections of Buffalo.

Mills had been located along the Niagara River and Scajaquada Creek since the 1830s, including the Erie Mills, Niagara Mills, Globe Mills, and a Starch factory, all of which were still extant in 1884.<sup>122</sup> Most of these mills were located south of Bird Avenue and along the pier extending south from Squaw Island, and many of them had burned down or were torn down by the 1920s.<sup>123</sup> The mills and factories of Black Rock attracted new immigrants from Europe to live in the area.<sup>124</sup>

Despite the presence of some foundries and machine shops in the early decades of the nineteenth century, it was not until the middle of the century that heavy industry took root in Black Rock.<sup>125</sup> Around 1850, the Pratt brothers partnered with William Pryor Letchworth to form Pratt and Letchworth, which subsequently became renowned for saddlery hardware. Headquartered on the Terrace in Buffalo, Pratt and Letchworth established the Buffalo Malleable Iron Works on Tonawanda Street in 1860, probably subsuming the existing Iron and Nail Works at the site.<sup>126</sup> In 1872, Pratt and Letchworth occupied thirty-eight acres between the New York Central Railroad and Scajaquada Creek, which emptied into the Erie Canal adjacent to the Black Rock depot.<sup>127</sup>

While Upper Black Rock was becoming largely a residential area of the City of Buffalo (except for locations adjacent to the Erie Canal/Niagara River corridor), Lower Black Rock saw extensive industrial and commercial development after the conclusion of the Civil War. At the time, numerous industrial operations were situated along both sides of Scajaquada Creek, including saw mills of Laycock Brothers and N.H. Hoyt, and a shingle mill on the Creek's south side, and Parsons Saw Mill, the Malleable Iron Factory, Niagara Pail and Tub Factory, Hall and Sons Fire



Atlas Depicting Industry at the Mouth of Scajaquada Creek on the Niagara River, c.a. 1866

Source: 1866 Stone & Stewart Atlas Map

Brick Factory, and a shingle factory on the north side. Pratt's Iron Works were located along the river south of the Creek. Iron ore smelting began in Buffalo around 1860, as economical lake transportation of ore to Buffalo enabled the city's commerce-based economy to gradually shift to a manufacturing economy.<sup>128</sup> While industry took root at the junction of Scajaquada Creek and the Niagara River/Erie Canal, areas to the east remained vacant or in farmland.<sup>129</sup> In 1866, Forest Avenue was not yet constructed and Elmwood Avenue terminated at Delavan Avenue, Rees Street was not surveyed and Grant Street was known as Scajaquada Street.<sup>130</sup> The land located south of the Creek and east of Grant Street between Grant Street and Elmwood Avenue was farmland until its purchase by New York State in 1870 for the construction of the Buffalo State Hospital (H.H. Richardson Complex).

Heavy industrial development was not the only factor driving development in the City of Buffalo in the middle to late 1800s. Joseph Dart invented the Grain Elevator in Buffalo in 1848

and the construction of grain elevators in Buffalo allowed the City to become the grain trade center of the United States.<sup>131</sup> This status as a national hub allowed industries around the country to ship even more goods and materials into and through the City of Buffalo. Additional commerce, partially attributable to the grain trade, created surplus available jobs, resulting in a consistent population increase through the middle of the century.<sup>132</sup>



HOUSE BUILT BY WARREN GRANGER. FROM A WATER-COLOR SKETCH BY JACOB WELLS. THE PICTURE SHOWS IT AS IT APPEARED SOME HALF CENTURY AGO, DURING THE OCCUPANCY OF SAMUEL A. PROVOOST. A LATER OWNER, MR. F. H. RANSOM, ADDED A TOWER. AT THE LEFT, A HORSE-CAR APPROACH WAS HAD TO MOFFAT'S (FORMERLY GRANGER'S) GROVE, NOW INCLUDED IN FOREST LAWN CEMETERY.

Forest Lawn Cemetery pre-1850s

Source: 1866 Stone & Stewart Atlas Map

## IV. WATERWAYS AS URBAN DESIGN FEATURES: SCAJAQUADA CREEK AND THE DESIGNED LANDSCAPES IN FOREST LAWN CEMETERY, DELAWARE PARK, AND THE PAN-AMERICAN EXPOSITION (1860s - 1900s)

### DESIGNED LANDSCAPES

The development of the landscapes through which the Scajaquada Creek flows, including Buffalo State Asylum, Delaware Park, Forest Lawn, although not used or designed for industrial purposes, nevertheless greatly impacted the form and function of the Creek. At the Buffalo State Asylum, Olmsted's design utilized the existing aesthetic value of flowing water. The Buffalo State Asylum is rich in architectural history and significance, featuring structures designed by Henry Richardson and landscapes designed by Fredrick Law Olmsted and Calvert Vaux. The

architects used the meandering and winding form of the Creek (at the time) to establish a pastoral and rural setting. The complex was complete with functioning farm fields intended to create an environment separate from the increasingly urbanized, dense, and developed surroundings.

Olmsted continued this theme in Delaware Park through the design of a series of lakes and water features that add aesthetic value to the park. Olmsted was mindful of the Erie Canal and existing (often dense and polluting) manufacturing, industrial and other commercial uses located west of the park. In response, he incorporated design elements to provide park visitors a "relief from urban ills." Olmsted aimed to promote "natural" aesthetics through design concepts including water features, vegetation, flowing, and non-uniform landscapes.

Land use along the Creek west of Main Street transitioned from predominantly industrial uses to formal institutional, recreational, and pastoral uses. Industrial operations to the west continued to use the Creek for transportation, power, and fresh water, manipulating the form and quality of the Creek in the process. Olmsted

and architect Charles Clarke, through the Buffalo State Asylum, Delaware Park, and Forest Lawn Cemetery, utilized the Creek and shaped the immediately surrounding physical spaces to create aesthetically pleasing landscapes suitable for quiet personal reflection or recreational uses. Although the land use and purposes of the spaces along the Creek differed greatly from east to west, both areas significantly modified the Creek to serve the needs of the anticipated users.

### FOREST LAWN CEMETERY (1849)

Charles E. Clarke, a local lawyer, purchased 80 acres of farmland from Warren Granger and James N. Granger in a rural area in the north part of Buffalo.<sup>133</sup> On this piece of land, he created Forest Lawn Cemetery in 1849, initially a modest and practical establishment intended to respond to the need for a large-scale graveyard due to significant population growth in the mid-19<sup>th</sup> century. The Cemetery was also necessary to accommodate an increased death rate during a cholera epidemic in the early industrial era.<sup>134</sup>

Clarke selected this site due to existing undulating topography and rural character. From the beginning, Clarke designed the Cemetery not to only accommodate burials, but also to serve as an attractive open space. Visitors could enjoy the attractive scenery inside the cemetery where they could take a walk or drive their carriage through native forest and green lawns.<sup>135</sup> The Père-Lachais, a famous French cemetery that attempted to balance art and nature, served as an inspiration to Clarke.<sup>136</sup> The designers actively incorporated Scajaquada Creek into the Cemetery as a landscape feature. A site improvement featuring the grading and construction of 30 Acres of macadamized avenues took place in 1850.<sup>137</sup>

In 1864, the Cemetery's physical footprint further expanded to the south.<sup>138</sup> Infrastructure improvements accompanied this expansion, including the construction of footways and



Olmsted's Central Park, New York, New York, c.a. 1906

Source: pbh-network.com

### OLMSTED'S LEGACY

Known internationally for his landscape architecture projects, Frederic Law Olmsted redefined landscape architecture by incorporating the natural landscape within the human built environment. Olmsted's projects ranged from major urban parks like Central Park, New York City, to country estates like Biltmore in Ashville, North Carolina. His design concept was to connect the human experience back to the natural environment through the traditionally English "picturesque" landscape. Olmsted's landscapes were designed to appear 'natural;' a refuge from the twentieth-century city. Olmsted was born in Hartford Connecticut in 1822, and passed at the age of 81. He is remembered through his many projects, and publications that continue to inspire designers today.

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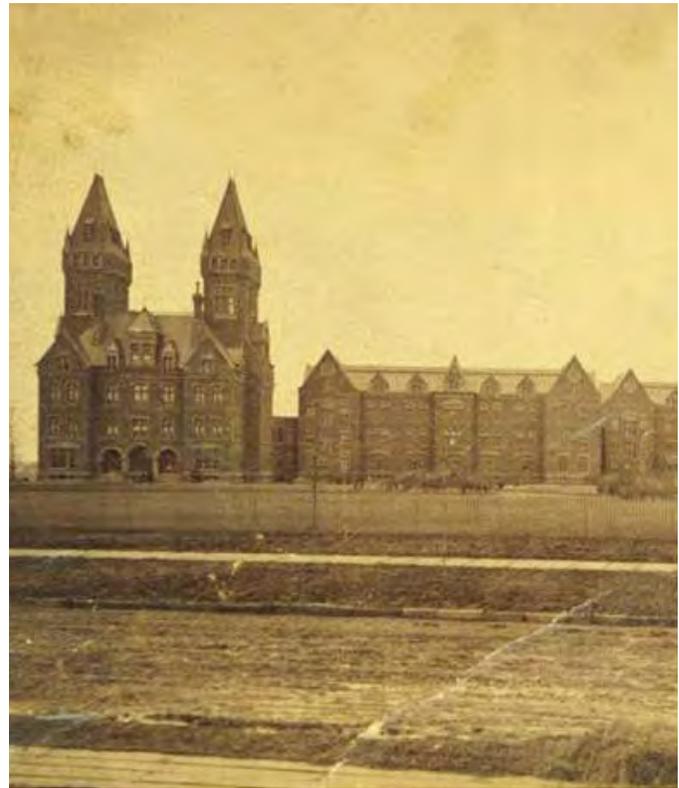


carriage paths, which were incorporated into a curved pattern road network of additional roads and aesthetic features. Riverbank reinforcement, burial lot expansion and some road construction alongside the Creek bank became a factor that forced significant changes in the stream width. The Creek initially served as a natural boundary separating the north and the south portions of the cemetery. To connect the separated portions the Cemetery staff erected bridges in 1888 and 1895. Beyond the functional purpose of providing visitors a means to traverse the Creek these bridges served as aesthetic features.

## LANDSCAPE DESIGN AND MODIFICATION (1868-1880)

In 1869 an independent conglomerate of wealthy businessmen and prominent citizens, including the industrialist Pascal Pratt of Pratt and Letchworth, recruited Frederick Law Olmsted, a landscape architect and park designer, to create a plan for a system of parks connected by tree-lined parkways through the City of Buffalo.<sup>139</sup> “The Park,” now known as Delaware Park, was the highlight of Olmsted’s system and had a major impact on the development pattern of the Scajaquada Creek corridor. Olmsted’s park design altered the hydrology of the Creek by placing a man-made lake through its center. Olmsted and others anticipated that the park would attract future residential development in the adjacent (Olmsted-designed) Parkside neighborhood.

While Delaware Park was the most prominent and celebrated Olmstedian feature, was not the only piece of Olmsted-designed landscape architecture built in the City of Buffalo. Olmsted went on to design his now world-renowned series of parks and parkways systems, including The Park (Delaware Park), The Front (Front Park), and The Parade (MLK Park). A number of lush, tree-lined parkways, including Bidwell Parkway, including Lincoln Parkway, Humboldt Parkway, and Chapin Parkway, connected these



H.H. Richardson Complex (Buffalo State Asylum),  
c.a. 1880

Source: richardson-olmsted.com

parks and created a park-like, natural, means of transportation throughout the City. Each of these parks had their own distinct themes, designed activities, and associated functions.

## BUFFALO STATE ASYLUM FOR THE INSANE

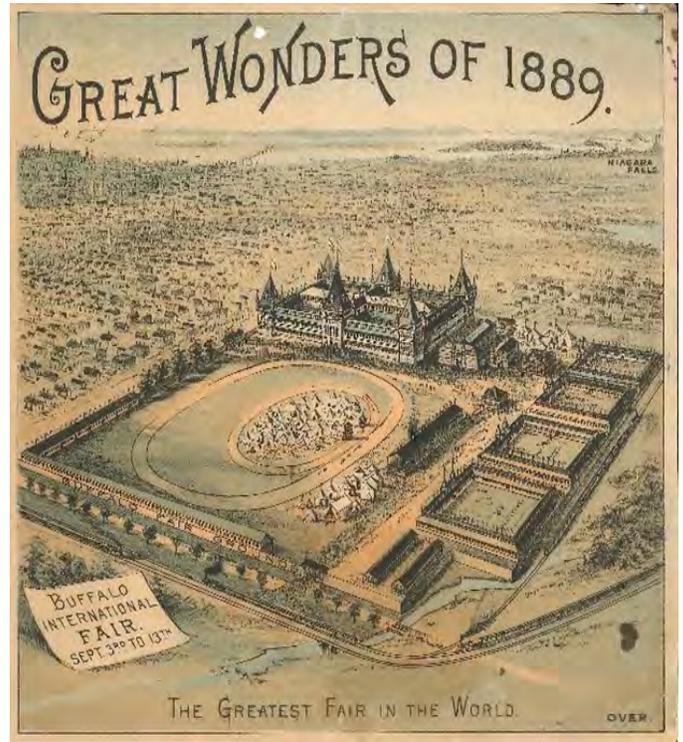
Completed in 1870, the aforementioned Buffalo State Asylum for the Insane was a large mental institution located just south of the western portion of the Creek. Henry Hobson Richardson designed the physical structures in a style now known as Richardsonian Romanesque. The facility’ management structure followed the Kirkbride Plan,<sup>140</sup> a mental health treatment method that advocated for using the building and grounds as a self-contained means of mental health treatment. This method involved specifically designed structures, but also large amounts of open, pastoral and bucolic-themed spaces.

As previously noted, Olmsted collaborated with Calvert Vaux to design the landscape surrounding the Richardson-designed structures. This site remained a large, entirely open space for at least a decade prior to the eventual development of additional patient housing and treatment buildings. Beginning in 1927, Buffalo State College moved to the site, adding a number of new buildings that occupied much of the original Olmsted and Richardson landscape and significantly diminishing its notable design.<sup>14</sup>

### INTERNATIONAL EXPOSITIONS: INTERNATIONAL INDUSTRIAL FAIR AND PAN-AMERICAN EXPOSITION

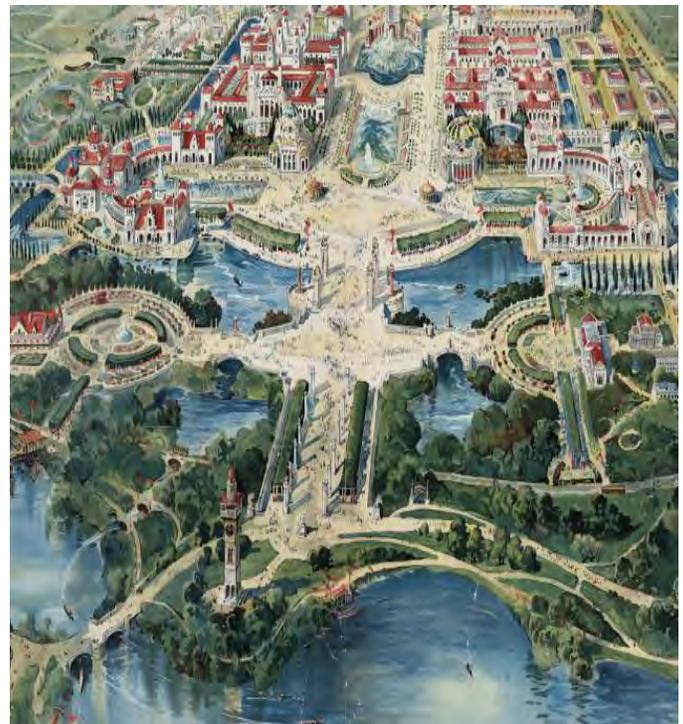
Buffalo's status as a major railway hub and manufacturing center, along with its Olmsted-designed park system, ornate infrastructure, and institutional amenities made the City a prime location for international expositions at the turn of the century. Scajaquada Creek was a visible feature at the exposition grounds where many of these events took place. In 1889, the International Industrial Fair was held in Buffalo, representative of the City's expanding industry at the time.<sup>142</sup> The fair grounds were located on a parcel that was the original site of the Buffalo Driving Park originally built by Chauncey Hamlin in 1868.<sup>143</sup> Scajaquada Creek, not yet hidden under East Buffalo, traversed the northeast corner of the grounds. By 1903, the City subdivided the parcel into the streets and lots that would become the residential neighborhood known as Hamlin Park.<sup>144</sup>

At the turn of the century Buffalo was booming, with its links to Midwestern agriculture and eastern markets, abundant electric power, a host of important industries, and wealthy and influential leadership, Buffalo was the logical venue for the 1901 Pan-American Exposition, which paid tribute to the nation's industrial, agricultural, and commercial dominance after the victory in the 1898 Spanish-American War. Delaware Park was the site of the 1901 Pan-American



Advertisement for the Buffalo International Industrial Fair, 1889

Source: The Buffalo History Museum



Caption: Bird's eye view of Pan-American Exposition in Buffalo, 1901

Source: buffaloniagara.about.com

Exposition.<sup>145</sup> The Exposition showcased the latest technological advancements, most notably electricity.<sup>146</sup> Fittingly, many of the exposition buildings were covered in light bulbs that drew power from a hydroelectric dam at Niagara Falls.<sup>147</sup> Unfortunately, the exposition is most notable historically as it was the location of the assassination of President William McKinley.<sup>148</sup>

The exposition emphasized water as a prominent feature of the fair grounds and the City. Bird's eye views of the fair indicate that temporary, man-made canals were interwoven throughout the grounds and Hoyt Lake.<sup>149</sup> The Exposition organizers erected an array of temporary and permanent buildings on the shores of Hoyt Lake, including a new park casino, the "Water Gate" entrance to the Exposition, a lifesaving station, the New York State Building (now the Buffalo History Museum) and, in the North Bay in front of that building, the Electric Fountain.<sup>150</sup> The lake served as recreation for Exposition visitors who could rent rides in electric boats or gondolas at the casino.<sup>151</sup> It was the location of the nightly fireworks displays, thrown up from barges in the water, and it provided the aquatic location of sporting events during the summer.<sup>152</sup>

## V. FROM THE WATERWAYS TO THE RAILWAYS: THE EXPANSION OF NEIGHBORHOODS AND INDUSTRIAL ZONES ALONG SCAJAQUADA CREEK (1880s - 1920s)

### DAWN OF A NEW ERA

At the dawn of the twentieth century, the City was booming and gaining national and international prominence. Railways connected the City to trans-national trade routes and encouraged rapid industrialization and urbanization across large areas of the City. However, the local significance of railways was short lived with the advent of electric streetcars and automobiles. With urbanization and modernization, the City also faced new social, ecological, and political challenges, including immigration and environmental degradation. Patterns of development along Scajaquada Creek during this period reflect these trends. By the early 1900s, development along the Creek was no longer concentrated at the mouth, as diverse industries and neighborhoods sprang up around Delaware Park and east of Main Street. Furthermore, the Creek's ecological condition was poor where it flowed through the City's East Side neighborhoods. Creek conditions were a combination of pollution and combined sewer overflows, which plagued many cities around the country grappling with rapid urban development, and resulted in untreated human waste "overflowing" from the sewer into urban waterways. Like many other cities across the country, Buffalo would attempt to solve its public health crises by burying the Creek.



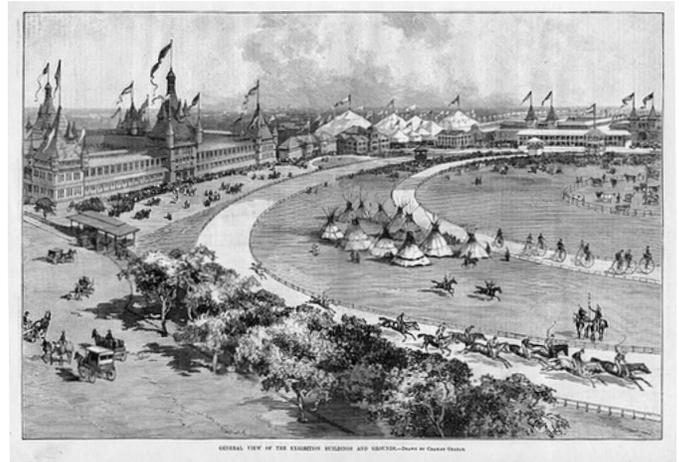
Church of the Assumption Along the Shoreline of Scajaquada Creek

Source: <http://www.broadviewnet.net/assumption/history.html>

## RAILROADS AND ECONOMIC DIVERSIFICATION

The singular transportation linkage from the Midwest to New York City facilitated by the Erie Canal was not long lasting. By the 1850s, existing rail lines began to spread throughout the City.<sup>153</sup> This development did not occur in an unbridled fashion, as the government put restrictions in place to limit freight transfer by rail.<sup>154</sup> This limitation ensured that the Erie Canal had a near monopoly on cross-state transportation to protect the significant state investment in the massive infrastructure project.<sup>155</sup> However, shortly after the Canal's completion it became clear that rail lines, particularly those powered by steam locomotives, could move people and freight much faster than the Canal. Despite the protective measures the State Legislature imposed to protect the Erie Canal and associated businesses, rail companies began to develop lines throughout New York State, eventually resulting in various railroad proposals for Buffalo.<sup>156</sup> In 1900, Buffalo was the second largest railway hub in the country behind Chicago.<sup>157</sup>

Some of Buffalo's first rail lines were laid prior to the aforementioned increase in popularity of rail transport. In the early 1830s,<sup>158</sup> the rail companies completed construction of these



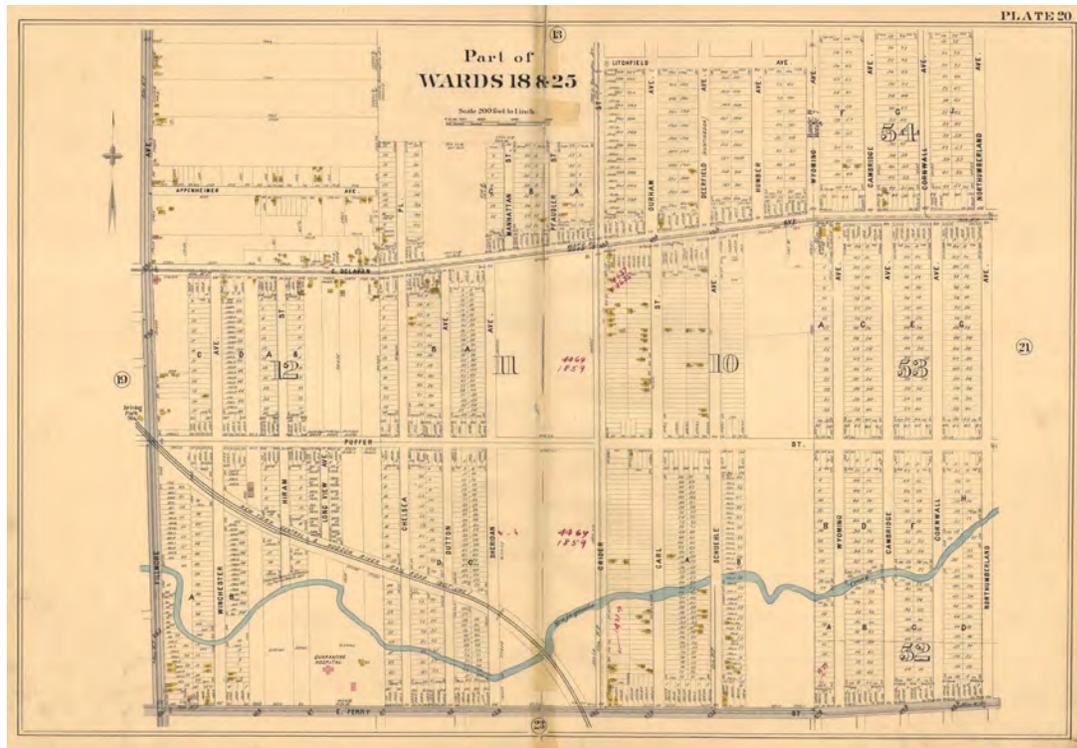
Hamlin's Driving Park, Later Home to the Expo of 1888-1889

Source: <https://www.buffalorising.com/2013/08/the-history-of-hamlin-park-part-iv-hamlin-driving-park-and-the-home-builders/>

lines on the Terrace near Pearl Street, which is located in present-day Downtown Buffalo.<sup>159</sup> The line connected Buffalo to Black Rock and it was subsequently named the Buffalo & Black Rock Railroad.<sup>160</sup> This early railroad was very crude, with rudimentary hardware pieces roughly affixed to the ground.<sup>161</sup> Horses pulled carriages along this route, transferring primarily passengers along this straight-line path.<sup>162</sup> By the 1850s numerous other lines had developed in Buffalo and the surrounding region. In 1853, "The New York Central Railroad" effectively consolidated the various lines into one entity.<sup>163</sup> Similar to the Erie Canal, the rail infrastructure included in the New York Central Railroad was one of the largest pieces of public infrastructure at the time. The company was one of the largest and most powerful in the country, and after a further series of mergers, became even larger.<sup>164</sup>

## BUFFALO BELT LINE

Through a series of mergers and further infrastructure connections the New York Central Railroad Company created the "Buffalo Belt Line" in 1883.<sup>165</sup> Originally known as the "Junction Railroad," the Belt Line was a fifteen-mile freight and commuter rail line that forms a continuous loop through the City's downtown, East Side, Scajaquada Creek, and the Niagara River.<sup>166</sup> The



1894 atlas illustrating east side land parcels in conjunction to Scajaquada Creek.

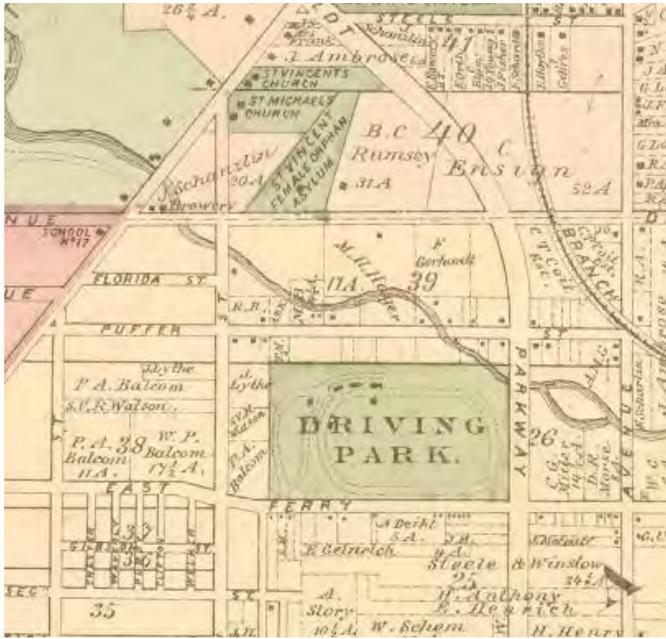
Source: 1894 City of Buffalo Atlas Map, Erie County, NY

Belt Line encouraged rapid industrial development throughout the City, the trajectory of which can be traced along the Scajaquada Creek in a west to eastward direction. The development of these rail-oriented factories marked a significant shift, as previous development occurred primarily along waterways, with ships then providing the only means of efficiently transporting goods. The increased importance of rail and the City's expansive rail infrastructure facilitated even more expansive development as new industrial operations could locate anywhere near a rail line. Eventually, passenger rail service developed on the Belt Line (as well as streetcars) which supported additional residential development on a scale that would not have otherwise been possible in those areas at the time.

Several character-defining features appeared on the physical landscape to symbolize the era of the railways, especially near the mouth of the Creek. Many industrial facilities featured rail spurs leading directly up to or inside of the factories. By 1889, a large freight rail yard was

built on the northwest portion of the Belt Line just north of Scajaquada Creek, providing service for the International Rail Bridge, north of the old Black Rock Harbor. This rail yard also served as freight interchange between many large rail lines.<sup>167</sup> By 1894, bridges crossing Scajaquada Creek were constructed at Grant Street and Elmwood Avenue. Rail crossings were built across Scajaquada Creek both near the Pratt and Lambert site, crossing to the south side of the Creek, before crossing back to the north side near Grant Street.<sup>168</sup>

Railways had a tremendous impact on the growth of industrial, commercial, and residential development in adjacent areas, particularly near the western portion of Scajaquada Creek. While significant industrial activity existed in Black Rock prior to the arrival of rail in the area, proximity to the Belt Line accelerated the growth and diversification of new industries along this stretch of the Scajaquada Creek. For example, industrial works such as Buffalo Cooperative Stove, Hard Manufacturing, and Standard Plaster located in



Atlas Illustrating Land Owner Parcels in Conjunction to Scajaquada Creek and Hamlin Park, c.a. 1880

Source: <http://preservationexchange.blogspot.com/2013/08/the-history-of-hamlin-park-part-i-early.html>

the Grant-Amherst neighborhood in the years following the completion of the Belt Line.<sup>169</sup> By 1900, the Belt Line had attracted still more industry to the area, most notably the Fedders Manufacturing Company.<sup>170</sup> The work available in these factories attracted a wave of immigrants to the area surrounding Assumption Church just east of the original Village of Black Rock.<sup>171</sup> The City's Black Rock neighborhood initially featured a relatively large share of the area's railroads for several reasons. Black Rock is one of the closest neighborhoods in Buffalo to the Canadian shore, which made it a short trip for goods to cross the Niagara River from Canada, by either train or ferry. Furthermore, as rail lines gained popularity, much of the area in Black Rock north of the Creek was relatively undeveloped, which meant a lot of land was available for rail companies to develop rail lines and rail yards spurring development among associated industries that relied upon rail access.

## EAST SIDE DEVELOPMENT

The shift to dense residential development spurred by railroad proliferation is especially pronounced in the City's East Side neighborhoods. In some neighborhoods east of Main Street, the paths of the Belt Line and Scajaquada Creek intersect to form distinctive settlement patterns and urban forms. Development along the Scajaquada Creek east of Main Street largely built around, rather than on top of, the Creek. For example, several streets in the Hamlin Park neighborhood such as Florida Street have an irregular alignment that follows the path of the Creek as development. The history of the Northland Corridor and the Delavan-Grider neighborhood offers rich insights into general patterns of development along the Scajaquada Creek on the City's East Side. The Northland Corridor originally developed as a manufacturing center along the Belt Line, and remains one of the most extensive and intact industrial areas on the City's East Side.



Houdaille Car Advertisement

Source: Buffalo History Museum

## GENERAL MOTORS COMPANY BUILDING IN BUFFALO

**Plant to Produce Five Hundred Chevrolet Cars Daily, Employing 4,000 Men, Will be in Operation Early Next Year—Located on Delavan Avenue and Erie Railroad**

Buffalo's latest industrial acquisition is a new plant on East Delavan Avenue at the Erie crossing, which when completed will employ nearly 4,000 men and have an output of 500 cars daily. Adjoining this will be a factory operated by the Fisher Body Company which will produce bodies used in the construction of the Chevrolet car. Both these companies are owned and controlled by the General Motors Corporation of Detroit.

The Buffalo site was selected by W. S. Knudsen, Vice-President in charge of production, of the Chevrolet Motor Company. Negotiations for the purchase of the site were conducted through Jacob Gangnagel. At the same time another plant is being constructed in Cincinnati.

The Buffalo tract includes 29½ acres of land with a frontage of 1650 feet on the Erie Railroad and about 800 feet

on East Delavan. The property is less than four miles from the center of the city. Buildings will be erected at once with 400,000 square feet for the Chevrolet Motor Car Company and 200,000 square feet for the Fisher Body Corporation. The Chevrolet Company will employ about 2,000 men at Buffalo and the Fisher plant about 1,800, with a daily payroll of approximately \$23,000. Every effort will be made to have the plants in operation shortly after the first of the year.

To utilize this site it was necessary to secure, through the City Council, the closing of two streets on the tract, which had been laid out but never developed. The City Council, appreciating the value to Buffalo of an industry of this magnitude, consented to the closing of these paper streets and preparations for construction were begun immediately after this action by the Council.

General Motors Artlice published to promote new auto manufacturing in Buffalo.

Source: Buffalo History Museum

The history of the Northland Corridor is marked by a transition from fallow land to a heavily industrialized corridor with a neighborhood integrated around it.<sup>172</sup> Prior to 1872, the neighborhood was divided into several large plots owned by landholders, as well as dozens of smaller plots with various owners.<sup>173</sup> By 1891, the entire area was subdivided into smaller parcels, but relatively few were built upon.<sup>174</sup> Until the 1900s, the area continued to be mostly undeveloped farmland with the occasional permanent structure.<sup>175</sup> Over the following decade, structures along East Delavan Avenue gradually developed for industrial uses due to their proximity to the Belt Line, resulting in a mixed land use pattern of large factories and residential housing for factory workers.<sup>176</sup> Industry in the area continued to intensify and by 1917 included several quarries, a lumber mill, a coal yard, and many processing plants for raw materials, most of which were located along East Delavan Avenue.<sup>177</sup> The Otis Elevator Company owned the area's largest factory, which was located on the corner of Grider Street and East Delavan Avenue, and also owned an ancillary foundry to the south of that site.<sup>178</sup> While some industrial companies,

notably the Buffalo Foundry and Machine Company, were able to utilize a combination of bridges, conveyors, and pipes crisscrossing over the water to construct facilities over Scajaquada Creek prior to its burial in the 1920s, the majority of the extensive industrial development occurred after the Creek was covered.<sup>179</sup>

To the west of the Northland Corridor and Delavan-Grider neighborhood lies Hamlin Park, a residential neighborhood whose development and land use patterns offer a different context for East Side development reflective of the varied character of areas along Scajaquada Creek. The neighborhood is roughly bounded by Main Street to the north, Humboldt Parkway to the east, East Ferry Street to the south, and Jefferson Avenue to the west and is currently listed as a local historic district within the same boundaries. Historically, the neighborhood was planned as two major subdivisions roughly divided by Scajaquada Creek.<sup>180</sup> While the history of Hamlin Park neighborhood also illustrates the shift from agrarian to residential development that occurred on the City's East Side at the turn of the twentieth century, Hamlin Park is also distinct as the only East Side neighborhood on the National Register of Historic Places.<sup>181</sup> Tree-lined streets provide a canopy over residential blocks and a ribbon of linear parks run through the neighborhood. From roughly 1860 to 1912, the neighborhood developed through the planning of the Hager and Driving Park subdivisions, the material fabric resembling that of a streetcar suburb.<sup>182</sup> The majority of Hamlin Park, including residential and commercial buildings, was fully built out by the mid-1920s.<sup>183</sup> The initial residents of Hamlin Park were upwardly mobile Polish, German, and Jewish families moving from nearby neighborhoods of the Fruit Belt and Broadway-Fillmore, seeking to leave the crowded, mixed-use neighborhoods for the quiet and comfort afforded by an almost entirely residential neighborhood.<sup>184</sup> The Scajaquada Creek flows through Hamlin Park, hidden below the streets by culverts that capped the Creek in the 1920s. Although no longer exposed, the



footprint of the Creek is clearly visible by the linear parks on top of it.

## ELECTRIC STREETCARS AND AUTOMOBILES

In addition to rail, other transportation advancements dramatically reshaped patterns of urban development and urban form along Scajaquada Creek and in the City of Buffalo from the end of the nineteenth century and into the beginning of the twentieth century. The development of the electric street railway at the end of the nineteenth century increased the locations available for residential use and improved accessibility for many residents to the City's park system. By 1900, twenty-five streetcar lines paralleled city roads connecting downtown Buffalo with outlying neighborhoods in all corners of the City.<sup>185</sup> In 1902, the electric railway was consolidated with other streetcar lines to form the International Railway Company.<sup>186</sup> The success of the electric railways undermined the profitability of the Belt Line, which ceased passenger service during World War I.<sup>187</sup> The electric railways were similarly rendered obsolete during the 1920s and 1930s by increased accessibility of automobiles and buses due to technological advances in manufacturing.<sup>188</sup> The character of industrial companies mirrored these transportation shifts as new companies that manufactured automobiles and automobile components emerged in the City. However, with rapid urbanization came new challenges for urban development that would have drastic consequences for Scajaquada Creek.



Scajaquada Creek is Buried by the City of Buffalo in the 1920s

Source: Buffalo Courier-Express

## VI. URBAN DEVELOPMENT PRESSURES AND PUBLIC HEALTH CRISIS: SCAJAQUADA DRAIN PROJECT AND SEWER INFRASTRUCTURE (1920s - 1950s)

The City, similar to many other cities across the United States during the 1920s, saw groundbreaking technological advancements create a new way of living causing drastic social transformation. Urbanization occurred rapidly as the automobile and the hard-surfaced road produced increased mobility and blurred the customary rural-urban divide. In Buffalo, the population increased dramatically from 352,387 people in 1900 to 506,775 in 1920. At the same time, population in the region increased as well. Erie County had a significant increase in population from 433,686 people in 1900 to 634,688 people in 1920.<sup>189</sup> During this growth period of the early 20th century, the Scajaquada Creek and its surrounding areas also began to see drastic change. There was an influx of immigration to the East Side of Buffalo, especially in the Hamlin Park neighborhood, where thousands of German and Jewish immigrants became new homeowners. It was also during this time that many manufacturing



*The Bird Island primary treatment plant as it appeared shortly after its construction in 1938.*

Bird Island (Now Unity Island) & The Buffalo Sewer Authority, ca. 1938

Source: Buffalo Sewer Authority

plants began to blossom, notably in the Northland Corridor.<sup>190</sup>

During this period of increased urbanization, the Scajaquada Creek's waters experienced higher pollution and environmental degradation as more people flocked to the East Side neighborhoods and used the Creek to dump garbage, cats and refuse. As urbanization took over the shores of the Scajaquada Creek, the tension between residents and the Creek grew. During the spring, the Creek also sent hunks of ice hurtling down Genesee Street flooding basements and washing out shrubbery. These environmental changes along the Creek began causing annual floods affecting the quality of life for residents living along the watershed in the northeastern section of the City.<sup>191</sup> After several years of study and debate, the City determined that the Creek had to go.

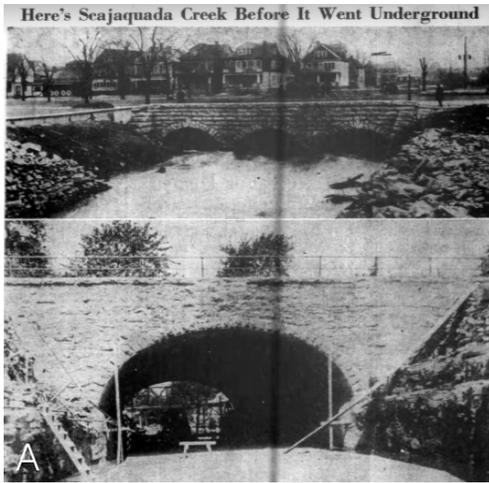
In the early 1920s, the citizens of Buffalo demanded a strategy from the government to reduce the flooding. In response, the Department of Public Works and the Bureau of Engineering proposed a plan to transform the Scajaquada Creek into a sewer drain by burying it. Leaders were hopeful that the burial of the Creek would solve the environmental problems and manage the sewage system. It was decided that a large drain would be placed into the ground stretching about seven miles from Forest Lawn at Main

Street to Genesee Street (Schiller Park).<sup>192</sup>

The project implementation was a long, difficult, and expensive process as it required removing hundreds of tons of rock, trees, streets, and bridges over five or six years. The construction of the drain affected the existing road network along the Creek. The project required the closure of local road sections in residential areas and bridges along the Creek from Main Street to Genesee Street. To embed the huge drain structure, the engineering technique required the excavation of the ground and the Creek. This impacted the residents' mobility and the road traffic near the project as the use of automobiles were already popular during this time.<sup>193</sup> The completed underground structure is 14 feet high, from 24 to 33 feet in width, and is sunk underground from 15 to 30 feet. It is capable of handling 5,600 cubic feet of water a second.<sup>194</sup>

After the completion of the project, development of new houses on the buried stream followed. The burial of the Creek also allowed new roads to emerge in order to serve the new settlements, including Hamlin Road and Brunswick Blvd on the former site of the Fair Grounds on Humboldt Parkway. Furthermore, additional development occurred in the Creek corridor, including large pockets of industrial development between Delavan Avenue and Ferry Street.

SCAJAQUADA CREEK UNCOVERED



Over time, the uncovered portions of the Scajaquada Creek still faced degradation (through sewage, garbage and chemicals) and consequently the Creek carried its waste to the Niagara River. In response to the persistent pollution of the waters, in 1935 the New York Department of Health mandated that the City of Buffalo must discontinue the menacing nuisance of the pollution of the Niagara River waters. However, as this occurred during the Great Depression, the City could not correct the problem as city funds and bonding capacity were limited.

As a result, the Buffalo Sewer Authority was established. The Buffalo Sewer Authority (BSA) is a public benefit corporation created by an Act of the State Legislature in the spring of 1935. The State mandated that BSA provide an efficient means of relieving the Niagara River and other tributary streams, such as the Scajaquada Creek, from pollution by sewage and waste.<sup>195</sup> The State authorized the BSA to borrow money and placed full responsibility on the BSA to carry out the State Health Department's mandate. The BSA provided a system of intercepting sewers to bring sewage of Buffalo to the then modern (1938) and efficient Bird Island sewage plant where matter was properly disposed of.<sup>196</sup>

A: Scajaquada Creek Before it Buried by the City of Buffalo in the 1920s

Source: Buffalo Courier-Express

B: Construction Underway to Bury Scajaquada Creek

Source: Western New York Heritage Press. [www.wnyheritagepress.org](http://www.wnyheritagepress.org)

Residences Effected from Creek Burial.

Source: Western New York Heritage Press. [www.wnyheritagepress.org](http://www.wnyheritagepress.org)

D: Scajaquada Creek Pre-Construction.

Source: Western New York Heritage Press. [www.wnyheritagepress.org](http://www.wnyheritagepress.org)

E: Steel Beams Arch Over Scajaquada Creek During Construction in the 1920s

Source: Western New York Heritage Press. [www.wnyheritagepress.org](http://www.wnyheritagepress.org)



Pratt & Lambert Paint Industry Operation, c.a.1940.

Source: Buffalo History Museum

## VII. RISE OF THE HIGHWAYS AND THE DECLINE OF THE CITY: SCAJAQUADA EXPRESSWAY AND POST-WAR SUBURBANIZATION (1950s - 1980s)

Similar to the way in which the addition of rail outpaced canals in their development, efficiency, and popularity, the rise of automobiles and highway infrastructure replaced rail as the preferred means of transportation throughout the twentieth century. Streets began to adapt to the needs of automobiles, and Buffalo became a significant producer of automobiles and automobile components. Starting in the 1920s, city planners and politicians were quick to tout the benefits and necessity of investing in highway and automobile infrastructure. The 1922 "Buffalo Report on the City Plan and Public Building Sites," reflected this approach, which prioritized the unimpeded movement of automobiles above all other objectives, disregarding neighborhoods and other built and natural features of the City. The rail lines never completely disappeared from the City, nor did they lose all of their usefulness. However, passenger service on the Belt Line waned and ended in the 1930s, the increased accessibility and popularity of

automobiles caused corresponding investments into automobile oriented infrastructure. In the 1920s, with a population of over 500,000, Buffalo's vibrant economy attracted other manufacturing companies, including the Curtiss-Wright Aeroplane Company and General Motors Company.<sup>197</sup>

Despite a seemingly vibrant, diversified economy in the 1940s, a long economic decline was underway by the end of World War II. Buffalo's industrial infrastructure—its factories and railroads—were aging, and its workforce was declining due to protracted labor struggles and suburbanization. Beginning in the 1950s, a small yet significant number of industries began to leave the City. By the mid-1950s, a series of large-scale public construction projects, including the Skyway, New York State Thruway, and Scajaquada Expressway, drastically reshaped the physical and economic networks of Buffalo and Western New York.

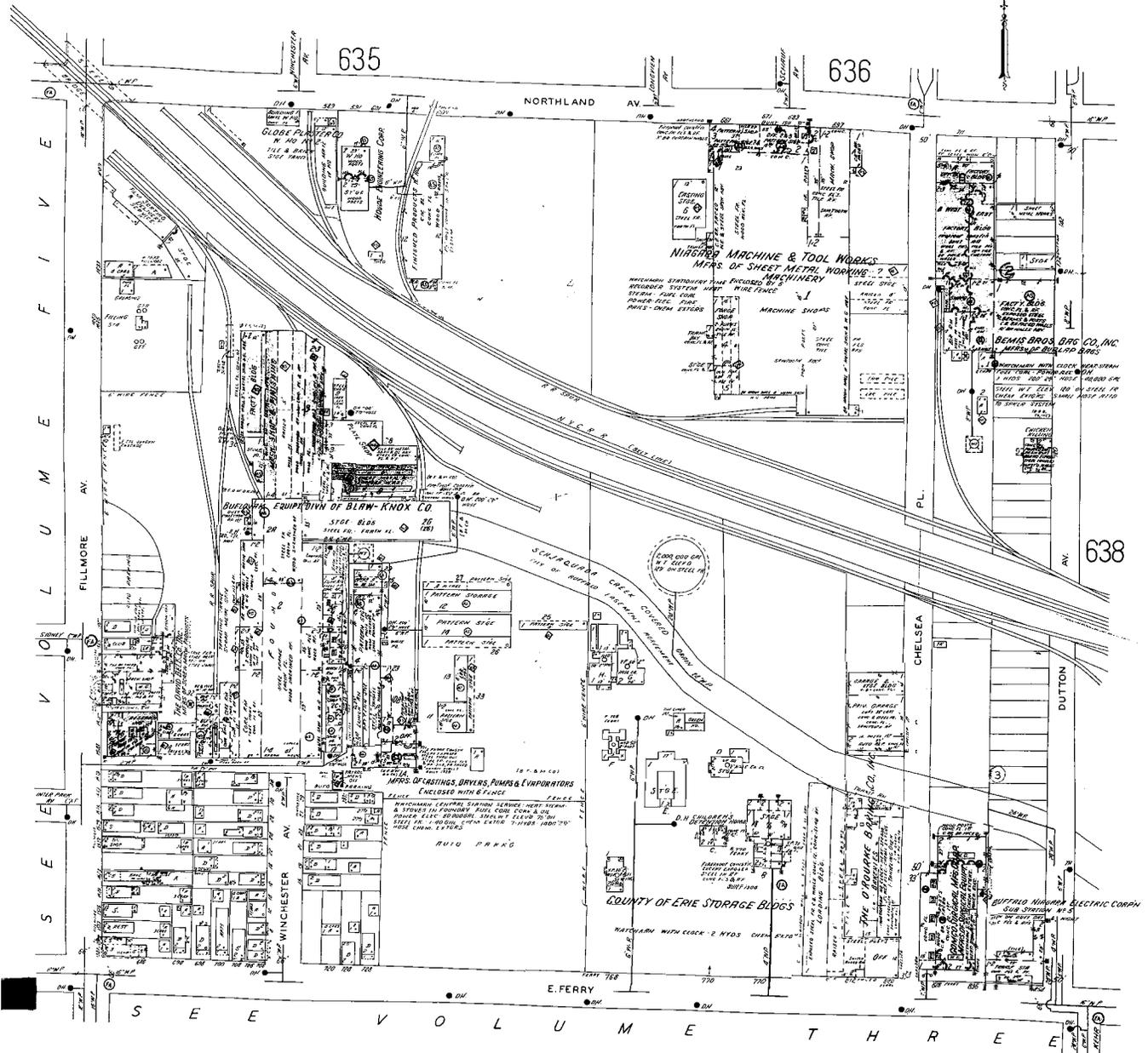
Historic maps from the 1950s detail the area east of Tonawanda Street and west of Scajaquada Creek filled with industrial structures related to Fedders Manufacturing Company, Pratt and Lambert, Hard Manufacturing Company, and Pratt and Letchworth among others.<sup>198</sup> Several Buffalo Structural Steel Company facilities and several large tanks were located on the east bank of the Creek, spanning both sides of the New York Central's tracks.<sup>199</sup> While many industrial companies located along Scajaquada Creek remained active in the later decades of the twentieth century, they uniformly suffered dramatic declines after the 1980s.

After World War II, there was an increasing push for highway construction due to rapid suburbanization and population growth, as well as the growing predominance of the automobile as the preferred means of transportation. The population increase was caused by a baby-boom period resulting from thousands of soldiers returned to the country and choosing to start a

family during a time of economic growth. The federal government “backed” or “insured” mortgages issued to these veterans, which allowed these families to purchase new houses but typically preventing them from renovating existing houses. This incentivized many families to move out of the City. The new housing construction was predominantly located outside of the City where the design of the developments and associated infrastructure required the use of personal vehicles to travel between home, work, shopping and recreational locations. This increased driving then led to the increased demand for highways to connect suburbs to the City.

Highway development soon became a hot issue for many cities, including the City of Buffalo. “In 1951, the City Planning Commission adopted a Major Traffic Ways Plan that included the Scajaquada as one of the proposed expressways intended to alleviate heavy volumes on residential streets and to move cars from one part of the city and region to other sections of the region.” There were many highways constructed during the mid-twentieth century in Buffalo. Interstate 190 was constructed in 1959; it connected northern suburb Tonawanda area to the city center along the Niagara River. This highway development ended up blocking the original mouth of the Scajaquada Creek.

The New York State Route 33, Kensington Expressway, was constructed during the late 1950s to connect the eastern suburb of Cheektowaga and the airport to the city center. Route 33 had minimal impact on the path of the Creek as the portion it crossed was previously buried in the 1920s. “Scajaquada Expressway,” New York Route 198, completed by 1962, was the final major highway expansion within the City. It was constructed alongside and on top of the Scajaquada Creek in order to connect the Interstate 190 on the west side of the City with the New York State Route 33 on the City's East Side, notably dividing Delaware Park and



Sanborn Map of the Buffalo Foundry Crossing Scajaquada Creek, c.a. 1950

Source: Sanborn Fire Insurance Map Company

greatly modifying the shoreline of the Creek. According to the New York State Department of Transportation, “there are two parts of the Scajaquada Expressway which are Humboldt Parkway [where] constructed began in 1952 and Scajaquada Expressway (Route 198) [where] construct[ion] began in 1958.”<sup>200</sup>

The rate of residential and industrial development had greatly decreased along the Scajaquada Creek by this time, as many available land parcels were developed during previous decades. Industry had mainly reached its peak of expansion along the Creek at this time, taking advantage of the aforementioned drain project and any open land still available in the East side. A 1950 Sanborn Map provides an example of the industrial maximization of space as it shows the Buflovak Company (formerly the Buffalo Foundry and Machine Co) crossing over the now covered Scajaquada Creek at Fillmore and East Ferry. Although the complex expanded significantly from 1917 to 1950, the burial of Creek appeared to have made it easier to expand their facilities.<sup>201</sup>

Since the construction of the expressways and the decline of industry, not much in the way of major developments have been constructed that had an impact on Scajaquada Creek. The next major effect on the waterway will result from the NYS 198 Scajaquada Corridor redevelopment plan. The result of this project is not yet known, as the final plan announcement has not yet occurred. Construction is expected to start in the winter of 2017/2018.<sup>202</sup>

## VIII. COMMUNITY ACTIVISM FOR CREEK REVITALIZATION: SCAJAQUADA PATHWAY AND PUBLIC ACCESS TO WATERWAYS IN THE TWENTY-FIRST CENTURY

In the 1980s, community-led activism led to the creation of the Scajaquada Pathway (now known as the Jesse Kregal Pathway), a multi-use recreational trail along Scajaquada Creek from Delaware Park to the Niagara River. The Scajaquada Pathway suggests the possibility of a new chapter in the history of Scajaquada Creek focused on increased public access and engagement with the Creek for a variety of community uses.

In 1982, Jesse Kregal, an avid runner and former musician in the Buffalo Philharmonic Orchestra, first proposed the idea for a recreational trail running alongside Scajaquada Creek from Delaware Park to the Niagara River.<sup>203</sup> Kregal thought of the idea while driving along the Scajaquada Expressway, recognizing both barriers and opportunities to interaction with the Creek.<sup>204</sup> The proposal received tremendous support from both community groups and government officials.<sup>205</sup> Construction began within a year through an influx of state funds, later supplemented with city and county funding. Although construction was halted at various times, the pathway opened to the public in 1989 thanks to the consistent advocacy of Kregal and a community-working group that persistently nudged decision-makers when things were moving too slowly.<sup>206</sup>

Scajaquada Pathway provides pedestrians and bicyclists with numerous opportunities to observe and interact with local waterways, namely Scajaquada Creek. The two-mile pathway serves as the only dedicated public access to the Creek. Below the Scajaquada Expressway, amid



Scajaquada Creek Near the Mouth, Today  
Source: Bradley Everdyke

a largely abandoned industrial area, the trail runs adjacent to the Creek, offering its travelers access to various landscapes and landmarks. The pathway is also a major link between the Niagara River Greenway and the Olmsted Park System. Since its opening, the pathway has been a major focus of engagement and investment by local community groups. The Scajaquada Pathway is now a common feature of local plans, including recent plans focused on bicycle facilities, brownfield redevelopment, neighborhood planning and community development, and waterfront revitalization. Combined with its active use, the frequent mention of the trail in community conversations has brought renewed attention to the historic and existing conditions of Scajaquada Creek.

The pathway not only enables access to the Creek but also to local history, including physical remnants of a once thriving manufacturing center, War of 1812 battle, and Native American settlements at the mouth of Scajaquada Creek.

In this way, the Scajaquada Pathway brings the historic narrative of Scajaquada Creek full circle. At the same time, the establishment of the Scajaquada Pathway suggests the possibility of writing a new chapter in the history of the Creek and the relationship between people and place in Buffalo. The physical features along the pathway, as well as the legacy of community activism that led to its creation and ongoing maintenance, reveal the complex legacy of assets and challenges that confront the future of the Creek and the City. Despite challenges of environmental contamination, vacancy, and abandonment that are visible along the pathway and within the Creek itself, the trail also runs through walkable neighborhoods, Olmsted parks, and cultural institutions. The Scajaquada Pathway is a story of citizen movements that have restored and preserved public access to natural and cultural amenities in Buffalo. While much more work is required to restore Scajaquada Creek a solid foundation is now in place.

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# CHARACTER DEFINING CULTURAL RESOURCES





# DESIGN GUIDELINES: EXECUTIVE SUMMARY

Design guidelines aim to develop a cohesive connective tissue that spans the length of Scajaquada Creek. Guidelines simultaneously create individualized 'zones' and interventions that work together to communicate the Creek's unique history. At large, the Creek was divided into two sections in the mid-twentieth century when it was channelized and buried, erasing immense amounts of history and concealing the Creek from the city. The west portion of Scajaquada Creek, west of Main Street, remains visible, while the east portion, east of Main Street, remains buried beneath dense urban fabric. Through the process of this investigation, the western portions of the Creek have been divided into three cultural zones (A - C), each with their own defining characteristics, while the east portions of the Creek have been divided into four zones (D - G). The following Graphic Outline investigates and identifies contemporary, and proposed defining features. In addition, the following Outline proposes a series of multi-scalar interventions that aim to reconnect the city to the Creek. Interventions focus largely on reconnecting the two sections of the Creek through a unified vision. Investments in placemaking, branding, wayfinding, awareness, education, institutional partnerships, and green infrastructure work together to generate a green urban transect that connects users to the Creek, and its multi-faceted history and future.

## CENTRAL OBJECTIVES

- Improve Ecological Makeup of Creek
- Promotion of Environmental, Cultural, and Public (Branding) Awareness of the Creek
- Restore Connectivity to the Creek Across All Areas
- Establish an Interpretive Historic Battlefield Site at the Niagara Street Bridge, the Location of the Battle of Scajaquada Creek
- Access: Physical, Psychological, and Educational
- 'Daylight' the Creek Using Various Architectural, Natural, and Cultural Techniques
- Develop Local and Regional Relationships / Partnerships with Eco-Centered Organizations

## DISCOURAGED PRACTICES

- Further Channelization / Burring
- Further Dumping of Toxic / Hazardous Materials
- Do Not Allow Further Building on Top of the Creek
- Do Not Block Access to Creek Paths / Important Sites



# CULTURAL ZONES MAP

ZONE D: HAMLIN  
PARK  
(MAIN ST - FILLMORE AVE)

ZONE E: NORTHLAND  
(FILLMORE AVE -  
GRIDER ST)

ZONE F: SCAJAQUADA - KERNS  
(GRIDER ST - GENESEE ST)

ZONE G: SCHILLER  
PARK  
(GENESEE ST - PINE  
RIDGE RD)



## OVERALL PHYSICAL CHARACTERISTICS

Character defining features are objects, properties, structures, or other physical characteristics situated along Scajaquada Creek. This section briefly provides a list of the significant character defining features or categories identified within the study area.

### A: NEIGHBORHOODS

Neighborhoods along Scajaquada Creek have been influenced by its change over time. Residential neighborhoods on the east side for example, emerged after the completion of the Scajaquada Drain Project in 1927, where homes were built along the buried Creek without reference to it, while development on the west side follows and sometimes interferes the shoreline. Each neighborhoods connection to the Creek offers insight into physical and social associations with Scajaquada Creek.

### B: GREEN SPACES AND VEGETATION

A naturally formed waterway, the Creek plays an important ecological role in the health and character of its surroundings. Continued human intervention has resulted in the Creek taking on a series of different aesthetics ranging from overgrown banks and manicured parks on the west side to greenways following the Creek on the east side. Each areas unique character illustrates the Creek's dynamic history.

### C: BRIDGES

Bridge crossings along the Creek are unique in their architectural, infrastructural, and often historic significance. Varied in use, construction, and age, the bridges across the Creek add multi-scalar dimension to the Creek. The Niagara Street Bridge for example, though contemporary in construction and use, is associated with a significant battle in the War of 1812 while steel train bridges offer insight into Buffalo's rich rail history.

### D: RAILWAYS

Historically, railways were an important feature supporting industry along Scajaquada Creek. Some remain active while others are no longer in use. Abandoned railways cut through Buffalo and across the Creek, offering an unique opportunity for linear green spaces connecting the city.

### E: BIKE PATH

A bike path follows the Creek on the west side (Black Rock to Delaware Park); offering some of the only direct access to the exposed Creek. Barriers however, restrict access to the rest of the Creek's path (Delaware Park to Cheektowaga). A continuous bike path could offer the opportunity to connect the city along the Creek.

### F: HIGHWAY

The Humboldt Parkway's and the Scajaquada Expressway's intersection with the Creek has significantly influenced the Creek's transformation over time. The Scajaquada Expressway for example, set on columns resting on the Creek's augmented banks, forced the Creek beneath the highway, restricting access, polluting the air and water, and concealing it. Underutilized, the space below the highway offers an opportunity to reengage the Creek in a unique way.

### G: INDUSTRIAL BUILDINGS

The character and scale of industrial buildings along the Creek, though typically vacant and debilitated, offer insight into the Creek's original uses and represent significant opportunities for calculated redevelopment along its shores.

### H: LANDMARKS

A landmark is a natural or artificial beacon. The Buffalo Historical Society and Forest Lawn Cemetery are two landmarks along the Creek. Utilizing landmarks as building blocks for revitalization will unite the Creek at various scales across Buffalo.

A: NEIGHBORHOODS



E: BIKE PATH



B: GREEN SPACES AND VEGETATION



F: HIGHWAY



C: BRIDGES



G: INDUSTRIAL BUILDINGS

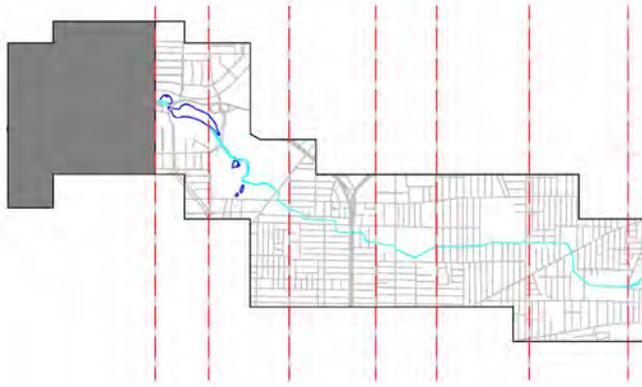


D: RAILWAYS



H: LANDMARKS





## CULTURAL ZONE A: WEST SCAJAQUADA

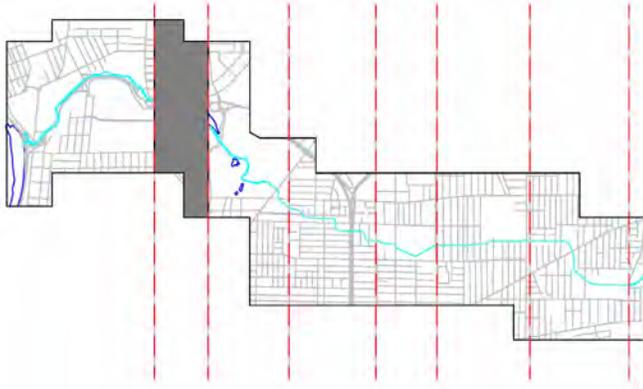
Zone A mainly consists of a historic and former industry zone. The historical significance of this zone lies in the location of the Battle of Scajaquada Creek from the War of 1812 as well as being a site of prominent industry throughout the late 19th Century until the mid-20th Century. Local historians place the Battle of Scajaquada Creek at the corner of Amherst Street and Grant Street. However, this studio has concluded that the more accurate location of the battle was at Niagara Street at the mouth of the Creek. Currently, there are no indications or historic markers near the site relating to the battle site. Niagara Street crosses the Creek on a concrete bridge, with overgrown trees and bushes blocking the view of the Creek to the east, and a rail bridge to the west (A & E). Also at this general location is where the Scajaquada Expressway merges with Interstate 190. Webs of on and off-ramps mark the character of this landscape (G).

Along Tonawanda Street, north of the Scajaquada Creek, the remnants of the City of Buffalo's former industrial era are evident. East of Tonawanda Street, empty buildings and parcels of land, including the former home of Pratt & Letchworth, an industrial powerhouse of the early 20th Century, stand vacant. Rail corridors, once busily feeding and extracting from the bustling industry, as well as large swaths of overgrown and undeveloped land (which include a former mini golf course) are also present (F).

This zone is further characterized by more vacant industrial parcels which house Buffalo State College and the Richardson Complex, which holds 140 years of history as a National Historic Landmark.<sup>1</sup> Buffalo State College is geographically separated from the rest of its surroundings. The campus is characterized by closely clustered buildings, parking lots, small green spaces, and large playing fields. Buffalo State's Burchfield-Penney Art Center on the eastern part of the zone is a large cultural attraction for the area. The college is bounded by the Scajaquada Expressway (New York State Route 198) in the north and is essentially cut off from the Scajaquada Creek. Although this zone currently has no direct impact on the Scajaquada Creek, it is still a very important facet for the area and an adjacent component that may affect the Creek after modifications are made to the expressway and the new housing for Buffalo State College is built (D). These changes may provide direct access to the bike path and the Scajaquada Creek.

Along the northern shoreline of Scajaquada Creek is a bike and pedestrian path that stretches from the mouth of the Creek, extending east outside the bounds of Cultural Zone A (B). The character of the path in this zone is made up of occasional views of the Creek, through thickets of overgrown vegetation of native and also invasive varieties, for example Japanese knotweed (C).





## CULTURAL ZONE B: DELAWARE PARK

Zone B is mainly comprised of Delaware Park which was designed and built by Frederick Law Olmsted and Calvert Vaux between 1868 and 1876. The park occupies 350 acres of what was then rural and undeveloped land north of the city of Buffalo. Olmsted intended “The Park”, as it was then called, to be the *pièce de résistance* of the Buffalo parkway system, a great innovation in city design which represented the Garden City movement. The purpose of the parkway system was to make green space widely accessible, as to encourage users to take full advantage of its tranquil and restorative properties. The park was created to be a place to restore the spirit for everyone who visited, immersing users in a refuge away from traditional urban settings. There are several features located near the Scajaquada Creek’s shoreline including The Buffalo History Museum, The Japanese Gardens, Hoyt Lake, Albright Knox Art Gallery, and Marcy Casino. The Buffalo History Museum, which was founded in 1901 as a part of the Pan American Exposition, is very significant to the area has a collection of records on the history of Buffalo, Erie County, as well as the United States.

The Japanese Garden is 6-acres and is represented as Delaware Park’s mirror located at the western end of the Park (D). This garden was designed in 1970 and completed its establishment in 1974. It was built as a representation of the horticultural sense of a relationship between Buffalo and Kanazawa,

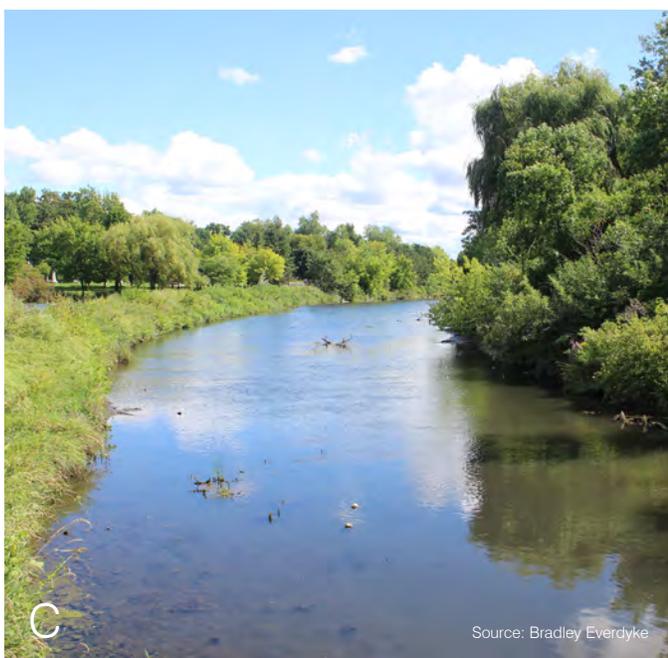
Japan. This garden consists of over 1,000 plants, three small islands with a bridge as a linkage, and 20 globe-type lights. In 2004, the Buffalo Olmsted Parks Conservancy took over management of the Japanese Garden and merged it as part of the Delaware Park.

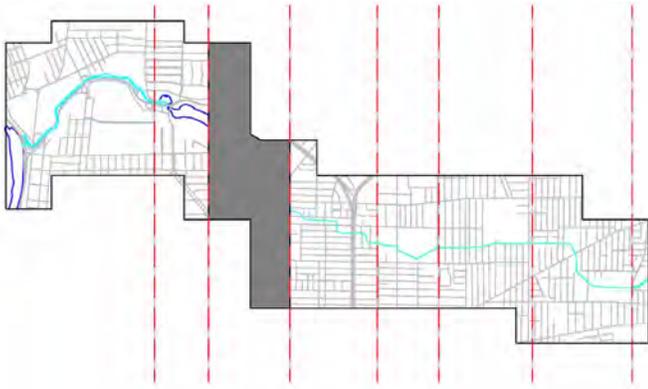
Other prominent features designed by Olmsted include Hoyt Lake, formerly known as the Gala Water. Hoyt Lake is at the center of the park and was initially larger at 43 acres, but is now 17 acres (B & G). This feature sits in the lowest part of the topographical depression that is the southern portion of Delaware Park. The shores of the lake are encircled by a promenade that functions as a boundary of the lake and other elements in the park.

Albright Knox Art Gallery is a museum located near the Scajaquada Creek and Delaware Park (F). Upon its foundation, this museum was intended to serve the Fine Arts Pavilion of the Pan American Exposition in 1901 and completed its construction in 1905. This museum was designed by celebrated American architects which are Edward B. Green, Gordon Bunshaft, Owings and Merrill. The main building of this museum is a neoclassical and modern building with a temple front design. In terms of relation to the Creek, this museum gives the sense of a classical and modern building near the shoreline of the Creek that highlight the art design of its architecture.

Another character defining feature that is located near the Scajaquada Creek is Marcy Casino (E). In 1874, the Marcy Casino originally was a boat house designed by Calvert Vaux to support and facilitate Delaware Park which was designed by Frederick Olmsted. By 1900, the boat house was destroyed and then it was constructed into a new building designed by Edward B. Green for the Pan-American Exposition event in 1901. Thus, this building became a casino in Delaware Park as a gathering place for residents and visitors of the city. Currently, this building is known as the Marcy Casino to honor high devotion of Delaware District Councilman, named William L. Marcy Jr. (1978-1983) to the Casino and the City of Buffalo.

Scajaquada Creek originally ran through the parks two lakes, but at the time it was channelized water from the Creek was diverted through a buried pipe that runs from the Creek's meeting with Mirror Lake to the south end of Hoyt Lake where it reemerges and flows into Forest Lawn Cemetery (C).





## CULTURAL ZONE C: FOREST LAWN CEMETERY

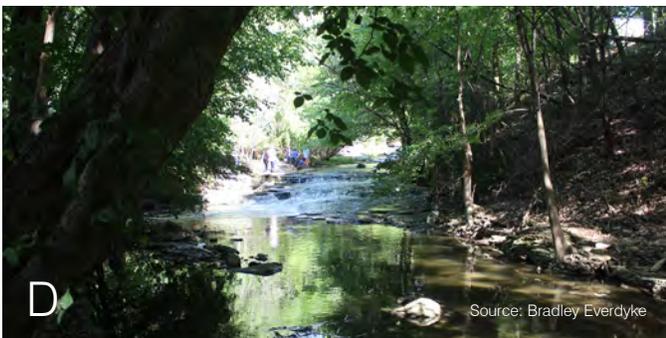
Forest Lawn is a 269-acre cemetery located in North Buffalo that was purchased and transformed into a cemetery by a Buffalo prominent lawyer, Charles E. Clarke in 1849. Clarke built Forest Lawn by adopting the theme of the world famous cemetery created by Père-Lachais in Paris. Forest Lawn has a picturesque rural cemetery theme that consists of rolling hills, beautiful valleys, a meandering Creek, and spring-fed lakes; therefore, this cemetery can serve both the dead and the living by its beautiful and tranquil view. This cemetery also has several appropriate sculptures and mausoleums. Forest lawn was designed with a water amenity that was constructed from the Scajaquada Creek throughout the site. Thus, character defining features that can be seen along the Scajaquada Creek in Forest Lawn include a water tunnel, stone stairways, meadow park, shadowing canopy trees, stone of Creek's barriers, and several mausoleums. A tunnel at the east end of the cemetery spans from here to just east of Villa Maria College in Lackawanna. This tunnel represents a starting point of the buried portion of the Scajaquada Creek. Water from the Creek and sewage system are mixed inside this tunnel, along with other potential pollutants that harm the Creek's water body (F). As a result, the water tunnel releases a bad smell throughout its stretch of the burial. At the northwestern edge of the cemetery, a fence and Delaware Avenue create

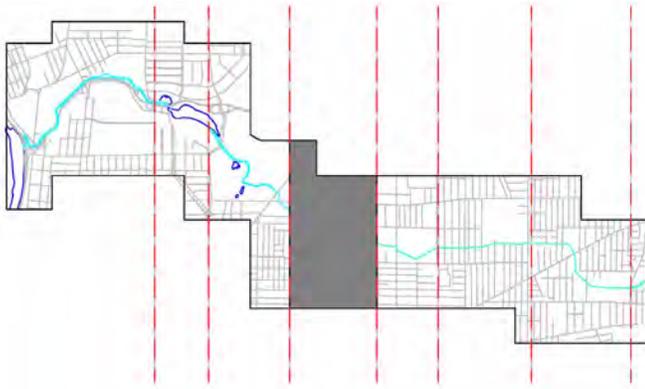
a hard edge between Forest Lawn and Delaware Park (C).

In terms of providing access to the water, stone stairways were designed on both sides of the Scajaquada Creek in Forest Lawn. These stairways also acted as connectors between areas with different elevations and topography. Due to their stone material, the stairways also offer a classic and natural feel to Forest Lawn's atmosphere. Historic stone stairways in Forest lawn connect the site to the shorelines of the Scajaquada Creek (E).

One of the memorial sites in Forest Lawn along the Scajaquada Creek is Letchworth Mausoleum (B). The Letchworth Mausoleum is one of the largest and most grand memorial sites in Forest Lawn Cemetery. This mausoleum was built to honor Mrs. Josiah Letchworth and family members who were a known as a very prominent family in Buffalo. This site is located on a hill with a graceful and tranquil view that has a view of the Scajaquada Creek below. This mausoleum was built with a Greek temple design that consists of an entry, balcony, and basement. The classic and luxurious mausoleum interior is made of Egyptian and Italian marble and is ultimately the most expensive memorial site in the Forest Lawn Cemetery.

Other character defining features that are found in Forest Lawn Cemetery along the Scajaquada Creek include several natural amenities like canopy trees near to the shoreline that shade the Creek, stone paving as the Creek's barrier, and also a vast meadow park (A). These key features that are located and designed along the Creek illuminate the presence of the Scajaquada Creek in Forest Lawn Cemetery. Accordingly, these natural amenities give a sense of tranquility that not only honor the dead, but also the living. At the southern end of the Creek in Forest Lawn, a short area of the Creek moves across a natural waterfall, surrounded by an un-manicured landscape with steep banks on each side (D).





## CULTURAL ZONE D: SCAJAQUADA GREENWAY

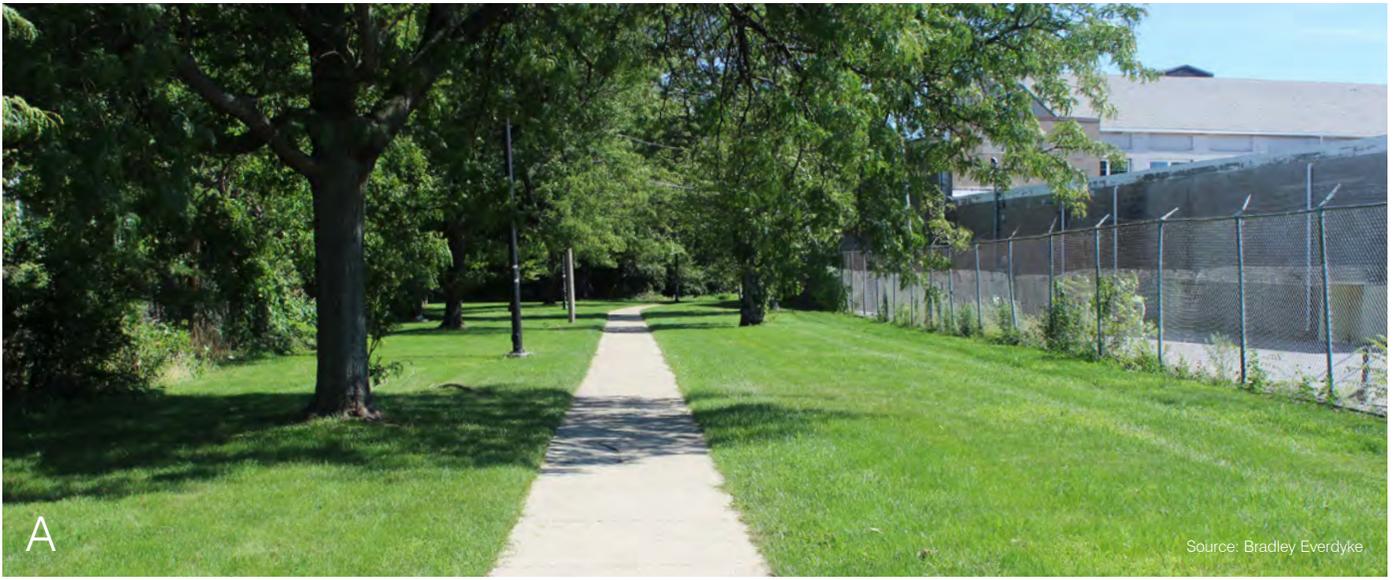
Zone D is characterized by a number of features, with one key feature being Canisius College. The college campus consists of buildings that are closely-knit together, surrounded by parking lots and small green spaces. Canisius College, which was founded in 1870, is located between the historic Hamlin neighborhood and Delaware Park. The 72-acre campus stretches along and across Main Street, and essentially rests upon the tunnels of the buried Scajaquada Creek.<sup>2</sup> The Creek runs right underneath the school's sports complex in the southern portion of the zone. Also at Main Street and Delavan Street, there is the heavily traveled NFTA Metro Rail Station that serves as a pit stop for Buffalo's underground rail system that runs along Main Street from downtown to the University at Buffalo's South Campus.

One of the more important aspects of this zone is a linear park located in Hamlin Park neighborhood between Jefferson Avenue and Florida Street. This park is small with only approximately 0.12 miles length of pedestrian pathway accompanied by several canopy trees on both sides of its path (A). Based on the location and shape of the park, it can be assumed that this park is located above the Scajaquada Creek. This park is formed by Florida, Elton, Victor, Pleasant, and Hager block and garden clubs that represented a strong and solid African-American middle-class neighborhood in Buffalo.<sup>3</sup>

The uses of this zone include residential, commercial, mixed use, transportation corridors, and open space. Other character defining features include transportation corridors that act as a divider, the Hamlin Park School, the Belt Line rail corridor, the Kensington Expressway and the buried Scajaquada Creek. What once was a cohesive and vibrant neighborhood, was split in two when the below-grade expressway was built in 1958. Mobility across the expressway is limited to either through-streets East Delavan or East Ferry Streets, or across a pedestrian bridge south of Northland Avenue. A view of the expressway facing south from that pedestrian bridge is shown with Humboldt Parkway seen running along both sides of the Kensington (B).

Though Scajaquada Creek remains tunneled through the entirety of Zone D, it whispers its presence in the form of pathways and right-of-ways. Of the three linear parks/open spaces in the project area, two of them extend into the Hamlin Park neighborhood on top of the course of the buried Creek (C, F & E). Remnants of automobile-related commercial spaces line Fillmore Avenue with the Belt Line as their backyards. The Creek's presence in Zone D is most notably through a series of manholes moving along the line of the Creek (D).

There is a 0.4-mile linear park that connects Donaldson Road and Lark Street by an elevated pedestrian bridge above the Kensington Expressway. This linear park also serves as a linkage line between the Hamlin Neighborhood and the Grider Neighborhood. Based on field observation, this linear park has two different sections showing by their physical realm toward neighborhood characteristics. A segment of this park in the Hamlin Park neighborhood is a well maintained park compared to the park section in Grider Park.





## CULTURAL ZONE E: NORTHLAND INDUSTRIAL

Cultural Zone E is laid out based on the Northland neighborhood industrial zone. This neighborhood originally developed as a manufacturing center along the New York Central Belt Line, and remains one of the most extensive industrial areas on the East Side (A, C & B). Currently there are many large structures throughout the area; many vacant or underutilized (D). Industry types range from auto part operations, plastic manufacturing, bed and crib manufacturing, machine scrap yards, auto repair, parts storage and more. This zone consists mostly of employment structures, but there are some residential homes in place throughout the area. Northland Street, which is the main artery for this neighborhood, is a largely industrial corridor that runs between Fillmore Avenue and Grider Street (E). The Scajaquada Creek runs below grade in the southern portion of the zone. Images and previous maps show that most of what currently stands was in place before the Scajaquada Creek went underground in the 1920s. Other character defining features include an active railroad, which also runs above the buried Creek, brownfields, and the future workforce training center at 683 Northland.<sup>4</sup>





## CULTURAL ZONE F: SCAJAQUADA – KERNs

Cultural Zone F, which is designated as the Bailey-Ferry neighborhood, is a mixed urban built and is bounded by Grider Street, East Ferry Street, Bailey Avenue, Doat Street, Schiller Park, and Hazelwood Avenue. Character defining features for Zone F are residential lands and a mix of housing ages, mixed uses along major roadways, and linear open space. Much of the area is residential within this zone. From Grider Street to Moselle Street, the housing stock is predominantly early 20th Century housing. Past Moselle Street, and north of Scajaquada Street, there is a marked change in the housing stock with more houses in the mass-production style of the 1950s. This change marks the development pattern of this area, with streets such as Wyoming, Cambridge, and Cornwall Avenues not being developed until the mid-20th Century. Zone F is adjacent to an industrial cultural zone, indicating the importance of industrial and manufacturing jobs to residents of the neighborhood, both past and present.

The major roadways in Zone F are lined with mixed uses, though vacancy of buildings and land is an issue. Another feature of this zone is that it is the location of Vive on Wyoming Street. Vive, now part of Jericho Road Ministries, is a program that gives housing assistance to refugees and asylum seekers.<sup>5</sup> This zone offers a potential opportunity for open space in the former right-of-way that extends past William Gaiter Parkway

between Delavan Avenue and Doat Street. There is also a bike path that follows along the parkway north of the zone, but the pathway ends when the parkway does at Delavan Avenue. This feature could provide an opportunity for connection to existing bike paths and pedestrian corridors.

Furthermore, zone F is also dominated by large industrial structures. East Delavan serves as the neighborhood's center offering a mixture of both residential and retail uses. The retail portion includes a car wash, a truck rental, a mini mart and more. Although industry takes up a great deal of the zone, there are also many one and two-family detached houses shown in the area as well. The neighborhood is further characterized by many community institutions, including schools and churches. In the eastern part of the zone, there appears to be a greenway path lined with trees connecting one neighborhood to the another. The Scajaquada Creek runs underneath parking lots and other structures, reflected in the southern portion of the zone.





## CULTURAL ZONE G: SCHILLER PARK

Zone G is Schiller Park which is located at Doat Street and Zelmer Street in one of Buffalo's East Side neighborhoods. This neighborhood was rapidly urbanized showing with the establishment of urban neighborhood amenities like public schools and the park named "Schiller Park" in the early 19th Century. Schiller Park was originally designed by landscape architect Roeder J. Kinkel on the 25-acre land that started its purchasing process in 1926, improvement in 1930, and completion in 1938. This park contained a tennis court, swimming pool, athletic field, and baseball field. The park experienced some changes in its function and physical realm as a section near Doat Street was turned into children's playgrounds. Today, the park has no section of the formal garden at Genesee Street, and the WPA-built swimming pool has been demolished. The existing natatorium has also been renovated, and the playground has been underused recently. This park was established above the buried tunnel of the Scajaquada Creek.<sup>6</sup>

### ENDNOTES

1. "Erie County Parcels 2015". Erie County GIS Department. January 12, 2015.
2. "About Canisius." Canisius. Accessed November 13, 2016. <http://www.canisius.edu/about-canisius/campus/>.
3. Mark Goldman, "Buffalo's Historic Neighborhoods: Hamlin Park," Buffalo as an Architectural Museum. Accessed November 12, 2016. <http://buffaloah.com/h/hamln/hamlin.html>.
4. Buffalo Urban Development Corporation. "Northland Neighborhood Strategy", Accessed 2016, <http://www.buffalourbandevelopment.com/documents/NorthlandNeighborhoodStrategyDRAFT.pdf>
5. "Vive Shelter". Jericho Road Community Health Center. Accessed 2016. <http://www.jrchc.org/vive/faq/>
6. "Looking Backward: Schiller Park, 1934. 2016. The Public. Accessed November 14, 2016. <http://www.dailypublic.com/articles/05182016/looking-backward-schiller-park-1934>.



## LARGE SCALE OBJECTIVES & INTERVENTIONS

### OBJECTIVES: ZONES A - G

1. Objective: Decrease Surface Run-Off  
Intervention: Green Infrastructure, Artificial Wetlands
2. Objective: Creek Health  
Intervention: Decreased Run-Off, Shoreline Stabilization / Restoration, Public Awareness / Policy
3. Objective: Awareness  
Intervention: Signage, Education Programs
4. Objective: Continuous Thread Connecting the Entirety of the Creek (Exposed & Buried)  
Intervention: Branding, Education Programs, Infrastructure Design / Improvement
5. Objective: Policy Improvement  
Intervention: Public, Private & Governmental Partnerships

### OBJECTIVES: ZONES A - C

1. Objective: Stream Restoration / Management  
Intervention: Shoreline Stabilization & Landscape / Eco. Design, Green Infrastructure
2. Objective: Preserve & Create Parkland  
Intervention: Brownfield Remediation & Redevelopment, Urban Design Strategies
3. Objective: Access to Creek  
Interventions: Infrastructure Improvements, Signage, Branding, 'Daylighting' Strategies

### OBJECTIVES: ZONES D - G

1. Objective: Awareness / Connection  
Intervention: Signage, Branding, Cultural 'Daylighting' Strategies, Infrastructure Improvements
2. Objective: Education  
Intervention: Signage, Branding

## DAYLIGHTING & URBAN STREAM RESTORATION

Design guidelines to “uncover” Scajaquada Creek as a historic cultural landscape in Buffalo build on concepts of urban stream restoration and daylighting to explore opportunities for enhanced public access to and engagement with the physical and cultural resources of the Creek. Urban stream restoration emphasizes streams as potential assets to communities rather than as problems to be managed and paved over. One form of urban stream restoration is daylighting. The concept of “daylighting” is quite broad and allows for a multitude of understandings of and interventions to increase access to buried streams. The term daylighting generally describes projects that deliberately expose some or all of the flow of a previously covered river, Creek, or storm water drainage. Daylighting projects liberate waterways that were buried in culverts or pipes, covered by decks, or otherwise removed from view. Common discussions of daylighting distinguish between several forms: natural restoration, architectural restoration, and cultural restoration. Natural restoration restores a stream to natural stream conditions. Architectural restoration restores a stream to open air through curated design interventions that do not intend to restore the Creek and its context to the condition of the Creek prior to human contact. Cultural restoration is the acknowledgment of a buried stream through markers or public art used to inform the public of the historic stream path, although the stream remains buried. In sum, a cultural restoration restores the stream to human consciousness, an architectural restoration restores public access and visual connection to the Creek but does not prioritize the restoration of the pre-human condition of the Creek, while a natural restoration provides the greatest environmental benefits by restoring natural functions of the stream, architectural restoration can provide important benefits by connecting people with water and enhancing quality of life in urban and



Dry Creek Bed, 'Cultural Daylighting'

Source: s-media-cache-ak0pinimg.com

residential environments.

At the outset of this project, a major goal was to assess the feasibility of physically daylighting portions of Scajaquada Creek where it is buried. However, throughout the course of our research into historic and existing conditions, we identified patterns of urban development and issues of stormwater management that pose significant challenges to physical daylighting at this time. Therefore, design interventions focused on cultural restoration offer important benefits as a first step towards more large-scale daylighting projects of the Creek. Since cultural restoration does not entail significant physical alterations and can be implemented at a range of scales, it can be useful for small-scale

initiatives, immediate action, projects with short timelines and limited budgets, and community-led initiatives. Furthermore, since this project focuses on the historic and cultural resources of Scajaquada Creek as a cultural landscape rather than simply an ecological and hydrological system, it can enhance understanding of cultural restoration as a significant and valuable form of daylighting and urban stream restoration.

## PRECEDENT

An initial precedent analysis investigating strategies for cultural restoration, presented over the next sections of this report, has begun to cultivate ideas on how interventions, at varying scales, can aid in achieving our goals for Scajaquada Creek. Though not comprehensive in scope, the provocative projects and images seek to garner understanding and excitement for our ideas for the future of the Creek.



# CULTURAL ZONE A



## A: HISTORIC BATTLEFIELD SITE

Objectives: Battlefield Awareness / Interpretation; Identification of Potential Archaeological Sites

Precedent: Fort York Visitors Center (G); Gettysburg National Military Park (D & H); Sackets Harbor (B); Brocks Monument (C); Battle of Eutaw Springs Battlefield Site; Queenston Heights, ON (A); Baltimore, MD & Little Rock, AR Memorials (E); Bologna Shoah Memorial (F); Boneyard Creek (I)



## B: BROWNFIELD REDEVELOPMENT

Objectives: Brownfield Remediation (Mitigate Contamination); Shoreline Stabilization & Restoration; Recreation; Water Retention

Precedent: Bishan Park (A); Irvington, NY (D); Copenhagen (B); Houtan Park (E); Lawrence, MA (C); Buffalo Outer Harbor (F)



## C: HIGHWAY / BIKE PATH INTERPRETATION



Objectives: Increase Use; Branding; Education; Connection; Safety (Lighting); Placemaking

Precedent: Rotterdam Lighting (F); LA River; Miami Lighting; Minneapolis Lighting (D); Eindhoven, Netherlands; Butler Hike & Bike (C); Copenhagen (B); Cumbernauld, Scotland (A)

## D: FLORA / SHORELINE MANAGEMENT



Objectives: Invasive & Non-Invasive Species Management; Shoreline Restoration & Stabilization; Access; Wildlife; Ecological Health

Precedent: Bishan Park (A); 18 Mile Creek (C); Houtan Park (E); Sausal Creek (D); Butler Hike & Bike; Fairmount Park & Meadow Creek (B); Riviera Beach; South Prairie Creek; Ningbo City (G); Invasive Species Removal (F)

Partnerships: Buffalo River Keeper; Buffalo Green Fund; ReTree



CULTURAL ZONES B & C

ZONE B



ZONE C

## A: CONNECTION BETWEEN DELAWARE PARK & FOREST LAWN CEMETERY

Objectives: Grant Pedestrian Access Between Delaware Park & Forest Lawn Cemetery (Currently Blocked by Delaware (A & B))

Intervention: Crossing Infrastructure at Delaware & Public Gate Into Forest Lawn (C & D)

Partnerships: Olmsted Parks Conservancy



## B: CREEK AWARENESS (DELAWARE PARK)

Objectives: Create Awareness for Creek Along Hoyt Lake in Delaware Park

Precedent: Dry Creek Bed (A & D); Signage (C); Roombeek (B)



## C: CREEK AWARENESS (FOREST LAWN)



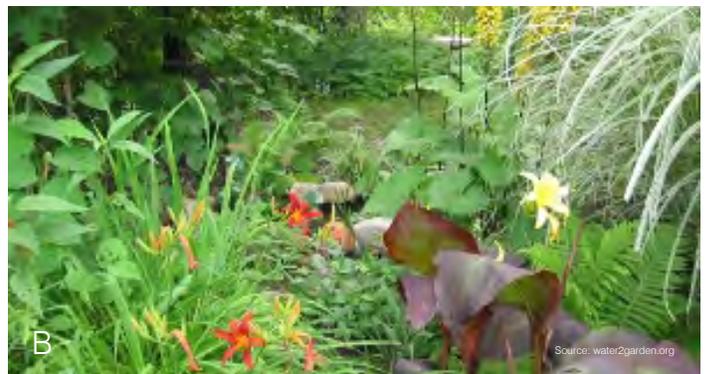
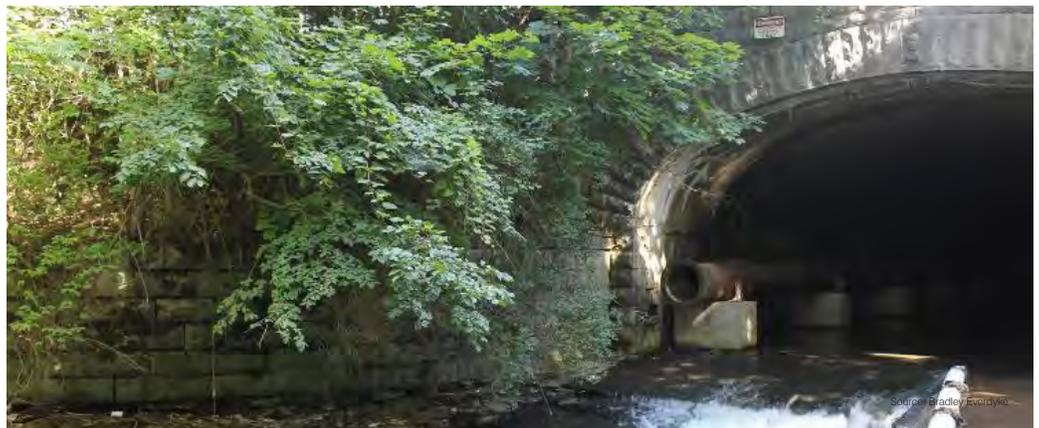
Objectives: Generate an Understanding for the Creek's Presence in Forest Lawn

Intervention: Signage, Branding, Resurrect 'Historic' Path Along Water

Precedent: Newton Creek

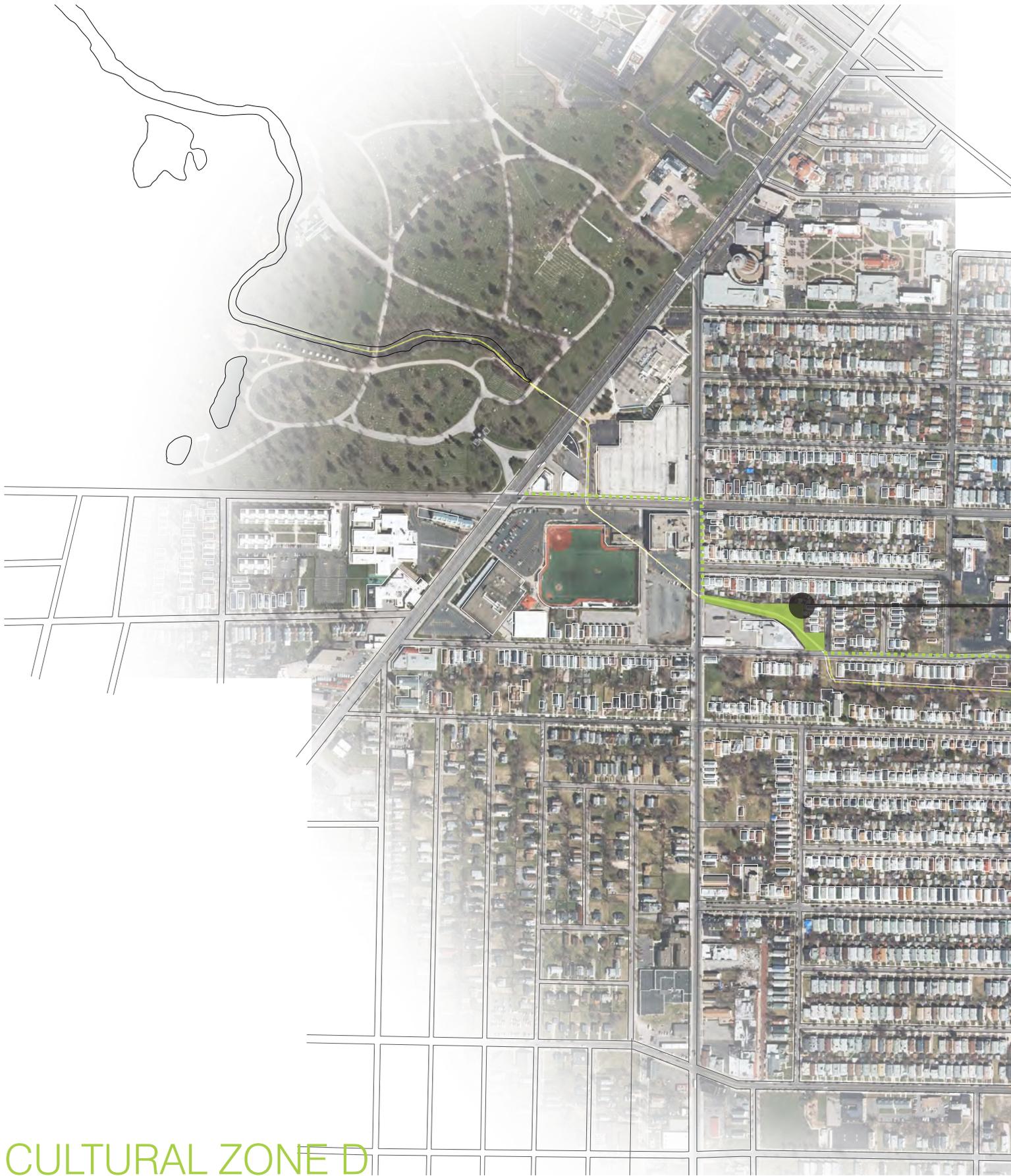


## D: COVERED CREEK EXIT



Objectives: Awareness; Ecological Improvement

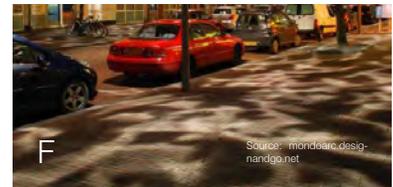
Intervention: Signage, Branding, Lighting (A), Filtering Plants (B)



# CULTURAL ZONE D



# A: LINEAR PARK SYSTEM



Objectives: Connect Series of Linear Parks; Awareness; Education; Recreation

Precedent: Highline (A); Green Infrastructure (C); Rotterdam Lighting (F); LA River; Juanita Green Connection

Interventions: Urban Design (A & B); Recreation Areas (D), Dry Creek Bed (E)

## GREEN INFRASTRUCTURE

### TYPICAL CONDITIONS (TOP RIGHT)

Currently, surface run-off and sewage are moved into the same drainage system in the city. During inclement weather, the system can often be overwhelmed, moving its contents into the buried Scajaquada Creek, contaminating its waters.

### GREEN INFRASTRUCTURE INTERVENTION (BOTTOM RIGHT)

Green infrastructure allows surface run-off to be moved into planting retention beds flanking the street where it is allowed to permeate into the natural water table below instead of moving directly into the CSO (Combined Sewer) system. Permeable paving on streets and/or sidewalks also aid in allowing water to move into the ground instead of into the drainage system. Collectively, green infrastructure interventions will decrease the potential for overflows of hazardous materials into Scajaquada Creek, increasing the Creek's health.

### INDIVIDUAL SCALE INTERVENTIONS (BELOW)

Communities and/or homes can also aid in decreasing run-off through the use of rain barrels (A) to collect storm water or through the use of retention areas in their yards (B).

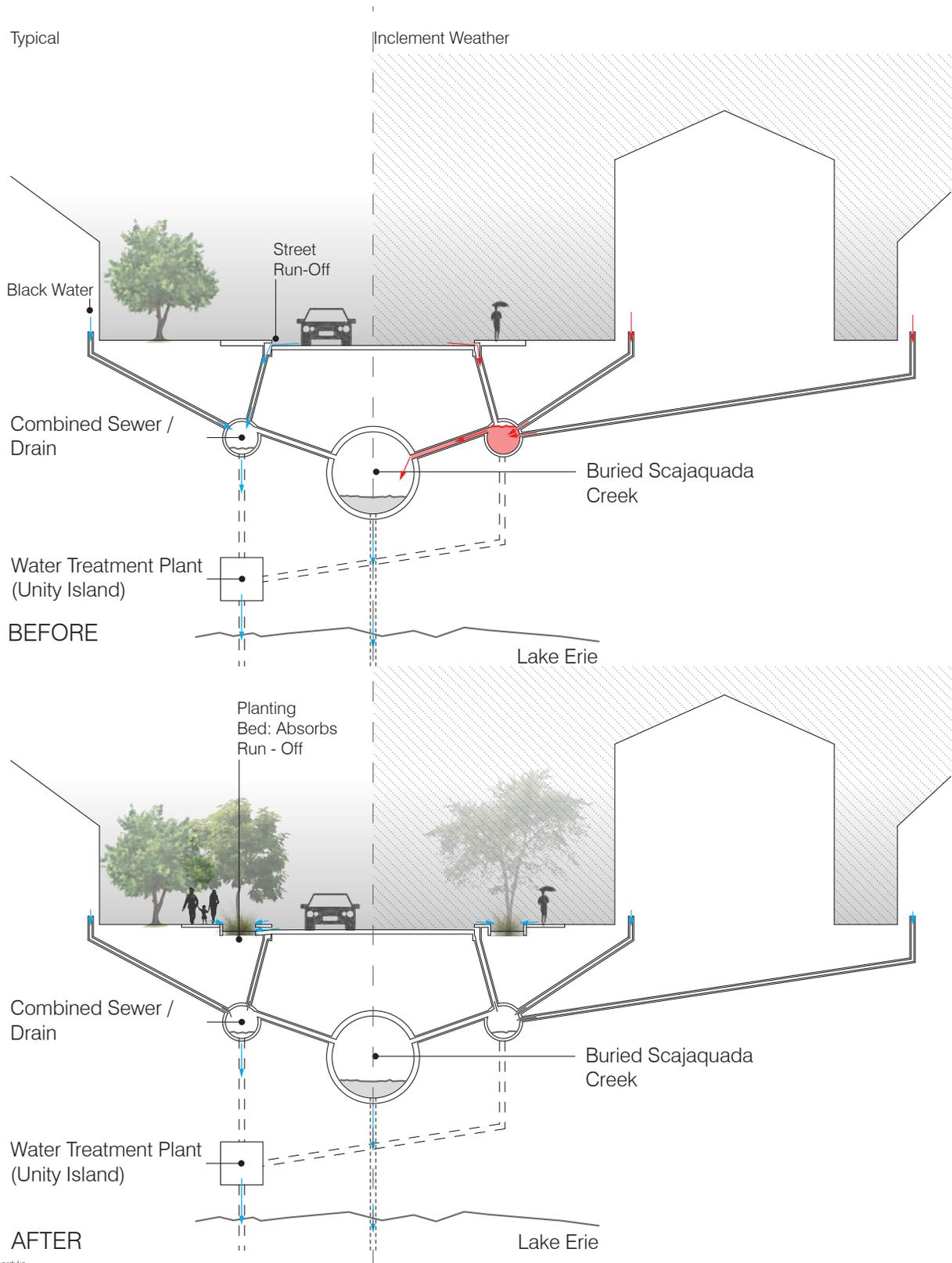


Roof Downspout

Rain Barrel



# GREEN INFRASTRUCTURE (ZONES D - G)



Source: Bradley Everdike



CULTURAL ZONES E & F

ZONE E

ZONE F





## A: NORTHLAND

Objectives: Awareness along East Ferry St; Awareness Beneath Streets

Intervention: Green Infrastructure; Sound Interventions; Manhole Graphics, Signage, Branding

Precedent: Grate Fish (A); Brush Creek (B); American Trails(C); Brush Creek(D);



## B. RECONNECTION

Objectives: Reconnect Two Ends of Scajaquada St Broken by Industrial Development

Intervention: Green Infrastructure; Branding; Signage; San Francisco Street Painting, Manhole Graphics

Precedent: San Francisco, CA (A); Los Angeles (B); Berkley, CA (C); Sawmill Creek (D);

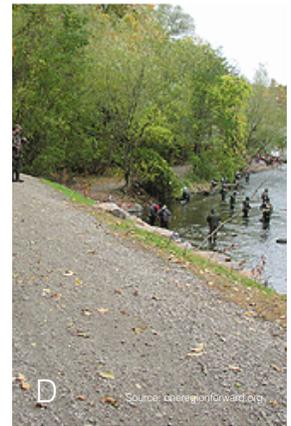




CULTURAL ZONE G



## A \ B: ARTIFICIAL WETLAND



Objectives: Decrease Run-Off Into Combined Sewer System; Awareness; Recreation

Intervention: Green Infrastructure; Branding; Signage

Precedent: Houtan Creek (A); Emajogi River(B); Sausal (C); Eighteen Mile Creek(D);



## C: CREEK ENTRANCE



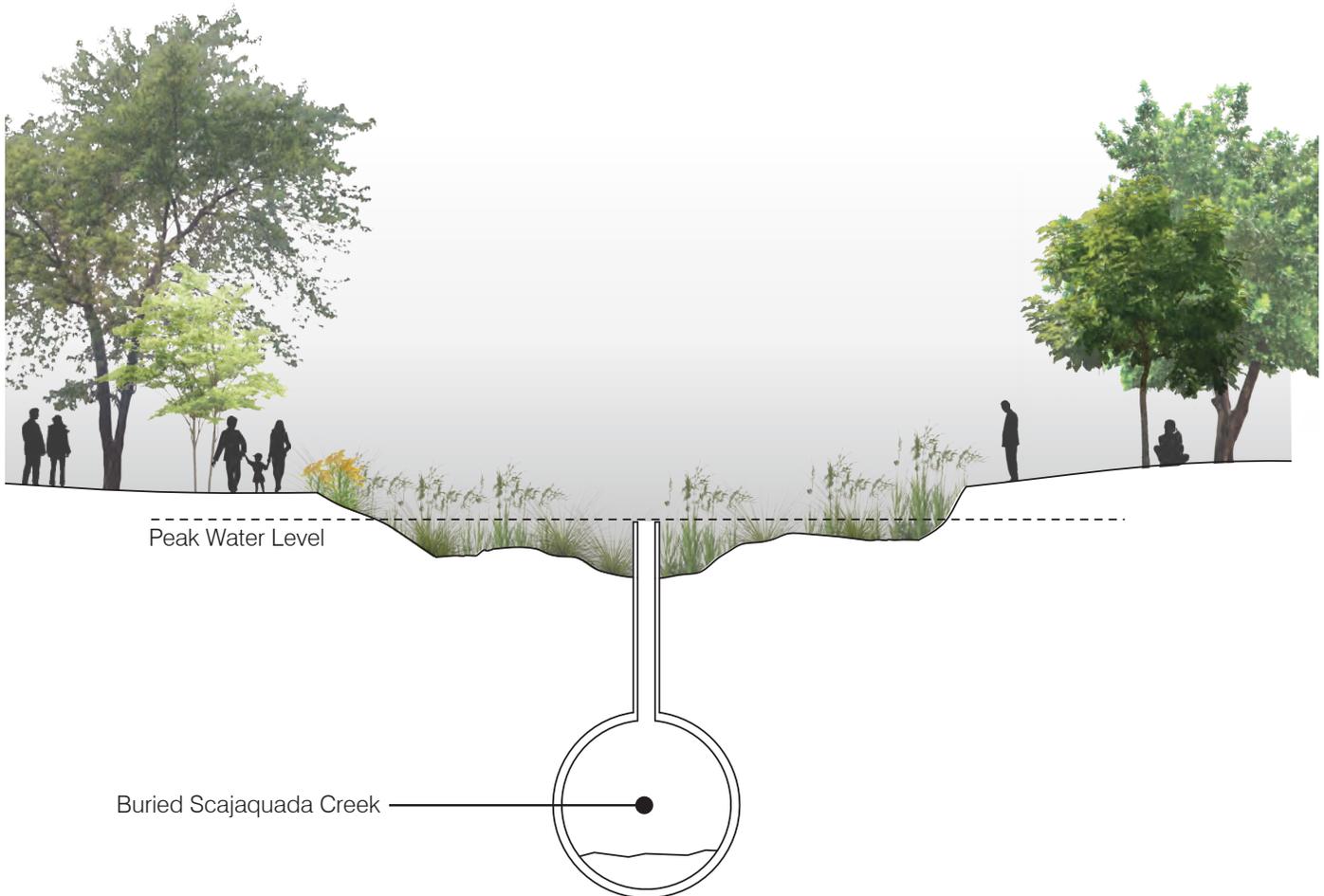
Objectives: Awareness

Intervention: Branding; Signage

Precedent: Newtown Creek(A); Philadelphia, PA(B); Newtown Creek (C); rendered idea by class (D); Hike Bike Trail (E)



## ARTIFICIAL WETLAND (ZONES A & G)



Surface run-off from surrounding areas is diverted to an artificial wetland where it can permeate back into the natural water table. If water levels within the wetland get too high, threatening flooding of the surrounding area, a drain in the wetland will allow water to move into the current CSO system.



# INDIVIDUAL DESIGN PROPOSALS





Ninuk Dwi Agustiningrum Setyowati





# INDIVIDUAL DESIGN

URP 581- STUDIO HISTORIC PRESERVATION



CULTURAL LANDSCAPE

“SCAJAQUADA GREEN CONNECTION”



By

Ninuk Dwi Agustiningrum Setyowati

#50169681

## **I. SCAJAQUADA AS A CULTURAL LANDSCAPE**

Scajaquada Creek is a historical creek reflecting the history of inhabitant settlements both of Native America tribes and European Immigrants, a war of 1812, urbanization movement, neighborhood establishment, industry activity, park systems, physical improvement of street and infrastructures and water resources in Buffalo City. Thus, Scajaquada Creek has a major role towards cultural and natural resources that formed the Buffalo City through the time. For instance, it is a water amenity of Delaware Park and Forest Lawn that been designed by considering the creek shoreline and ambiance. On the other hand, scajaquada creek was buried underground by establishing a 3.7-miles of water tunnel through the east side of Buffalo because of pollution contamination led by urbanization movement and activity. Despite the pollution in the creek's waterbody, cultural landscape project is needed to be designed for preservation purpose especially with a component of its history background<sup>1</sup>.

Based on previous reports, there are several characters-defining features illustrated the culture background of the city and the varied nature of land use, human activity and physical connection along Scajaquada Creek. Pathways, green spaces, and neighborhoods are three important character-defining features that scattered along the creek and connected the related areas. These features are connectors linked the areas along the creek from the mouth of the creek on the east side of the Buffalo City. For preservation purpose, these features need to be connected each other to bring the whole of Scajaquada Creek's ambiance through the footprints of this historical creek. Therefore, these features will be highlighted in this design as considerations for Scajaquada Creek's preservation planning.

To enhance the Scajaquada Creek, a daylighting project towards the drain creek is not always be the best option due to neighborhood and community connectivity. Several projects can be implemented considering its construction cost and community engagement to their neighborhood based on character features that can be found along the Scajaquada Creek. For instance, Greenway pathway along the shoreline both water surface and drain burial creek can be implemented to enhance and preserve the creek. For drain Scajaquada Creek, dry creek beds

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<sup>1</sup> Charles A. Birnbaum, "Protecting Cultural Landscapes Planning, Treatment and Management of Historic Landscapes," US Department of Interior National Park Service, Technical Preservation Service, <https://www.nps.gov/tps/how-to-preserve/briefs/36-cultural-landscapes.htm>.

and manholes can be designed and utilized above the site into a linear greenway that connected the whole watershed.

## II. PRECEDENT ANALYSIS

### II.1. TROOST CORRIDOR ACTION PLAN (KANSAS CITY, MO)

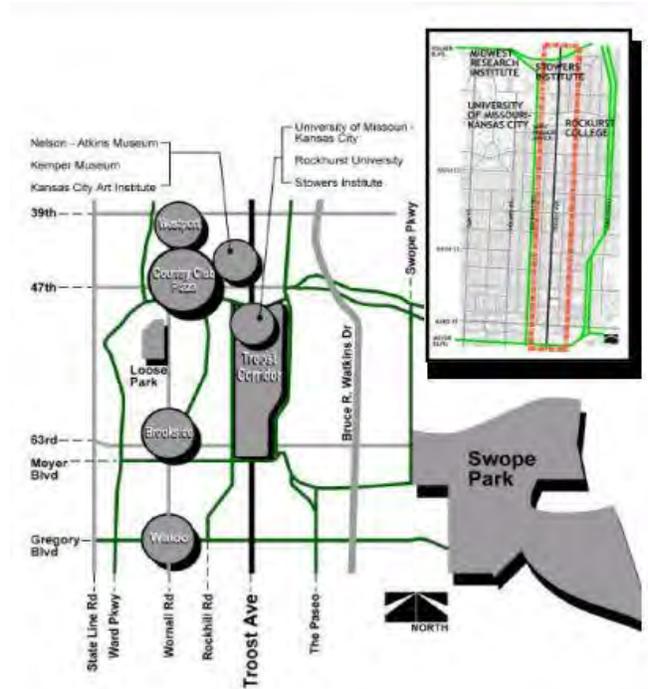
Troost Corridor Action Plan was designed by the Southtown Council, Kansas City in 2003. This plan was intended to provide a diverse urban amenity for various stakeholders both private and public by enhancing cohesiveness and direction among them. Also, this plan provided a great sense of 'place' with a community-based vision among neighborhoods, institutions, and commercial development. This plan was constructed by considering the area characteristic that has a rich diversity of residential resources, education institutions, medical facilities, and telecommunications in the urban center of southeastern Kansas City. This area became a major linkage between all types of business, from small until large, associations, and institutions<sup>2</sup>. The Southtown Council (2003) designed a development of the Troost Corridor Action Plan supporting redevelopment of a diverse environment by implementing several primary development principles which are:

1. Preserve and Enhance the Corridor's Diverse Character
2. Preserve 'Gems' and Seek Infill Opportunities
3. Neighborhood Preservation and Enhancement
4. Promote Private Property Enhancements
5. Troost Corridor as Distinctive Place
6. Troost Avenue Neighborhood Centers
7. Seek Market Development and Businesses for Conducive a Neighborhood-Oriented Environment

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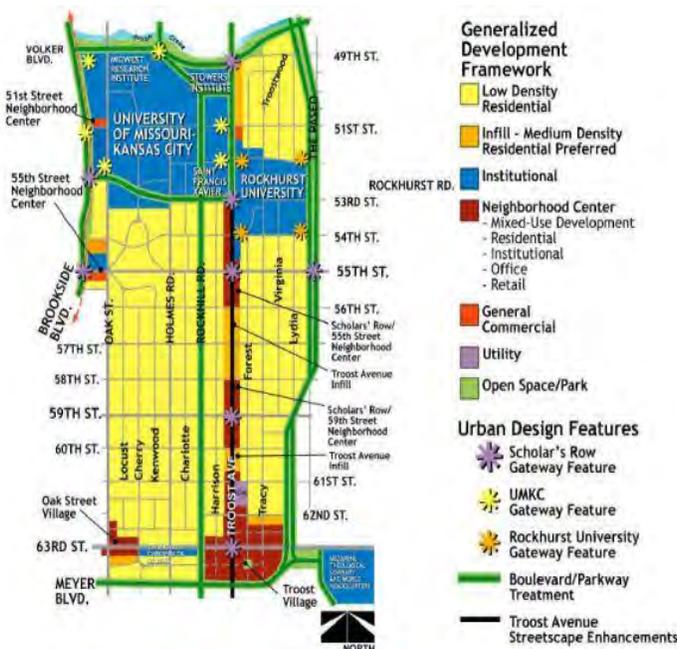
<sup>2</sup> Gould Evans Goodman Associates, "Troost Corridor Action Plan," ed. Southtown Council (Kansas City: Gould Evans Goodman Associates, 2003).

*Concept Plan of the Troost Corridor Action Plan in the Southtown*



The Troost Corridor Plan connects the Brush Creek Cultural Corridor by containing commercial, cultural, and educational centers in the Southtown Kansas City. Therefore, this plan promoted mixed-use structures with a variety of usages like ground level retail and institutional uses, upper-level office, institutional, and residential uses.

Figure II.1.1 The Troost Corridor of The Southtown Kansas City



This plan has a generalized development plan contained low-density residential, institutional, commercial, open spaces, utility, and neighborhood center with mixed-use development. Also, this project promoted urban design that utilizes a sense of 'scholar's row with gateway feature, boulevard, and streetscape with a pedestrian friendly environment.

Figure II.1.2. Framework of the Troost Corridor in Southtown

## II.2. JUNIATA GREEN CONNECTION IN MANCHESTER, PITTSBURGH, PA

The neighborhood of Manchester is located in a border of the major state highway 65 on the eastern. The selected site of Juanita Street has perpendicular of two separated bike trails. Thus, this gives an opportunity to priority plan for safety bike lines by slowing down the traffic into the neighborhoods. This plan was designed to enhance two sites in Juanita Street (Figure II.3). The first site has an unsafe pedestrian traffic with sparse trees along Juanita Street. Also, this site becomes crowded parking lot for nearby church on weekend pray session. Meanwhile, the second site is a linear park space in the residential area consists of a baseball field, basketball courts, and Elementary School. This second site has graffiti issue in the neighborhood that takes over the existing trees and hard surfaces<sup>3</sup>.



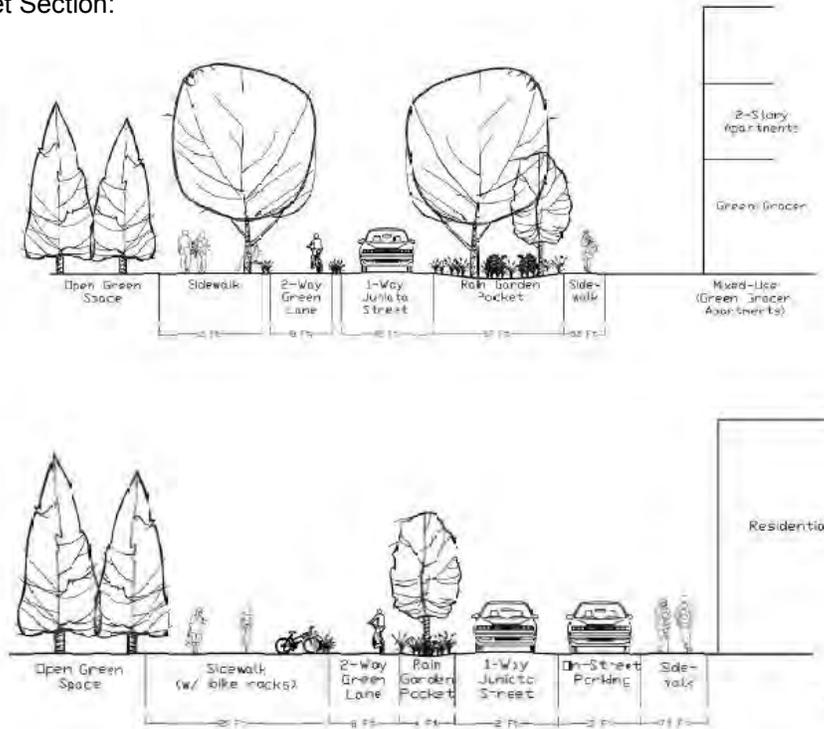
Figure II.2.1. Proposed Sites of Juanita Green Connection

<sup>3</sup> Jessica Owens, "Juanita Green Connection: The Revival of Manchester's Juanita Street Corridor," (Pittsburg: Penn State, 2015).

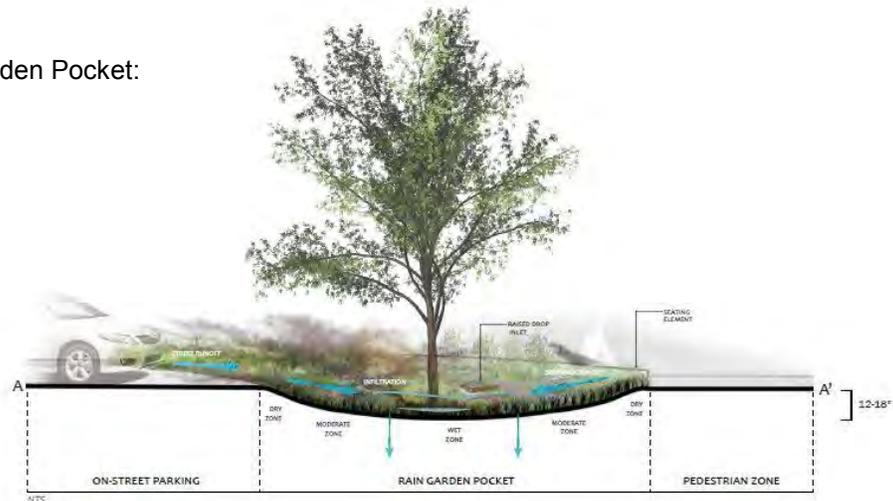
Proposed Design

This plan was designed to promote a green connection with adding more green vegetation to the street of Juniata and providing outdoor recreation and healthy green living in the neighborhood. This plan was also designed with other urban utilities like stormwater remediation with some rain garden pocket in the street's curb<sup>4</sup>.

Juanita Street Section:



Rain Garden Pocket:



<sup>4</sup> Ibid.

### III. SELECTED AREA

Scajaquada Creek has approximately 6.7 miles of total length that flowed in Buffalo City with 3.7 miles as a drain creek buried underground. Today, this creek is divided into several parts separated by street or highways, buildings, houses, and neighborhoods. Thus, this separated creek sections cause unawareness of the people about the creek itself or even many people do not know about the existence of the Scajaquada Creek. Therefore, this study designs a preservation planning of the Scajaquada Creek by connecting these separated sections of the creek into one greenway. To implemented the purpose, this design emphasized two sites as its selected area by improving the area with utilizing pathway, pedestrian, crosswalk, dry bed, manhole, plant, and other park amenities. Se 1 is located at Delaware Avenue between Delaware Park and Forest Lawn. Meanwhile, section 2 is located in Hamlin Park neighborhood between Jefferson Avenue and Fillmore Avenue. Figure 1.1 shows detail location of the selected area in this study.



Figure 1.1 Location of the Selected Areas

#### IV. PROPOSED DESIGN

##### IV.1. SITE # 1

##### ***Existing Condition on Site # 1***

The site 1 in this study has several physical realms of urban amenities showing with a not good condition, especially for pedestrian users. These in-properly amenities are crosswalks on Delaware Avenue near between Delaware Park and Forest Lawn and Sidewalk through neighborhood from Delaware Park to Forest Lawn..



The crosswalks in this site need to improve and utilize with a physical realm that gives a sense of more pedestrian friendly. The paint of the crosswalks in this site is fade away. Also, there are no properly cross sign on all sides of the street.

Figure IV.1.1. Crosswalk on Delaware Avenue



The sidewalk along neighborhood in this site does not have a bicycling line. Also, this pedestrian has spare plants with located in an adjacent side with the highway that gives an insecure feeling for walking on this site.

Figure IV.1.2. Sidewalk along Neighborhood between Delaware Avenue and Forest Lawn



The crosswalk in front of Forest Lawn gate is not facilitated with appropriate crosswalk's paint on the street and cross sign for people to cross over and enter the Forest Lawn. Additionally, this site is passed by highway with high traffic volume, so it gives unsafe sense for walking, jogging, and even bicycling.

Figure IV.1.3 Crosswalk In-front of Forest Lawn Gateway

### ***Proposed Plan for General***

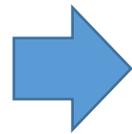
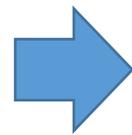
#### **1. Scajaquada Creek Logo**

This plan proposed a general design of Scajaquada Creek logo that can be utilize for all sites and urban amenities. This Scajaquada Creek Logo is designed by using customize sense that depicted Scajaquada Creek condition.



#### **2. Scajaquada Creek Signage and direction**

This plan proposed a signage of Scajaquada Creek as direction of the creek. This proposed plan of signage has purpose to generate public and people awareness about Scajaquada Creek existence and condition .



### ***Proposed Plan on Site # 1***

The proposed plans for site 1 are two major design plans for promoting the pedestrian friendly environment in the site. Figure IV.1.4 illustrates that this study plans crosswalks enhancement and streetscape with bike lane installation into the neighborhood by utilizing other urban amenities and nature environment. This proposed plan on site 1 is constructed by adopting and adjusting design of streetscape with pedestrian and crosswalks from precedent analysis “Troost Corridor Action Plan” in Kansas City.



Figure IV.1.4. Proposed Physical Features Enhancement on the Site 1

#### 1. Enhance of the Crosswalk on Site 1

This study recommends two major crosswalks that need to be enhanced and installed with additional amenities to create a safety and healthy pedestrian. First proposed crosswalk is located on the Intersection of Delaware Avenue between Delaware Park and Forest Lawn. Another proposed crosswalk is located in front of Forest Lawn gateway at the intersection of Delaware Avenue and W. Delavan Avenue. Crosswalks are essential in establishing the pedestrian lane to cross over from one to another side of the street. These crosswalks should concern about population, traffic volume, type of vehicles that passed by likes truck, bus, or private automobile

for creating the pedestrian friendly environment. These crosswalks should be designed by installing visible marking (ladder striping) and additional pedestrian utilities, such as traffic calming, shorter crossing distances, median, and flashing signal and light<sup>5</sup>.

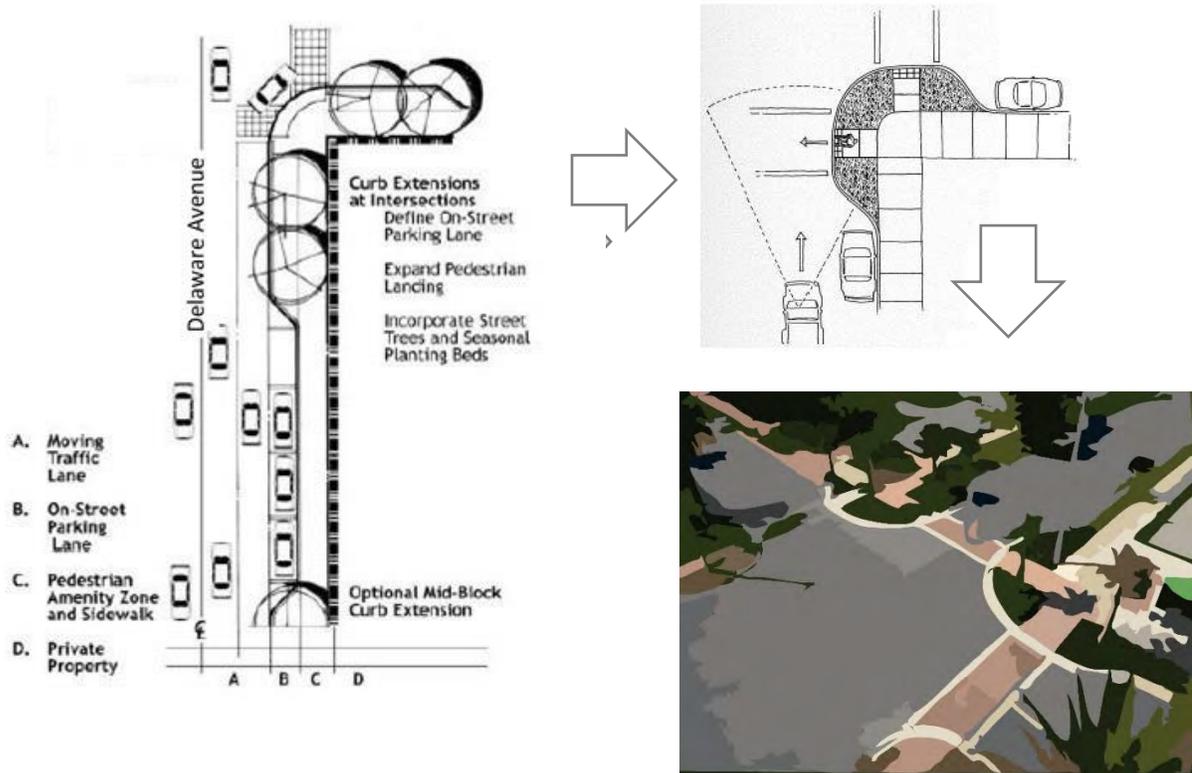


Figure IV.1.5. Proposed Crosswalk Design on Site 1

## 2. Improve and Utilize Streetscape with Bike Lane

The streetscape on the site 1 that recommended to improve is a 0.40-mile neighborhood's sidewalk at Delaware Avenue between Delaware Park and Forest Lawn. This plan designs streetscape with four major components which are on-street parking lane, bike lane, amenity zone, and pedestrian or sidewalk. Figure IV.1.6 shows that this plan recommends on-street parking lane for promoting a sense of traffic calming effect that gives benefits for businesses in an urban area. The amenity zone is an area between the on-street parking lane and the sidewalk.

<sup>5</sup> U.S. Department of Transportation, "Bicycle & Pedestrian Program: Designing Sidewalks and Trails for Access," U.S. Department of Transportation: Federal Highway Administration, [https://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/sidewalk2/sidewalks208.cfm](https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/sidewalks208.cfm).

This zone includes pedestrian illumination (i.e. street and pedestrian lighting), traffic signalization, street signage systems, and landscaping<sup>6</sup>.

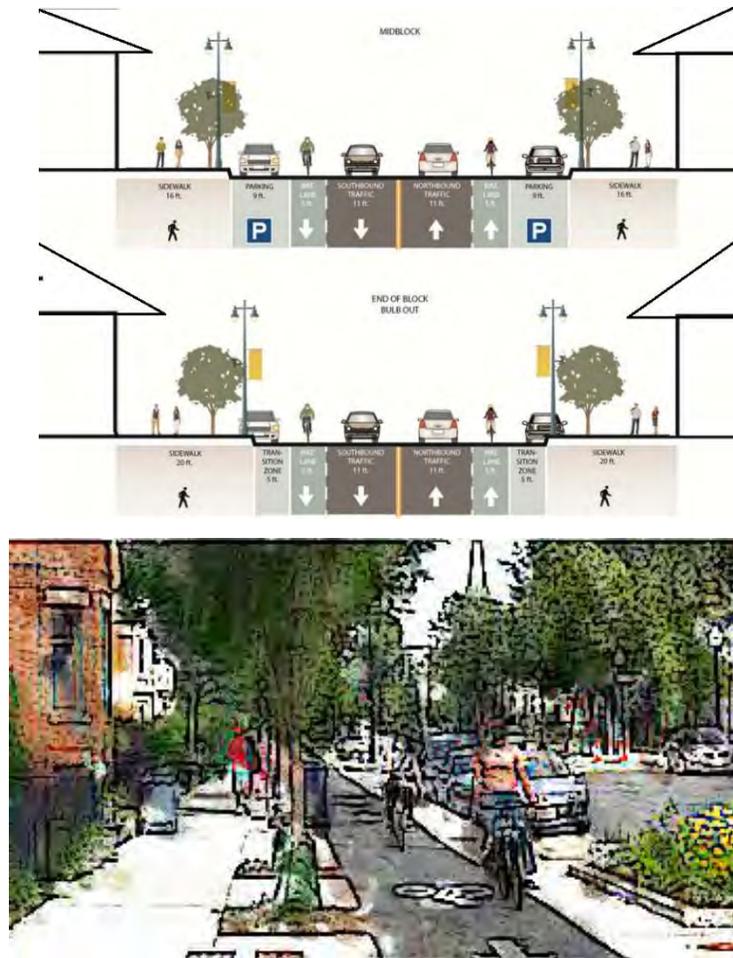


Figure IV.1.6. Proposed Streetscape on Site 1

## IV.2. SITE # 2

### **Existing Condition on Site # 2**

The site 2 for this research is located in Hamlin Park Neighborhood between Jefferson Avenue and Fillmore Avenue. This site has two linear parks separated by street and houses in the

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<sup>6</sup> Associates.

neighborhood. This site is a location of drain Scajaquada Creek that buried underground since the 1920s<sup>7</sup>.



Figure IV.2.1. The Linear Park between Jefferson Avenue and Florida Street

This linear park located in Hamlin Park neighborhood between Jefferson Avenue and Florida Street. This park is a small park with only approximately 0.12 miles length of the pathway within several canopy trees on both sides of its path. This park is located above the Scajaquada Park and adjacent with the Fibron Product Inc on its south side.



Figure IV.2.2. The Connecting Bridge as part of the Linear Park

Another linear park is a 0.4-mile park connected Donaldson Road and Lark Street by an elevated pedestrian bridge above the Kensington Expressway. Also, this linear park is a linkage line between the Hamlin Neighborhood and the Grider Neighborhood. This park has sparse vegetation along both sides of the pathway.

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<sup>7</sup> Margaret Wooster, *Living Waters: Reading the Rivers of the Lower Great Lakes* (SUNY Press, 2009).

### ***Proposed Plan on Site # 2***

The proposed plan for site 2 is designed to enhance the drain Scajaquada Creek with 3.7 miles tunnel buried underground. This plan for this site consists of four major plans which enhance linear park, utilize creative manholes, enhance connector bridge, and establish greenway connection on this site. This proposed plan on site 2 is constructed by adopting and adjusting design of linear park from precedent analysis “Juniata Green Connection” In Manchester, Pittsburgh.

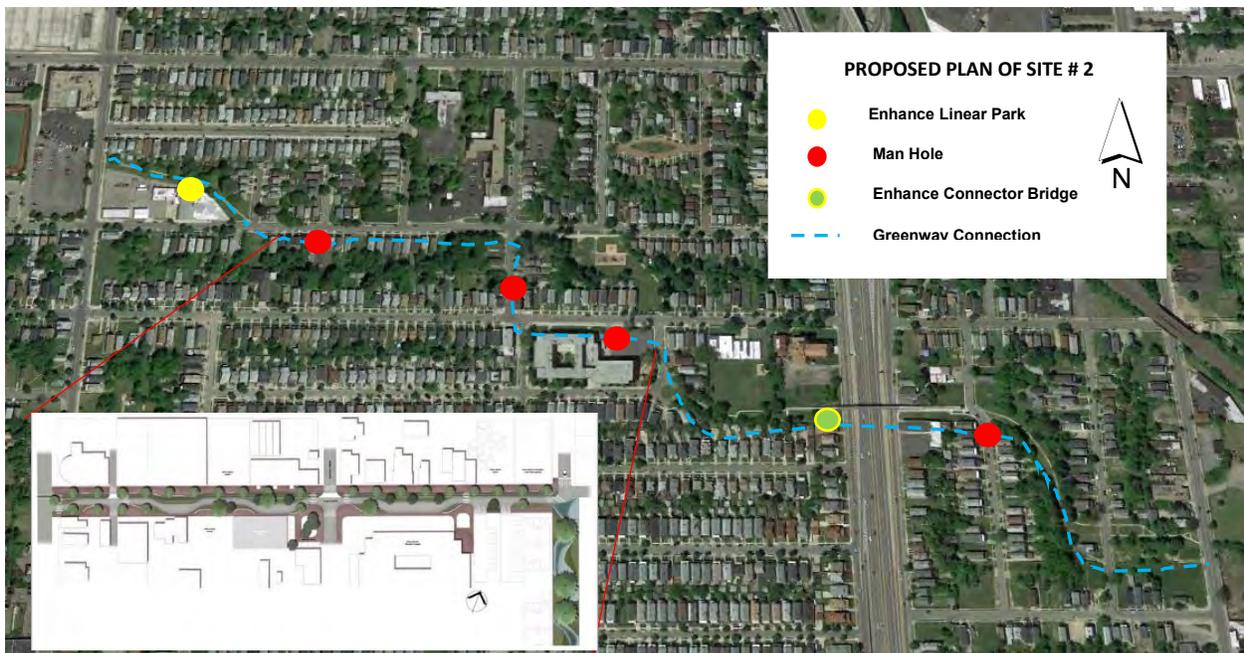


Figure IV.2.1. Proposed Physical Features Enhancement on the Site 2

#### 1. Enhanced Linear Park

This plan has a purpose of enhancing linear park in Hamlin Park by promoting more nature park with more plants, both trees and flowers, bike lane, pedestrian lights, and dry creek bed. By adding more vegetation, this linear park will be more give a sense beauty of nature environment. Other park amenities like a bike lane and pedestrian lights are needed to revive the park into amusement public park in Hamlin Park Neighborhood. Besides, a dry creek bed will have functions not only for aesthetic purpose but also for signing drain burial Scajaquada Creek on this site, so people will aware and care about the creek environment and history behind it.



Figure IV.2.2. Proposed Plan of Linear Park Enhancement on Site 2

## 2. utilize creative manholes

Man hole is recommended to be utilized on the street above the drain tunnel of the Scajaquada Creek. This manhole has functions for air circulation and indirect daylighting into the underground drain creek. For giving a sense of aesthetic to the landscape, man holes should be designed with a creative design. Also, transparent manholes can be a good idea to be installed on the drain creek site for letting daylight enter the underground tunnel.



Figure IV.2.3. Example of Transparent Manhole

### 3. Enhance Connector Bridge

This proposed plan is designed to enhance an elevated bridge that connected Donaldson Road and Lark Street by adding urban park amenities to the Bridge area. These urban park facilities that needed to be installed are street lights, more plants like canopy trees, brushes, and flowers, and also dry creek bed as a continued dry bed for the previous linear park.



Figure IV.2.4. The Connector Bridge

### 4. Greenway Connection in Hamlin Park Neighborhood

This plan is designed to promote green connection by introducing more green plants that be installed to the Florida Street and Hager Street in Hamlin Park Neighborhood. Therefore, it can also promote outdoor recreation and healthy green living to the community in Hamlin Park Neighborhood and its adjacent neighborhood. This greenway connection lane contains with pedestrian or sidewalk, bike line, and curve for supporting on-street parking. This green lane designs by introducing two green lanes of bicyclists that serve a potential expanded existing bike paths. By implementing the green lane project on this site, it will lead to a more livable street that gives an easy access to get around by walking and also promote an active and healthy lifestyle<sup>8</sup>.

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<sup>8</sup> Owens.

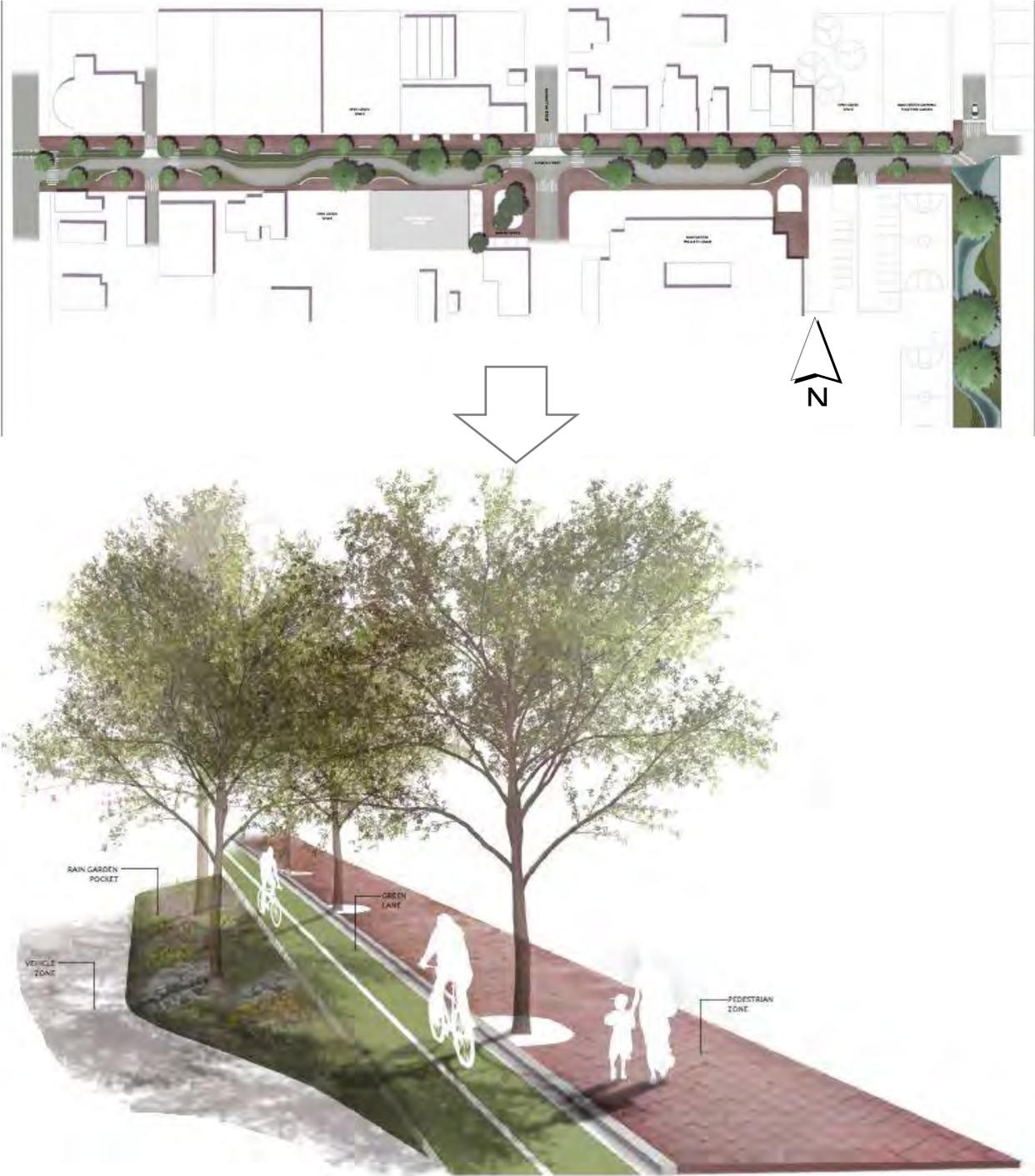


Figure IV.2.5. The Greenway Connection on Site 2 (Hamlin Park Neighborhood)

Ninuk Dwi Agustiningrum Setyowati  
URP581 – Scajaquada Creek Research  
Fall 2016

## REFERENCES

- Associates, Gould Evans Goodman. "Troost Corridor Action Plan." edited by Southtown Council. Kansas City: Gould Evans Goodman Associates, 2003.
- Birnbaum, Charles A. "Protecting Cultural Landscapes Planning, Treatment and Management of Historic Landscapes." US Department of Interior National Park Service, Technical Preservation Service, <https://www.nps.gov/tps/how-to-preserve/briefs/36-cultural-landscapes.htm>.
- Owens, Jessica. "Juanita Green Connection: The Revival of Manchester's Juanita Street Corridor." Pittsburg: Penn State, 2015.
- Transportation, U.S. Department of. "Bicycle & Pedestrian Program: Designing Sidewalks and Trails for Access." U.S. Department of Transportation: Federal Highway Administration, [https://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/sidewalk2/sidewalks208.cfm](https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/sidewalks208.cfm).
- Wooster, Margaret. *Living Waters: Reading the Rivers of the Lower Great Lakes*. SUNY Press, 2009.

Bradley Everdyke



# RECONNECTION / MITIGATION

## THE PURPOSE OF THIS DESIGN PROPOSAL IS TO:

1. Address Current Connectivity Issues Across the Entirety of Scajaquada Creek through the Creation of a 'Green' Pathway that Connects the Creek Physically and Visually through a System of Green Paths and Infrastructure Across the City of Buffalo
2. Generate Understanding of Current Ecological Issues Facing the Creek in terms of Buffalo's Combined Sewer Sanitation System and the Effects / Mitigations for Combined Sewer Overflow through the use of Green Infrastructure and Artificial Wetlands
3. Bring Attention to the Battle of Scajaquada Creek Battlefield Site through a Series of Proposed Intervention around the Niagara Street Bridge where the Battle Took Place

## CSO'S & GREEN INFRASTRUCTURE BRIEF

### TYPICAL CONDITIONS

Currently, surface run-off and sewage are moved into the same drainage system in the city. During inclement weather, the system can often be overwhelmed, moving its contents into the buried Scajaquada Creek, contaminating its waters.

### GREEN INFRASTRUCTURE INTERVENTION

Green infrastructure allows surface run-off to be moved into planting retention beds flanking the street where it is allowed to permeate into the natural water table below instead of moving directly into the CSO (Combined Sewer) system. Permeable paving on streets and/or sidewalks also aid in allowing water to move into the ground instead of into the drainage system. Collectively, green infrastructure interventions will decrease the potential for overflows of hazardous materials into Scajaquada Creek, increasing the Creek's health.

### INDIVIDUAL SCALE INTERVENTIONS (RIGHT)

Communities and/or homes can also aid in decreasing run-off through the use of rain barrels to collect storm water or through the use of retention areas in their yards.

## ARTIFICIAL WETLANDS

Surface run-off from surrounding areas is diverted to an artificial wetland where it can permeate back into the natural water table. If water levels within the wetland get too high, threatening flooding of the surrounding area, a drain in the wetland will allow water to move into the current CSO system.

**ZONE A: WEST SCAJAQUADA**  
(BLACK ROCK CANAL - ELMWOOD AVE)

**ZONE B: DELAWARE PARK**  
(ELMWOOD AVE - DELAWARE AVE)

**ZONE C: FOREST LAWN CEMETERY**  
(DELAWARE AVE - MAIN ST)



**BATTLE FIELD SITE**  
- Commemorates Battle of Scajquada Creek, War of 1812

**DEFINING FEATURES:**

- Barriers to Creek
  - Elevated Highway
  - Steep Berm Covered in Dense Foliage
- Bike Path

**INDUSTRIAL**

- Vacant & Occ. Industrial/ 'Big Box'
  - Land & Buildings
- Bridges Across the Creek
  - Auto & Rail

**INSTITUTIONAL**

- Buffalo State College
- McKinley High School
- Park Space

**DEFINING FEATURES:**

- Manicured Landscapes
- Highway Barriers
- Public Programming
  - Recreational
  - Leisure
  - Religious

**DELAWARE PARK**

- Hoyt & Mirror Lakes
- Marcy Casino
- Institutional
  - Albright Knox
- Buffalo History Museum
- Topography

**FOREST LAWN CEMETERY**

- Topography
- Grave Markers
- Creek
- Paths & Historic Bridges
- Triumphal Arched Entry's

**GREEN INFRASTRUCTURE**

- Controls runoff
- Filters water back into water table
- Decreases amount of water moving into combined sewer

**SHORELINE RESTORATION**

- Establish riparian shoreline to aid in cleaning water
- Create more inviting public space

**PARK SPACE / BATTLE FIELD SITE**

- Vacant Industrial Yards - Green Space

**INSTITUTIONAL**

- Engage Buffalo State
  - Recreation Areas
- Educational Opportunities

**PARK SPACE / CEMETERY**

- Retain public use / historic character
- Encourage expansion of water treatment plantings and 'eco-centric' edge

**GREEN INFRASTRUCTURE**

- Controls runoff
- Filters water back into water table
- Decreases amount of water moving into combined sewer
- Educational Opportunities

**CREEK WAY-FINDING**

- Marks line of the creek through sections
- Marks 'Change-in-Time' Neighborhoods
- Educational Opportunities

**ZONE D: HAMLIN PARK**  
(MAIN ST - FILLMORE AVE)

- DEFINING FEATURES:
- Residential
  - 2.5 Story Singles/Doubles
  - Buried Creek with 'Paths' & Right Aways
  - Diverse Neighborhoods
  - Canisius
  - BRTA Delavan / Canisius Station
  - Depressed Highway
  - Light Rail Line

**ZONE E: NORTHLAND**  
(FILLMORE AVE - GRIDER ST)

- DEFINING FEATURES:
- Industrial Corridor
  - Belt Line
  - Open Land
  - Buried Creek
  - Creek runs through inaccessible areas

**ZONE F: SCAJAQUADA - KERNS**  
(GRIDER ST - GENESEE ST)

- DEFINING FEATURES:
- Residential
  - 1.5 - 2 Story Singles
  - Pocket of Industrial between Scajaquada and Kerns: Blocks Movement
  - Buried Creek Runs Directly Beneath Roads

SCAJAQUADA

- Homes Face NS Streets, Do Not Face Scajaquada St

KERNS

- Facing Homes
- Low Rise
- Open Land/Commercial at Intersection of Kerns & Genesee

**ZONE G: SCHILLER PARK**  
(GENESEE ST - PINE RIDGE RD)

- DEFINING FEATURES:
- Open Park Space
  - Playing Fields
  - 'Vacant' Feeling
  - Large Retention Pond
  - Villa Maria College
  - Buried Creek

**ARTIFICIAL WETLAND**

- Controls runoff
- Filters water back into water table
- Decreases amount of water moving into combined sewer



**POCKET PARKS**

- Way-finding / Needed Public Open Space

**SCAJAQUADA CREEK 'CULTURAL ZONES,' DEFINING FEATURES, & INTERVENTION STRATEGIES**



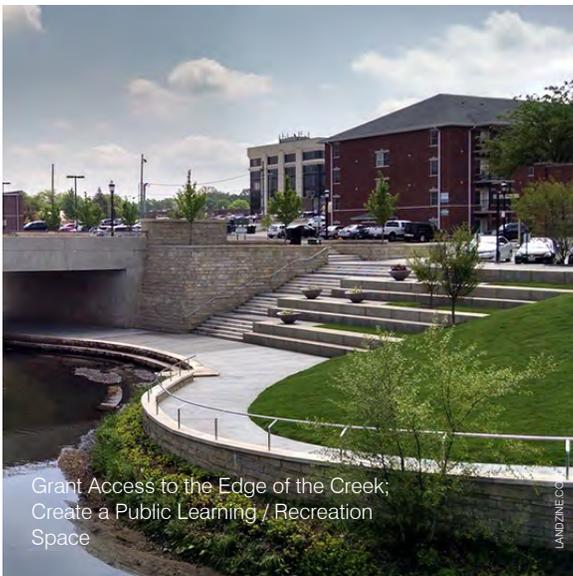
Grid of Trees ReForest & Represent Military Formation

PIN/EST/COM



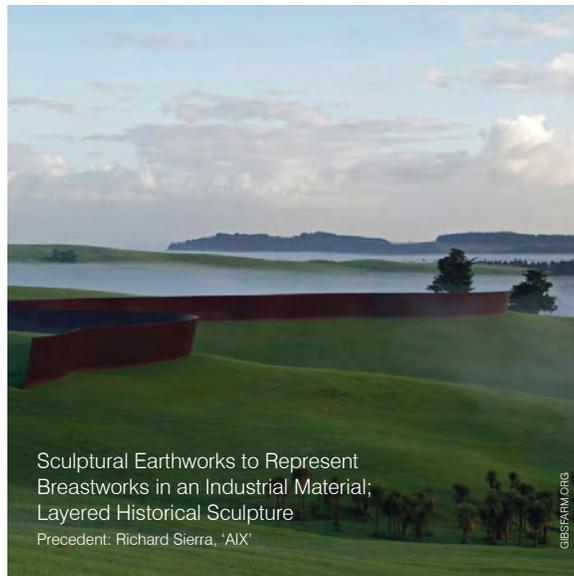
Memorialize the Battle of Scajaquada Creek  
Precedent: Shoah Memorial

PHOTO/COM



Grant Access to the Edge of the Creek;  
Create a Public Learning / Recreation Space

LAND/INE/CC



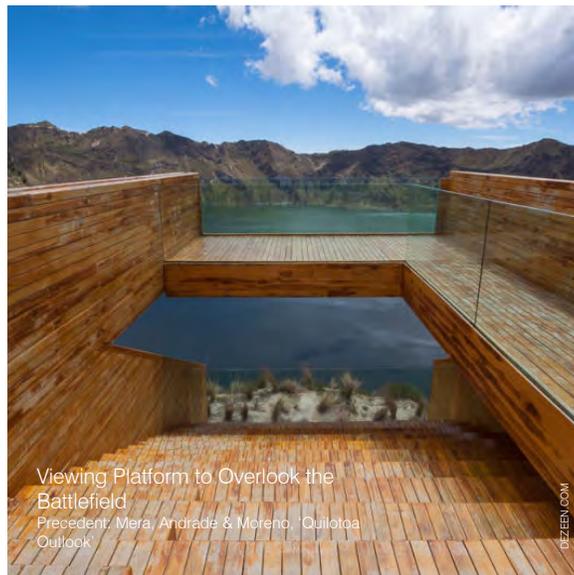
Sculptural Earthworks to Represent Breastworks in an Industrial Material;  
Layered Historical Sculpture  
Precedent: Richard Serra, 'AIX'

GIBS/FAR/WOR/IG



Grant Access to the Edge of the Creek

PHOTO/COM



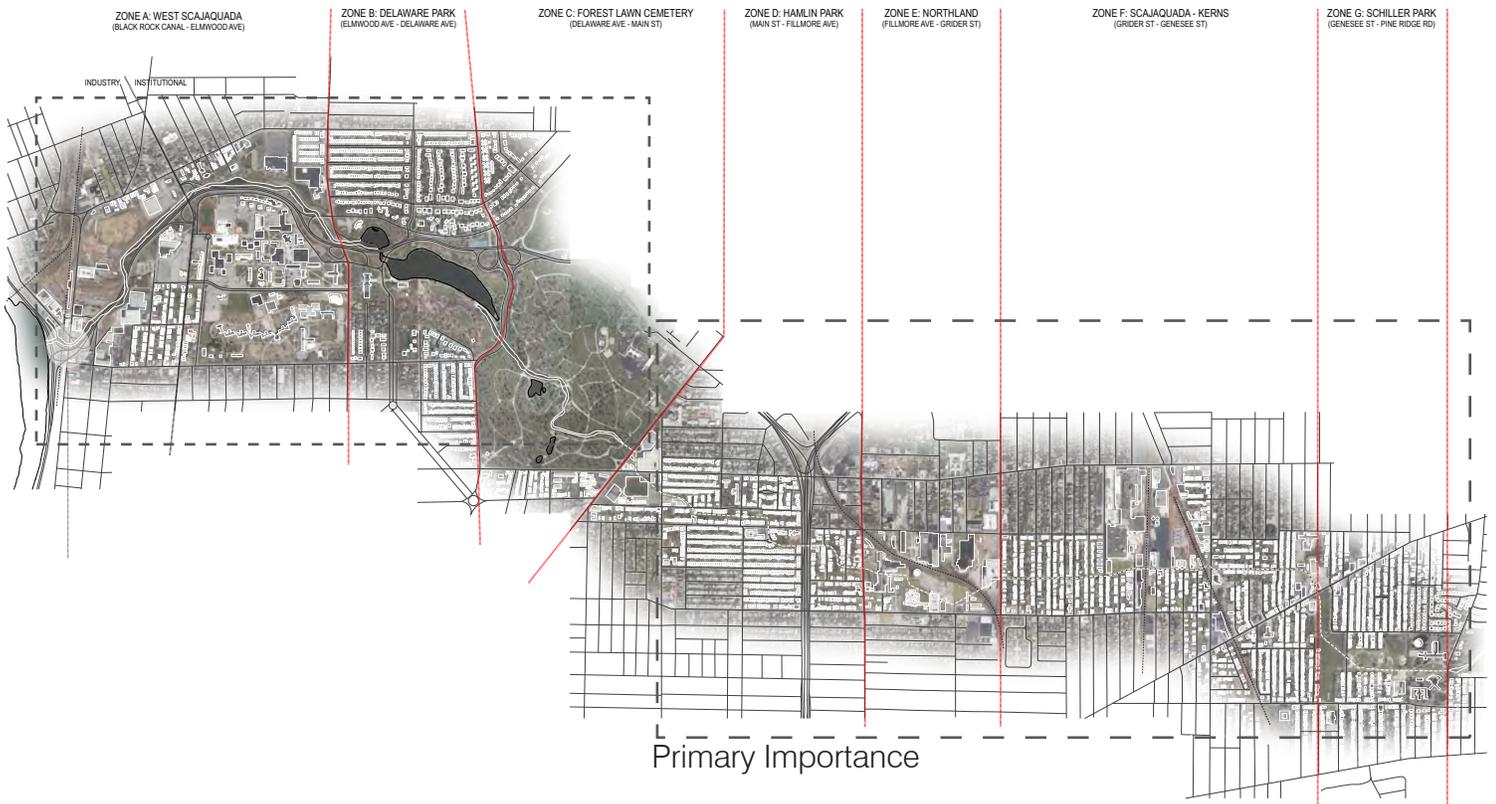
Viewing Platform to Overlook the Battlefield  
Precedent: Mera, Andrade & Moreno, 'Oullotca Outlook'

DEZEEN/COM

# HISTORIC BATTLEFIELD



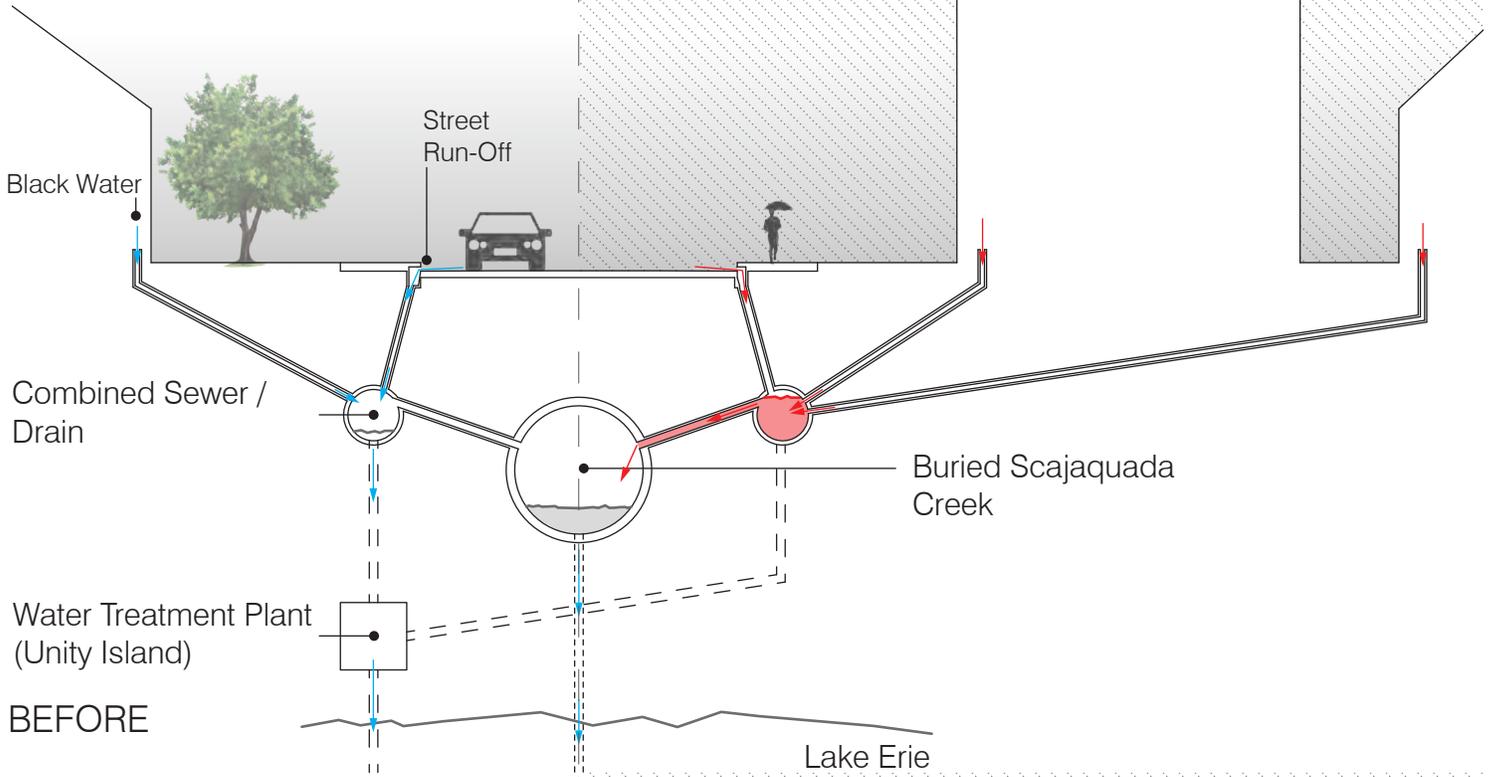
Conceptual Redevelopment Plan for Historic Battlefield Site



# GREEN INFRASTRUCTURE

Typical

Inclement Weather



Planting Bed: Absorbs Run - Off

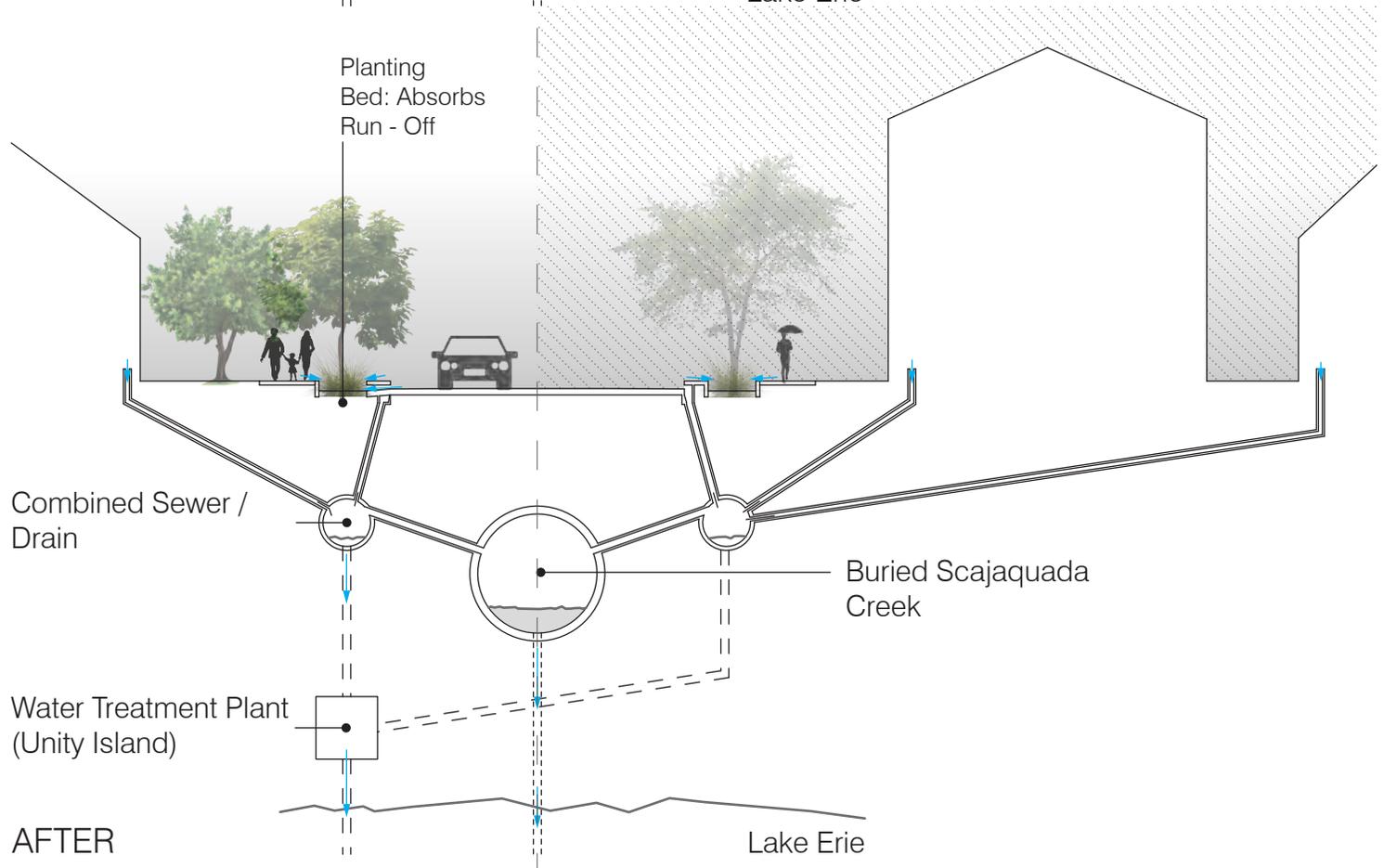
Combined Sewer / Drain

Water Treatment Plant (Unity Island)

AFTER

Buried Scajaquada Creek

Lake Erie



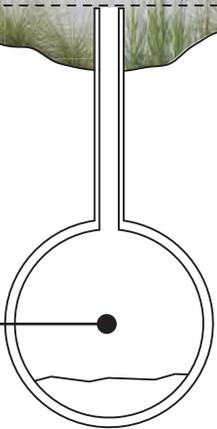


Barriers to be Bridged to Reconnect Path.



Peak Water Level

Buried Scajaquada Creek



# ARTIFICIAL WETLANDS

## Artificial Wetlands

'Green Path' Moves through the city, following the line of the creek.

- Bike Path
- Linear Parks
- Green Infrastructure
- Sign-age
- Decorated Man Holes
- Wetlands



Impermeable boundaries moves around, but presence still noted within



Case Study: Houtan Park



## PRECEDENT: FORT YORK NATIONAL HISTORIC SITE VISITOR CENTRE

Location: Toronto, Ontario  
 Architect: Kearns Mancini Architects  
 Date: 2016  
 Budget: \$25,000,000

### FEATURES:

- Historic Fort Visitors Center
- Set below a highway overpass
- Utilizes historic fort defensive architectural concepts to develop design
- Utilizes conflicting contemporary urban context as design guideline and improves upon it

A national historic site, Fort York marks the first settlement of York, Ontario, what is now Toronto. Through the nineteenth and twentieth centuries, rapid urbanization quickly engulfed the historic fort surrounding it by an elevated highway, a man made harbor, and industry. In the twenty-first century, the City of Toronto commissioned a new visitors center for the historic fort, from which the Fort York National Historic Site Visitors Centre was developed. The slim building sits just south of the historic fort, in a sliver of space between the forts walls and the adjacent elevated highway. The design of the building takes notes from the adjacent fort, specifically earthwork and barriers, to create the dynamic building and spaces within that tell the story of the fort's evolution to time and its presence in Canadian military history.

### RESOURCES:

Masden, Deane. "Fort York National Historic Site Visitors Center." *Architect Magazine*, Published: October 18, 2016, Accessed: December 1, 2016. [architectmagazine.com/project-gallery/fort-york-national-historic-site-visitor-centre\\_o](http://architectmagazine.com/project-gallery/fort-york-national-historic-site-visitor-centre_o).



## PRECEDENT: BOLOGNA SHOAH MEMORIAL

Location: Via de Carracci, Bologna, Italy

Architect: SET Architects

Date: 2016

Budget: \$100,000

Material: Corten Steel

### FEATURES:

- Experiential Holocaust Memorial
  - Move through an 'oppressive' space, symbolizing the oppression of the Jewish Faith during World War II by the Nazi party.

The Bologna Shoah Memorial is an experiential installation holocaust memorial. Two tall panels of corten steel, chosen to rust and age through time, rise from a public plaza in the heart of Bologna, pronouncing themselves perpendicular to the space's adjacent walls. The narrow space pulls visitors through it, closing slowly as visitors move through, representing the oppressive forces of the Nazi party on the Jewish faith. The walls appear solid on their exterior, but are hollow boxes along their interior, generating an understanding for the harsh, cold spaces of the internment camps. The 'space,' generated by the tall walls, instills a moment of reflection on its visitors, calling attention to the holocaust and potentially the continuing prejudices in the world.

### RESOURCES:

Arch Daily. "Bologna Shoah Memorial / SET." *Arch Daily*, Published: February 20, 2016, Accessed: October 17, 2016. <http://www.archdaily.com/782297/bologna-shoah-memorial-set>.



## PRECEDENT: HOUTAN PARK

Location: Shanghai, China

Architect: Turenscape

Date: 2010

Size: 14 hectares

Budget: \$15.7 Million

### FEATURES:

- Artificial Wetland Treats Highly Polluted River
  - Terraced to Oxygenate Water
  - Plantings Aid in Filtering Contaminants
- Flood Control through Landscape
  - Park and Wetlands Allowed to Flood
  - 'Natural' Aesthetic More Beautiful than Concrete Flood Wall
- Community Engagement
  - System of paths and platforms promote engagement with Huangpu River
  - Garden plantings promote community

Houtan Park is a large scale landscape and riverfront revitalization project built on a brownfield site in Shanghai, China. Originally an industrial site, holding a steel factory and shipyard, the project reintroduces the city to the Huangpu River while simultaneously filtering the rivers highly polluted waters through a series of terraced artificial wetlands. Water from the river moves through the wetlands, moving over small cascades, in order to oxygenate the water and control nutrient and sedimentary makeup. Various species of plants within the wetlands filter out different toxins from the water as its moves through them. The park also serves as an aesthetically pleasing system for flood control. Food production in active gardens, paired with a system of walkways and platforms promote community engagement and education.

### RESOURCES:

Landezine. "Houtan Park." *Landezine: Landscape Architecture Works*, Accessed: October 16, 2016. <http://www.landezine.com/index.php/2011/02/shanghai-houtan-park-by-turenscape/>

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Casey Gordon







# Uncovering Scajaquada Creek

PHASE 4: DESIGN

CASEY GORDON

## Introduction:

The Scajaquada Creek is a natural landmark that starts in Lancaster, crosses Buffalo from East to West, emptying into the Niagara River by the village of Black Rock and Unity Island. As Buffalo expanded, the city began to put its mark on the waterway, such as building a dam to form the lake in Delaware Park and changing the banks to be more pleasing in Forest Lawn Cemetery. Buffalo continued to grow through the early 1900s, and both residential and industrial growth followed Scajaquada Creek inland. Both forms of development used the stream as a dumping ground for waste and the quickly changing city also directed many sewer overflow pipes into the creek. By the 1920s, to reduce the impact of Scajaquada Creek on its neighbors from its guise as an open sewer, the city undertook a massive civil engineering project to bury 3.7 miles of the creek in an underground pipe called the Scajaquada Drain.<sup>1</sup> This project placed the waterway out of sight and out of mind for surrounding residential neighborhoods, limiting the exposure of residents to the debris and contamination of the water. Since that infrastructure development, the neighborhoods of Buffalo around and on top of the Drain has become disconnected from the stream, no longer sharing any obvious ties.

## Daylighting Concept and Precedent:

One way to bring Scajaquada Creek back into the public's perception is through daylighting. Daylighting in the case of a stream refers to a restoration of a subterranean stream in an effort reintegrate it with the surrounding community or landscape. This

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<sup>1</sup> "Municipal Action Plans," in *Niagara River Greenway Habitat Conservation Strategy* (Buffalo, NY: Buffalo Niagara Riverkeepers, n.d.), [http://bnriverkeeper.org/wp-content/uploads/2015/09/Chapter\\_4.pdf](http://bnriverkeeper.org/wp-content/uploads/2015/09/Chapter_4.pdf). 197-201

restoration can be a small project, made of just providing markers along the stream path, to major multimillion dollar physical stream restorations that involve building a whole new waterway. While the two prior actions are the extremes of daylighting, they can be split into the two categories of daylighting; naturalization daylighting and symbolic daylighting.<sup>2</sup>

#### Naturalization:

A naturalization daylighting restores the selected stream to a natural appearance, including a stream bed and banks, normal stream curvature and flow, and the creation of natural riparian and wetlands habitats. This project usually leads to increased biodiversity in the daylighting project area, which often also leads to improved water quality due to the filtering effect of the plant and animal life in a newly restored section of water. In the case of a buried waterway, it involves removing the covering surface, restoring the stream bank and a stream channel. Ideally, it will resemble the historic stream, from before it was channelized, covered, or buried below ground.

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<sup>2</sup> Koshaley H. D, "Developing Eligibility Criteria for Daylighting Streams as Applied to Dallas' Mill Creek, TX," (master's thesis, University of Texas at Arlington, 2008), <https://uta-ir.tdl.org/uta-ir/handle/10106/1847>. 31.



*Sawmill River being buried in the 1920s. Source: Sawmill River Coalition*

An example of this method is Saw Mill Creek in Yonkers, NY. The creek was buried in the 1920s in order to help manage flooding issues and sanitation in the city, similar to the reasoning for the burial of Scajaquada Creek. It remained buried for about 90 years until citizen interest led to New York State designating over \$30 million dollars and a commitment from private developers to build alongside the restored river's path.<sup>3</sup> When it was finally daylighted, the river emerged from underneath a parking lot to become the centerpiece of a new downtown city park. The recreated stream provides over 12,000 square feet of new aquatic habitat and is used by many types of local plant and animal life. Interestingly, part of the creek is still flows through underground channels to prevent flooding within the city by providing for additional flow the above ground portion would be unable to handle.<sup>4</sup>

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<sup>3</sup> "Daylighting the Saw Mill River in Yonkers The Saw Mill River Coalition," The Saw Mill River Coalition, accessed December 9, 2016, <http://www.sawmillrivercoalition.org/whats-happening/daylighting-the-saw-mill-river-in-yonkers/>.

<sup>4</sup> "Daylighting the Saw Mill River - Groundwork USA," n.d.



*Sawmill River after daylighting. Source: Groundwork USA.*

### Symbolic:

A symbolic daylighting is focused on presenting the stream to the public, but without needing to change or view the existing stream or water feature. This method is often used when funds are not available for a full naturalization daylighting process, or when it is not currently feasible to strictly daylight the stream, due to property rights debate, water quality, resident opposition, or other problems. The waterway may be emphasized to the community via signage, a dry stream bed along the old waterway route, a path along the historic stream bank or present situation, or symbols above the waterway along the sidewalk or road. The symbolic daylighting may represent a waterway that no longer exists at all with the installation of a fountain or other artificial water feature, bringing some resemblance of a creek back to the open

One major case of a symbolic daylighting project is Cheonggyecheon Stream, in Seoul, South Korea. This stream had been completely hidden by urban development, becoming buried for sanitation reasons, and then being buried further with the construction of a highway over the stream channel. Between 2002 and 2005, the Seoul decided to remove the highway and reintegrate the stream with the city. As the original stream had disappeared by this time, the city created a new channel along with a park alongside it. This new channel and stream is artificially filled with water pumped in and filtered by the city from exterior sources. The revived stream and surrounding park quickly became a local landmark and cultural destination.<sup>5</sup> While it is a successful case of daylighting, this project is useful for the Scajaquada Creek project in theory, rather than use, as this project covers miles of stream distance and cost hundreds of millions of dollars.

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<sup>5</sup> "How the Cheonggyecheon River Urban Design Restored the Green Heart of Seoul | Inhabitat - Green Design, Innovation, Architecture, Green Building," n.d.



*Restored Cheonggyecheon Stream, Seoul, South Korea. Source: inhabitat.com*

A more feasible example of symbolic daylighting took place in Drachten, the Netherlands. An artist painted over half a mile of roadway, curb to curb, a bright blue color to represent a waterway that was paved over when the road was constructed. The change in color alerted the residents that there was something different about this part of the street. Further research would inform them about the road's history as a waterway, and of future efforts to remove the street and replace it once again with a waterway. Until the construction occurs though, the appearance of the road is highly visible example of symbolic daylighting.<sup>6</sup>

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<sup>6</sup> Glenn Weiss, "Henk Hofstra, "Blue Road", Netherlands," *Artsjournal*, last modified November 25, 2007, [https://www.artsjournal.com/aestheticgrounds/henk\\_hofstra\\_blue\\_road\\_nether/](https://www.artsjournal.com/aestheticgrounds/henk_hofstra_blue_road_nether/).



*Blue Road, Netherlands. Source: artsjournal*

### Proposal:

The intent of this daylighting proposal is to increase the Buffalo East Side's cultural connection to the currently hidden waterway, the Scajaquada Creek. The largest stretch of open and accessible land above the buried Scajaquada Drain is at the Schiller Park. This park is sparsely developed, featuring a playground, a pair of basketball courts, and a soccer field. The majority of the park is a large open field where the park used to contain a pair of baseball diamonds, but these have fallen into disuse and the hardware and fields have been removed leaving the open green space seen below. The Scajaquada Drain passes underneath this open field and then heads north towards Genesee Street below a small walkway. At this point, the Creek surface

is roughly 20 to 30 feet below ground. The Scajaquada Creek is currently still considered a part of the Buffalo Sewer system for this location, with several overflow sewers feeding directly into the Creek. Due to physical challenges of stream height, water quality, and monetary concerns, this daylighting proposed for this site is a symbolic representation of the Creek, rather than a naturalization restoration.



*Schiller Park, off Sprenger Avenue looking northwest. Mockup of proposed path (black) and dry bed (gray). Source: Google Maps*

There are three main features to this symbolic daylighting proposal.

- 1) Recreational pathway along historic Creek Path
- 2) Dry bed on top of Scajaquada Creek path
- 3) Stream-like fountain section along Dry Bed
- 4) Branding

These features can be viewed in the following map of the Schiller Park boundaries.

## Recreational Pathway:

The beginning of the path will be at the parking area along Sprenger Avenue, following the path shown in Figure 1. The path meanders across the main field following the Scajaquada Creek to the old park entrance on Genesee Street, just under one third mile in length. The path is paved, able to be used easily for walking, biking, skating, and any other common path based recreational activities. The path will have lighting approximately every 150 feet, along with benches at the halfway mark, when the field meets the trees along Hemingway Street.

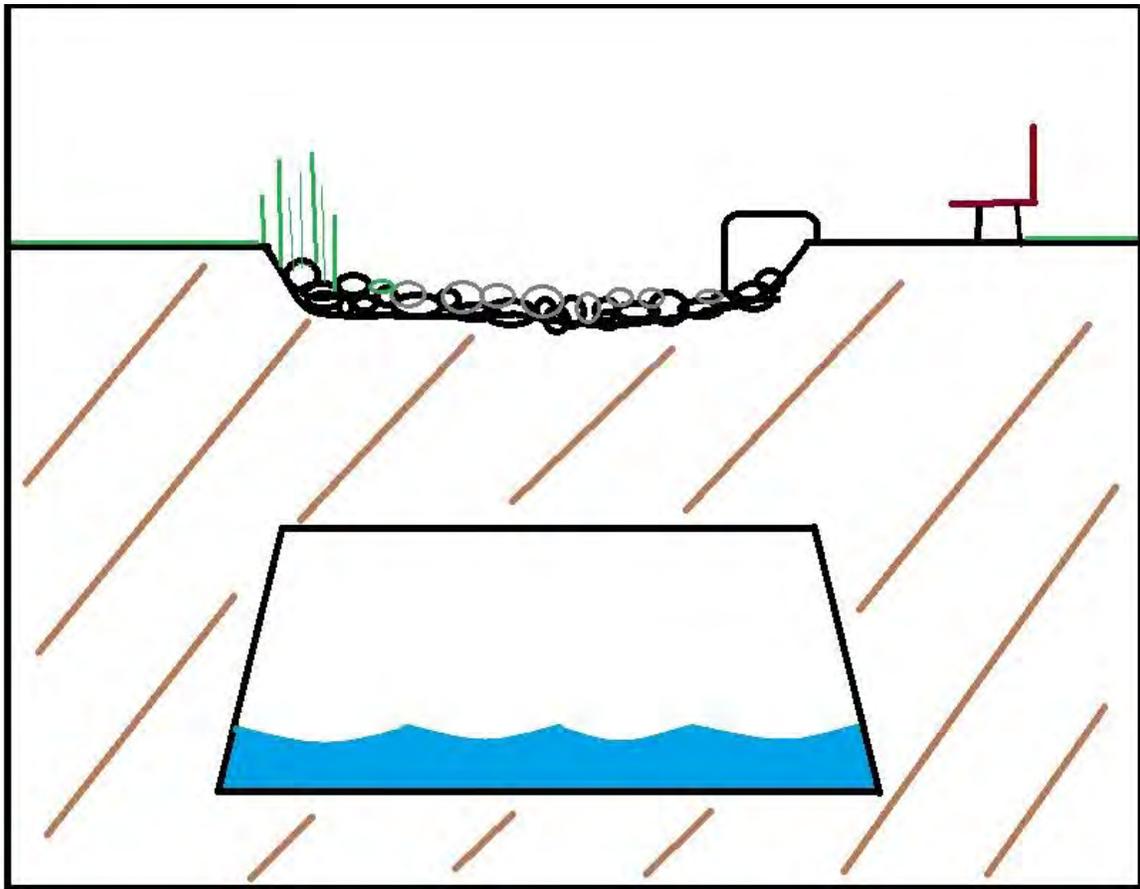


Figure 1 Project Boundaries. Source: Google Maps

## Dry Bed:

For the majority of this restoration, the Creek will be represented by a dry creek bed, following the course of the Scajaquada Drain below. This course is parallel to and alongside of the recreational path. The dry bed will have roughly the same width and

depth as the Scajaquada Creek would if not constrained within the Drain. This can be seen in the pathway and creek vertical segment seen below.



*Scajaquada Creek Daylighting Vertical Slice. Path is between bench and dry bed.*

The dry creek bed is lined with river stone and rocks to provide texture and a sense of flow for the stream. The connection is provided by both the rocks 'being' the stream, as well as the river rock appearance is similar to stones that naturally appear at the bottom of waterways. Native wetlands plants will be included alongside the bank of the dry bed to help reinforce the idea of a stream and its biosphere. The stream bed will be lined with a fabric tarp, to prevent weeds to growing in between the rocks and disrupting the appearance of the symbolic stream. This will also allow the dry creek bed

to serve as drainage for the surrounding field. Additional infrastructure changes can be made in the park, such as adding swales in the field, to direct runoff surface water to the dry creek, leading to an almost actual stream appearance during times of heavy rainfall or other water accumulation such as snowmelt.



*Dry Creek Bed example. Source: O'Connell Landscape, n.d.*

#### Fountain:

As the dry bed leaves the fields and enters the portion of the park alongside Countess Avenue, the dry bed will end and a new symbolic section begins. This section appears to be an actual creek, but is rather a recirculating municipal fountain. The appearance of the fountain banks should be similar to the previous dry bed section, incorporating larger rocks on the edges and some river stones on bed. This section is still parallel to the paved recreational pathway. Important is the integration of native plants in the fountain, with focus on the original appearance of the Scajaquada creek and the actual flora that was and is found along the Creek's course. A watered fountain

also allows for native stream animal species to be introduced into the park, such as small fish and turtles. Increased biodiversity from the added plant and animal life should encourage additional native species to take advantage of the new bioregion, including birds and additional plants. Alongside the fountain, a functional floodplain should be installed, to better divert water into the fountain's stream bed, and to act as a local wetlands environment, reminiscent of land that was developed upon nearby the Creek.

The appearance of this installation will be similar to the image of a stream styled fountain below. While a recirculating fountain will lead to cleaner water and not need to rely on Scajaquada Creek for a water supply, the machinery involved means that this part of the symbolic daylighting project will require semi-regular maintenance to ensure all of the plumbing is functioning and to prepare the feature for the harsh Buffalo winter conditions.



*Liberty Garden Artificial Stream/Fountain. Source: The Fountain Division, n.d.*

## All Parts:

Alongside the recreational path, and both the dry and watered creek portions, there will be benches as mentioned in the pathway segment. These are to be provided as spots for rest and reflection by users of the path as they spend time along the Scajaquada Creek trail. An example of the relation between the bench and the waterway is seen in the diagram on page 9. Also included at these stops will be informational stations in the style of large signs. Information included will be images of the Scajaquada Creek in the past, especially pictures concerning the Creek burial, explanations of daylighting, and other facts concerning the waterway beneath the user. A prime location for where benches and signs can be placed is along the path design by the corner of Countess Avenue and Heminway Street, right underneath the existing tree coverage, as seen on the map on page 8 of the this proposal. Another location for both signs and benches would be at the entrances to the walkway and park, along Genesee and Sprenger roads.

## Branding:

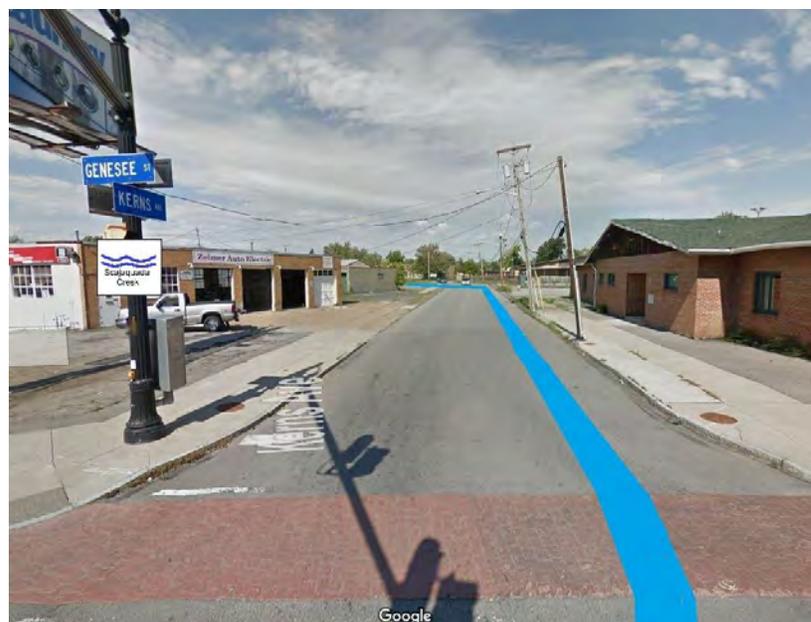
To help connect this daylighting project to the rest of Scajaquada Creek, an explicit branding program should be undertaken to unify all parts of the Scajaquada Creek and the Scajaquada Drain paths. A simple branding effort can be made by using a logo that is placed on signs alongside the path of the Scajaquada Creek. This sign can be posted at the entrances to the Schiller Park path, and then again heading into the residential streets and neighborhoods along Kerns Avenue. Other locations include the linear parks above the Drain between Fillmore Avenue and Main Street, and the Scajaquada Creek Bike Path which follows the waterway from Delaware Park to the

mouth at the Black Rock Canal. The use of the branding symbol should not be limited to locations mentioned in in this proposal.



*Potential Scajaquada Creek Logo.*

Another source of branding, and to directly tie the walkway and dry bed of Schiller Park into the rest of Scajaquada Creek, is a painted strip along the Kerns Avenue, leaving Schiller Park to go west. This would be reminiscent of the Blue Road in The Netherlands, but narrower strip in order to cover more distance. This strip would act as a continuation of the dry stream bed and the fountain as a representation of the actual creek below.



Example of blue Daylighting strip and Scajaquada Creek brand sign on signpost along Kerns Street, leaving the park

If a community member is traveling along any path that intersects with the Scajaquada Creek, they may observe this signage or paint strip and observe that they are connected to something else. If they choose to follow the line and signs, a resident could travel from Forest Lawn to Schiller Park and back, observing the changes in the waterway from the nature resembling surface waters at Forest Lawn to the symbolic daylighting of a buried waterway. The information provided through visual cues will provide context for a waterway that otherwise is completely out of sight and out of mind.

#### Conclusion:

As Buffalo continues to experience a revival in jobs, growth, and cultural assets, creating a new attraction, by highlighting an old city park and a historic geographic feature would fit right in with other projects being worked in the region, by tying in the old and forgotten to the new. A reworked Schiller Park, containing a pleasant and informative park based on the Scajaquada Creek would also allow residents of the East Side to participate in and experience the Buffalo Renaissance visible elsewhere in the city.

If greater funds become available and residents of the area around Schiller Park would like to fully daylight Scajaquada Creek, the space available makes this a feasible future option for the site. Any full daylighting plan is strongly contingent upon the cleaning Creek of sewage and chemical contaminants from overflow situations and preventing overflow events in the future. When water quality is increased, any new daylighting designs could additionally function as a natural filter for the creek as the water flows through the park, improving the quality before the water continues downstream towards Black Rock. Regardless of the final outcome of the design, any

daylighting in Schiller Park will be a benefit to the neighborhood and its residents who have been separated from Scajaquada Creek for nearly a century. Reconnecting a neighborhood and a city to the existence of an original water way, culturally and physically, is a worthy goal for improving Buffalo and the lives of residents within.

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# Enjoli Hall





# Restoring Connections

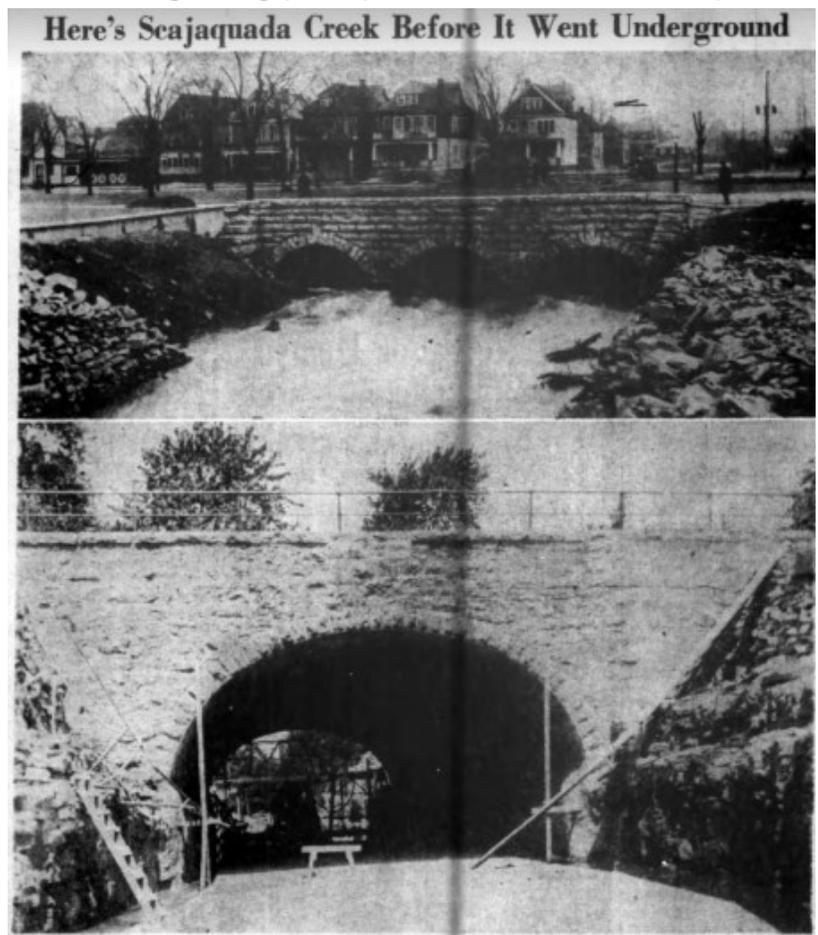
Pathways to Placemaking along  
the Scajaquada Creek Drain

Enjoli Hall  
URP 581  
Fall 2016

# Executive Summary

This report provides several frameworks to guide and inform priorities and principles for planning and design interventions along Scajaquada Creek in Buffalo, New York. Through the lenses of preservation planning, cultural landscapes, and environmental justice, Scajaquada Creek is understood as a product of its time and as an illustration of aspects of Buffalo's heritage, both positive and negative. While the concept of urban stream restoration, specifically daylighting, conveys the breadth and depth of possible design interventions along the full stretch of Scajaquada Creek in Buffalo, a review of existing plans for Scajaquada Creek reveal that the Scajaquada Drain has been largely ignored as a site for possible intervention.

The aforementioned planning frameworks, along with the findings of historic research, map analysis, character-defining features and cultural zones identification produced over the course of this semester, are "overlayed" to articulate a series of guiding principles to inform the development of planning priorities and a hierarchy of both design interventions and target areas along the project area. Using examples from across the United States and other countries, five design interventions are identified for the cultural restoration of the Scajaquada Drain: street painting, sonic daylighting, manhole covers, sidewalk enhancements, and wayfinding markers. The design interventions are mapped onto the project area to illustrate the possibilities for preservation and development of the creek and communities together. Proposals for each distinctive cultural zone identified along the Scajaquada Drain are discussed within the context of the history, land use, and character-defining features of the zone. The report concludes with a discussion of the importance of community engagement and public education alongside planning and design interventions to promote community stewardship and sustainable restoration projects.



Above: Bridges over Scajaquada Creek near the intersection of Humboldt Parkway and Northland Avenue before it was buried in the 1920s

(Source: Fulton History)

# Introduction:

## Scajaquada Creek Uncovered

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**“Thousands of Buffalonians cross a bridge on Main St. every day and don’t know it. Other hundreds have a creek in their backyards and don’t know it. This is Scajaquada Creek which begins in the Town of Lancaster, takes a nose dive underground in Cheektowaga and comes to the surface in Forest Lawn Cemetery. The subterranean creek is not one of nature’s freaks, but a 4½ million dollar flood control and sanitation project. Although it was less than 30 years ago that the historic creek was covered up, only a small segment of the population seems to remember much about it.”**

**—Buffalo Courier-Express, January 20, 1952**

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There is a creek that runs through the heart of the City of Buffalo, and to trace its course is to encounter the ebb and flow of the city’s history laid out along a curvilinear path. One may encounter some challenges following the course of the Creek—it has been buried, covered, overgrown, overlooked, and underutilized—but with some knowledge and direction, one can walk its length in a day or two. Scajaquada Creek is perhaps the most degraded, obscured, and untapped waterfront resource in the Western New York region. Scajaquada Creek runs through or in close proximity to many residential neighborhoods, as well as major educational and cultural institutions in the City. The Creek plays a critical role in the physical and cultural fabric of communities even where it is buried through street names and alignments, and the creation of linear green spaces and pathways.



Left: Completed sections of the Scajaquada Drain before being covered, 1924

(Source: Western New York Heritage Press)

While some recent studies have focused on the ecological condition of the Creek, the aim of this project is to uncover Scajaquada Creek as a significant cultural landscape in Buffalo through identification and preservation of historic and cultural resources along the Creek. Unlike traditional planning processes, preservation planning for cultural landscapes emphasizes conducting historic research using primary sources in order to “read the landscape” in its context of place and time. In addition to the landscape’s existing conditions and future land use patterns, its ability to convey historic significance is also considered when developing design guidelines and proposals.

# Preservation Planning for Cultural Landscapes

This study and analysis of Scajaquada Creek is organized around a preservation planning framework that establishes historic contexts for the identification, interpretation, and treatment of resources in an area. Historic contexts describe the significant patterns of development in an area, addressing pertinent environmental, economic, cultural, technological, architectural, and governmental factors that have influenced the development of an area. Unlike general background information, historic contexts are the lenses through which planning and design interventions are developed and justified. This planning framework is consistent with, and builds upon, guidelines established by the National Park Service for historic resources and cultural landscapes.

Cultural landscapes have emerged as an important concept in preservation planning that emphasize the evolution of human relationships with the natural world and the balance between natural and cultural heritage in place as central to the concept. **The National Park Service, a bureau of the U.S. Department of the Interior that develops standards and guidance on preserving and rehabilitating historically significant resources, defines a cultural landscape as “a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.”**

The National Park Service issues technical briefs and compiles resources that provide guidance for identifying, documenting, evaluating and preserving cultural landscapes within the context of preservation planning. Guidance emphasizes the value of multidisciplinary approaches and community stewardship for the preservation of cultural landscapes. Unlike traditional planning processes, preservation planning for cultural landscapes emphasizes historic research using primary sources in order to “read the landscape” in its context of place and time. In addition to the landscape’s existing conditions and future land use patterns, its ability to convey historic significance should also be considered when developing design guidelines and proposals. Successful approaches to preservation planning of cultural landscapes recognize cultural as well as natural values, sustain traditional connections to place, and engage people in stewardship where they live, work, and play.

Scajaquada Creek as a historic cultural landscape in the City of Buffalo reflects the historical significance of water resources, industrial activity, park systems, and walkable neighborhoods in the physical development of the city as well as its sense of place and identity. Conditions along the creek and its shores reflect the significant challenges of pollution, vacancy and abandonment, economic restructuring, and social inequality that threaten the existing and future prosperity and sustainability of the city.

Sources:

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# Urban Stream Daylighting and Cultural Restoration



Graphic depicting range of daylighting interventions including architectural restoration and natural restoration (Source: The River Management Blog)

Design guidelines to "uncover" Scajaquada Creek as a historic cultural landscape in Buffalo build on concepts of urban stream restoration and daylighting to explore opportunities for enhanced public access to and engagement with the physical and cultural resources of the Creek. At the outset of this project, a major goal was to assess the feasibility of physically daylighting portions of Scajaquada Creek where it is buried. However, research into historic and existing conditions of the Creek revealed patterns of urban development and issues of stormwater management that pose significant challenges to physical daylighting at this time. Fortunately, the concept of daylighting encompasses a multitude of interventions to increase access to buried streams. While the term daylighting generally describes projects that deliberately expose some or all of the flow of a previously covered stream, some daylighting projects do not entail significant physical alterations to buried streams.

Cultural restoration is the acknowledgment of a buried stream through markers or public art used to inform the public of the historic stream path and restore the stream to human consciousness, although the stream remains buried. Design interventions focused on cultural restoration offer important benefits as a first step towards more large-scale daylighting projects of the Creek. Since cultural restoration does not entail significant physical alterations and can be implemented at a range of scales, it can be useful for small-scale initiatives, immediate action, projects with short timelines and limited budgets, and community-led initiatives. This project offers the opportunity to enhance understanding of cultural restoration as a significant and valuable form of daylighting and urban stream restoration.

Source:

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# What are we doing in Buffalo?

There are countless examples of urban stream restoration and daylighting from across the United States and around the world that provide useful precedents for understanding the conditions, costs, partnerships for successful projects that bring a range of benefits to communities. However, when it comes to identifying precedents for Scajaquada Creek, there are many examples of planning and activities that are already occurring. While it is helpful to learn from other contexts, it is also important to be aware of activity that is already happening. In recent years, there have been consistent efforts to revitalize Scajaquada Creek and the areas along its banks. These efforts have included art installations, kayak launches, multi-use trails, historic markers, informational brochures and public tours, and museum exhibits, reflecting the cultural restoration of Scajaquada Creek in public consciousness.

Right: "Vision of Olmsted" mural at McKinley High School Scajaquada Pathway trail near Elmwood Avenue and Amherst Street provides vibrant art public art that celebrates City's historic and cultural assets adjacent to the creek

(Source: Black Rock Historical Society)



Right: Scajaquada Pathway (now Jesse Kregal Pathway) is a multi-use recreational trail along Scajaquada Creek from Delaware Park to the Niagara River. The two-mile pathway serves as the only dedicated public access to the Creek.

(Source: Jesse Kregal Pathway Committee)



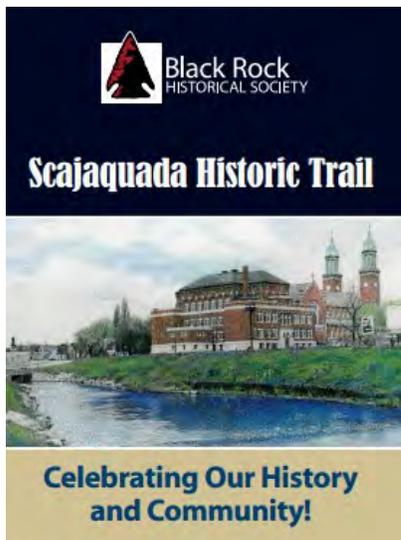
Right: Rendering for planned kayak launch site and mini park at the mouth of Scajaquada Creek to increase public access to and recreational use of the Creek

(Source: Buffalo Niagara Riverkeeper)



# What are we doing in Buffalo? (cont.)

Community engagement is vital to the process and outcomes of planning and design interventions such as those listed. Without the active engagement of existing residents, groups, and organizations in areas where interventions are proposed, not only may the intervention never be realized, but even if it is, it may not have the intended or desired effect of raising public awareness or consciousness of the Creek. Design interventions should be accompanied by efforts such as workshops, museum exhibits, community meetings, and classroom lessons that enhance community understanding of history and neighborhood development. At the same time, discussion of “daylighting” Scajaquada Creek, whether the conversation centers around natural restoration or cultural restoration or something in between, cannot ignore the ecological and hydrological condition of the Creek and the primacy of cleaning up the creek.



Above: Brochure for Scajaquada Historic Trail created by Black Rock Historical Society in 2015 includes a map and images of important historic and cultural assets in the Black Rock and Grant-Amherst areas

(Source: Black Rock Historical Society)

Below: Local artist Alberto Rey's 2014 exhibition "Biological Regionalism" featured a series of paintings on Scajaquada Creek as an important yet obscured natural resource in Buffalo

(Source: Burchfield Penney Art Center at SUNY Buffalo State)



Left: Stormwater drain stencil "Dump no waste, drains to Scajaquada Creek"

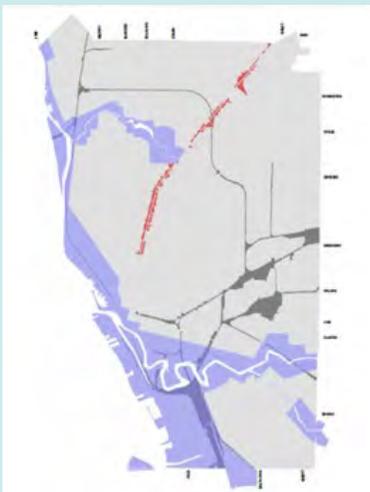
(Source: Buffalo Rising)

# Local Planning Precedents



Above: Rendering of community vision for Black Rock Harbor (Source: City of Buffalo)

A review of recent plans and proposals reveals that there are already many ideas about what should be done to some areas of Scajaquada Creek, particularly at the mouth of the Creek in West Scajaquada and Black Rock Harbor, as well as the sections of the Creek that run in between the Scajaquada Pathway and Scajaquada Expressway. Indeed, the public awareness of the Creek is reflected in the trail and highway names. The guidelines and proposals developed in this project should be in conversation with these existing proposals that are often community-driven and have stakeholders and support behind them. More significantly, this project should direct its attention and that of the general public to possibilities for enhancing public access to and interaction with the Creek in the areas east of Main Street. The neighborhoods and areas east of Main Street confront a number of challenges, including high rates of vacancy and abandonment, economic disinvestment, and lack of employment and recreational opportunities. Therefore, consideration to proposals that can bring increased investment and opportunity to these areas and restore community connections not only to the Creek but also to other amenities and improve overall quality of life should be taken seriously as this project moves forward.



Despite a wealth of planning activity around the Creek and area waterways, most maps do not feature the Creek where it is buried.

(Source: City of Buffalo)

# Local Planning Precedents, 2006-16

A Vision for Black Rock Harbor – West Scajaquada (2016)

Unified Development Ordinance (2015)

Local Waterfront Revitalization Plan (2014)

Tonawanda Street Corridor Brownfield Opportunity Area – Step 2 (2014)

Buffalo Sewer Authority Long Term Control Plan (2014)

Grant-Amherst Community Plan (2013)

Green Infrastructure Solutions to Buffalo's Sewer Overflow Challenge (2011)

Buffalo State College Facilities Master Plan (2010)

Master Plan for the Richardson Olmsted Complex (2009)

Buffalo Niagara: Where Industry Creates Energy (2009)

The Olmsted City – Buffalo Olmsted Park System: Plan for the 21st Century (2008)

Historic Black Rock: War of 1812 Bicentennial Community Plan (2008)

Bicycle and Pedestrian Master Plan for Erie and Niagara Counties (2008)

Buffalo Waterfront Corridor Initiative (2007)

Niagara River Greenway Plan (2007)

Black Rock-Riverside Neighborhood Plan (2007)

East Buffalo Neighborhood Plan (2007)

New York State 2030 Transportation Master Plan (2006)

Erie Niagara Framework for Regional Growth (2006)

Buffalo River Greenway Vision and Implementation Plan (2006)

Blueprint Buffalo: Strategies for Reclaiming Vacant Properties (2006)

East Delavan Neighborhood Plan (2006)

Buffalo Comprehensive Plan (2006)

# Story of Scajaquada Creek Drain

Scajaquada Creek runs through a fairly representative sample of Western New York's landscapes: as meandering creek, flood-control channel, and cement tunnel, through second- and third-ring suburbs, under shopping malls and interstates, under some of the least expensive and past some of the most expensive real estate in Buffalo, past landmarked historic sites and a disinvested low-income neighborhoods. What is called the "lower" creek, which flows from Forest Lawn Cemetery to its mouth in the Black Rock Channel, has been the subject of recent studies, surveys, cleanups, proposals, and public art installations. The Creek runs through Delaware Park, a massive Olmsted-designed greenspace that is managed by a private not-for-profit and bordered by mansions. Most of its lower length is traced by a multi-use recreational trail named after Jesse Kregal, who long advocated for its creation. This section of the Creek is far from healthy—it suffers from historic and persistent chemical contamination and is lined by combined sewer overflows. However, it is ultimately the section of the Creek that has had the most, and most consistent, attention from both policymakers and community advocates. On most modern maps of Scajaquada Creek, the line of the Creek is broken as it crosses the city limits into Buffalo. From Pine Ridge Road moving westward to Main Street, the Creek seems to disappear. This broken line is Scajaquada Drain.



Preparation for Scajaquada Drain project, 1924

(Source: Western New York Heritage Press)

Across the country at the turn of the twentieth century, rapidly urbanizing and expanding cities such as Buffalo had a problem. Open channels of water became easy dumping grounds for trash and other waste, and as the cities grew, the flow of these waterways became insufficient to flush away the waste. By the 1920s, Scajaquada Creek had become an open cesspool, and the Buffalo Sewer Authority began the near-decade-long process of covering the Creek. The project, which dug down into the bedrock below the Creek as much as thirty feet and built a large cement tunnel some fourteen feet high and thirty feet wide, represented the contemporary approach to resource conservation and public health protection. The Creek had become a nuisance to residents, and residents had become a threat to the Creek, so the two were separated with cement and steel. The intricate hydrology of Forest Lawn Cemetery complicates what would otherwise be an open-and-shut case, a simple story of the burial of an urban stream. Many urban waterways have disappeared in this way, absorbed into the sewage infrastructure and preserved only in place names. The cemetery's hills contain a number of natural springs which refill the otherwise-empty creek bed and the Creek survives, gently trickling out of the cemetery and toward the Niagara River.

Source: Margaret Fess, "Thousands Cross Main St. Bridge and Never Know It," *Buffalo Courier-Express*, January 20, 1952, Accessed December 4, 2016, <http://fultonhistory.com/Newspapers/21/ Buffalo NY Courier Express/ Buffalo NY Courier Express 1952/ Buffalo NY Courier Express 1952 - 0711.pdf>.



Steel beams sourced by local industry laid across culver, ca. 1920s

(Source: Western New York Heritage Press)

# The Environmental Justice Challenge

The Kensington Expressway is almost universally regarded as a short-sighted misstep and policy failure in Buffalo's history, but one wonders if the burial of Scajaquada Creek will ever be talked about in a similar way.

The burial of the Creek has been normalized in the City's history, seen as a natural step towards urbanization and modernization in the early twentieth century. The concept of environmental justice affirms the need for urban ecological policies to clean up and rebuild our cities in balance with nature, honoring the cultural integrity of all our communities, and providing fair access for all to the full range of resources offered by the natural environment to promote equitable opportunity for health, recreation, and high quality of life. Many people criticize mid-twentieth century urban renewal for the ways that it tore apart the historic, social, and physical fabric of communities, particularly low-income communities of color in central cities. But perhaps we might write a new chapter in which we consider the burial of urban streams in the early twentieth century in a similarly reflexive fashion and strive to learn from the missteps of the past.

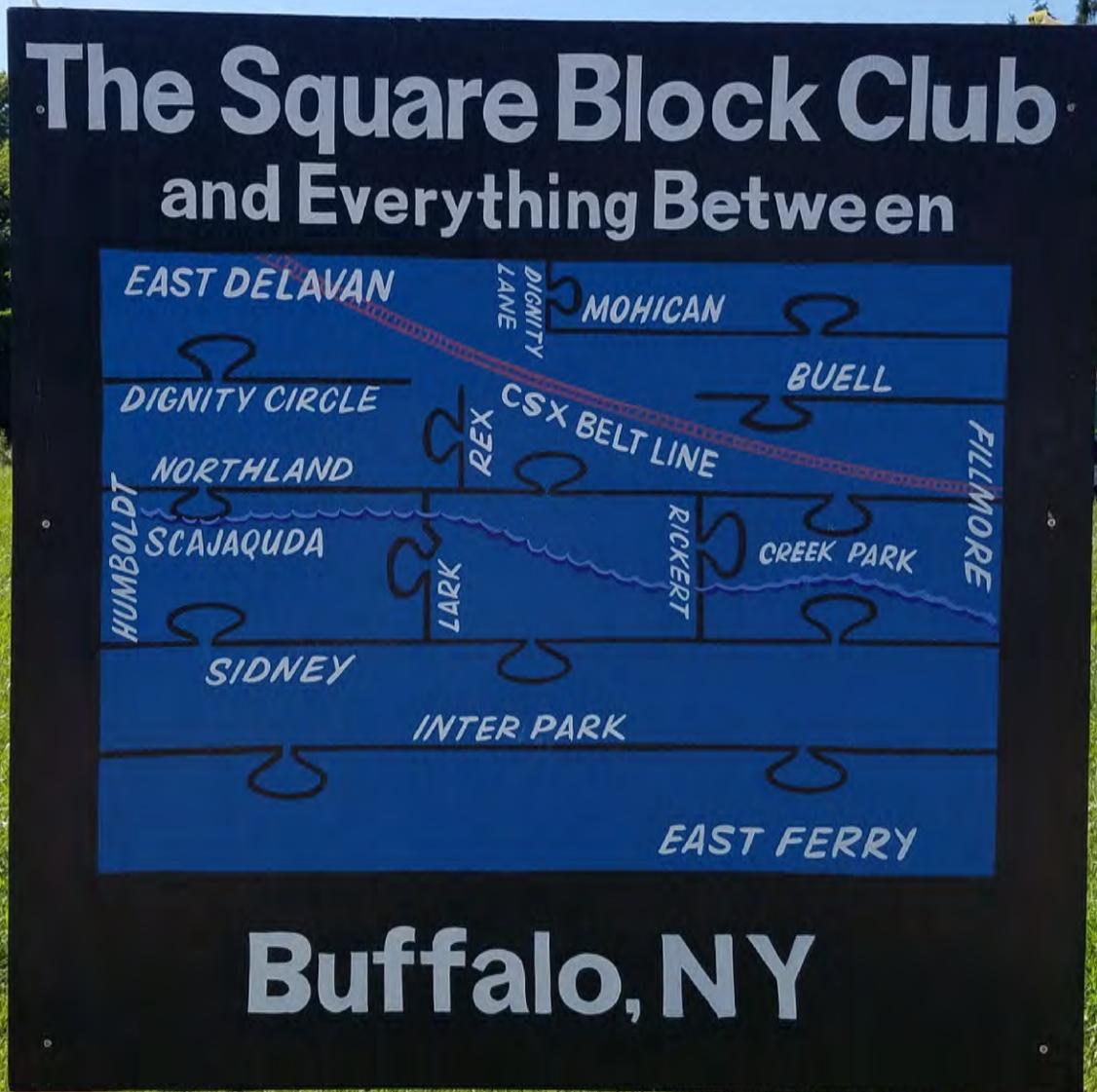
An important steps towards both urban stream restoration and central city revitalization is to devote greater attention and resources to the areas of Scajaquada Creek where it is covered. However, the best solution for these areas may not be to literally daylight the Creek. Ironically, the burial of the Creek has allowed for the creation of a series of pathways that promote walkability, connectivity, recreation, and green space in neighborhoods that suffered a major loss of these amenities and features with the installation of the Humboldt Expressway. A physical daylighting of Scajaquada Creek would destroy a vital and under-tapped resource and unique physical feature of this community.



Top: Humboldt Parkway in 1912, looking north from East Utica (from a brochure advertising Hamlin Park);

Bottom: The Kensington Expressway occupies almost the same width as the Parkway once did. (Source: Buffalo Rising)

# 5 Design Interventions for the Scajaquada Drain



Neighborhood sign featuring map of the residential blocks bounded by Humboldt Parkway to the west, Fillmore Avenue to the east, East Delavan Avenue to the north, and East Ferry Street to the south. Note the identification of Scajaquada Creek and the Belt Line on the map (Source: Jared Parylo)

# 1

## Street Painting



Street painting is a relatively inexpensive way to highlight the presence of a creek flowing underneath a street (or other paved surface such as a sidewalk or parking lot). Paintings can be temporary or permanent installations initiated by community groups or government agencies. Regardless, they serve as an artistic and colorful method of bringing public art and increased awareness to a community of its hidden history and resources.

Above: In Salt Lake City, Utah, students painted a creek overtop a culvert of the Jordan River to illustrate ideas within the channel, providing a canvas for creative expression and public engagement. (Source: Seven Canyons Trust)



Left In Houston, Texas, student teams created a series of artistic installations along the path of the buried Japhet Creek to restore the idea of the creek as a natural resource rather than dumping ground (Source: Society for Experiential Graphic Design)



Above: In Buffalo, New York, a community group led a walking tour of the buried Scajaquada Creek drain and marked the path of the creek with chalk markings that symbolize water. (Source: Beyond the Multitude Inspection, Maintenance, and Tourism Agency)



Above: In Athens, Georgia, students painted a meandering stream on top of campus sidewalks to draw campus attention to streams flowing directly beneath the ground as a first step towards more permanent installations and markings once public awareness is enhanced. (Source: University of Georgia)

## 2

# Sonic Daylighting



Left: In Buffalo, New York, a community group inserted a pipe into a manhole cover atop buried Scajaquada Creek in order to hear the water. The group is interested in exploring the possibility of installing a permanent device connected to the manhole covers in a public park where the culverts run through.

(Source: Beyond the Multitude Inspection, Maintenance, and Tourism Agency)

Sonic daylighting draws public attention to the significance of aural, as well as physical and visual, connections to the creek. Even in portions of creeks that are open to the air, elements of the surrounding built environments such as highways or active rail lines may dull the sound of the flowing water and reduce or disrupt the human sensory experience of the stream. The potential for sensory disconnection becomes even more pronounced where the creek is buried. While the visual disconnect is perhaps most obvious, community groups in several cities have developed devices and installations to draw people's attention to creeks flowing underground through the use of sound, whether natural or artificial.

Right: In San Francisco, California, a public art installation as part of a street festival sought to reveal forgotten and invisible waterways of the city through sonically and visually highlighting the underground Hayes Creek that runs beneath the festival grounds. The artist collected sounds of other local waterways and created a recording that played on a continuous loop in speaker boxes affixed to light posts.

(Source: Instructables)



# 3

## Manhole Covers



Above: In Brescia, Italy, an association has replaced existing manhole covers above historic underground river tunnel with tempered glass that allows passersby to observe the course of the river flowing underground. The association was motivated to increase public consciousness of “ancient urban rivers” that they view as an important source of local culture and history. (Source: Brescia Underground)



Above: Concept design for Sewer Viewer Periscope street viewing station for underground rivers flowing in mainline sewers underneath New York City, New York streets. The idea is to install a viewing station machine atop a manhole to allow passersby to look into the machine and see the water flowing underground. (Source: CUNY Institute for Sustainable Cities)



Above Several designed manhole covers from Asia, including an ornate nature scene painted on a manhole cover to highlight scenic natural resources in Osaka, Japan (top left), and renderings for wayfinding systems with directions to local destinations on manhole covers (top right, bottom). (Source: Pinterest)

Some designers have also proposed using manhole covers as an existing surface for the installation of public art to highlight buried streams and other natural resources in urban environments. Manhole covers have also been identified as good potential sources for wayfinding systems for buried creeks to highlight their obscured path and provide directions to continue along the path. Manholes also provide aural connections to buried streams and are useful existing materials for sonic daylighting interventions. Examples from other countries such as Italy and Japan illustrate the creative design and decoration of manhole covers to draw attention to streams flowing underground.

# 4

## Sidewalk Enhancements



Sidewalk enhancements or improvements include design features to alter the shape of sidewalks as well as street furniture such as lighting and benches to create amenities and recreational opportunities along sidewalks and enhance feelings of public safety. Sidewalk enhancements are a relatively inexpensive, subtle, and official method of designating the historic path and significance of buried streams.

Above: In Frankfurt, Germany, sidewalk enhancements were used as a placemaking revitalization strategy in a waterfront area. Curvilinear paths mimic a meandering stream to signify and enhance the character of the waterfront area. (Source: Pinterest)



Left and above: In Portland, Oregon, the city government in partnership with community groups sought to acknowledge its history of missteps regarding combined sewer overflows and stormwater management, specifically the burial of Tanner Creek. There are now several reminders of the creek flowing underground through the installation of permanent placards in the sidewalk to mark the path of the creek's historical channel. (Source: City of Portland)

# 5

## Wayfinding Markers



Above: In Queens, New York, a sculpture park was created along the path of the historic and now submerged Sunswick Creek. Decorated vertical poles with attached informational signs trace the path of the creek through a neighborhood. (Source: City as Living Laboratory)

Below: Similar idea of vertical sculpture park at entry to Toomuc Creek wetland reserve in Edenbrook, Australia (Source: Pinterest)



Right: Sign and interpretive program with area map and images for Little Sugar Creek Greenway in Charlotte, NC highlights wayfinding and linear parks as key features of urban stream restoration (Source: Pinterest)

Right: In Mannheim, Germany, a small placard is installed in the sidewalk as a wayfinding marker to point passersby in the direction of a local amenity. A similar approach could be taken for a buried stream path.

(Source: Pinterest)



Wayfinding markers are a broadly defined category including both graphic and architectural features, such as signs, pathways, sculptures and more, that allow people to determine their location within a setting, determine their destination, and develop a plan that will take them from their location to their destination.



# Character-Defining Features of the Scajaquada Creek Drain Zones

Site visits, historic research, and spatial mapping throughout the semester informed the development of character-defining features and cultural zones along Scajaquada Creek. Character-defining features refer to distinctive aspects of the Creek itself and its surrounding context that reveal important ecological conditions, historic events, land use patterns, modes of transit, and economic and cultural activities of the Creek and the City. The following list of character-defining features focuses exclusively on the Scajaquada Creek Drain. The list is not exhaustive nor are categories mutually exclusive. The following features are interpretive and subject to further debate and refinement, but their definition serves as a key step towards identifying appropriate design interventions and their placement along the drain. Collectively, this set of character-defining features illustrates the varied nature of land use, human activity and human connection along Scajaquada Creek where it is currently covered.

**Industrial buildings**

**Pathways**

**Neighborhoods**

**Streets**

**Linear parks**

**Green spaces**

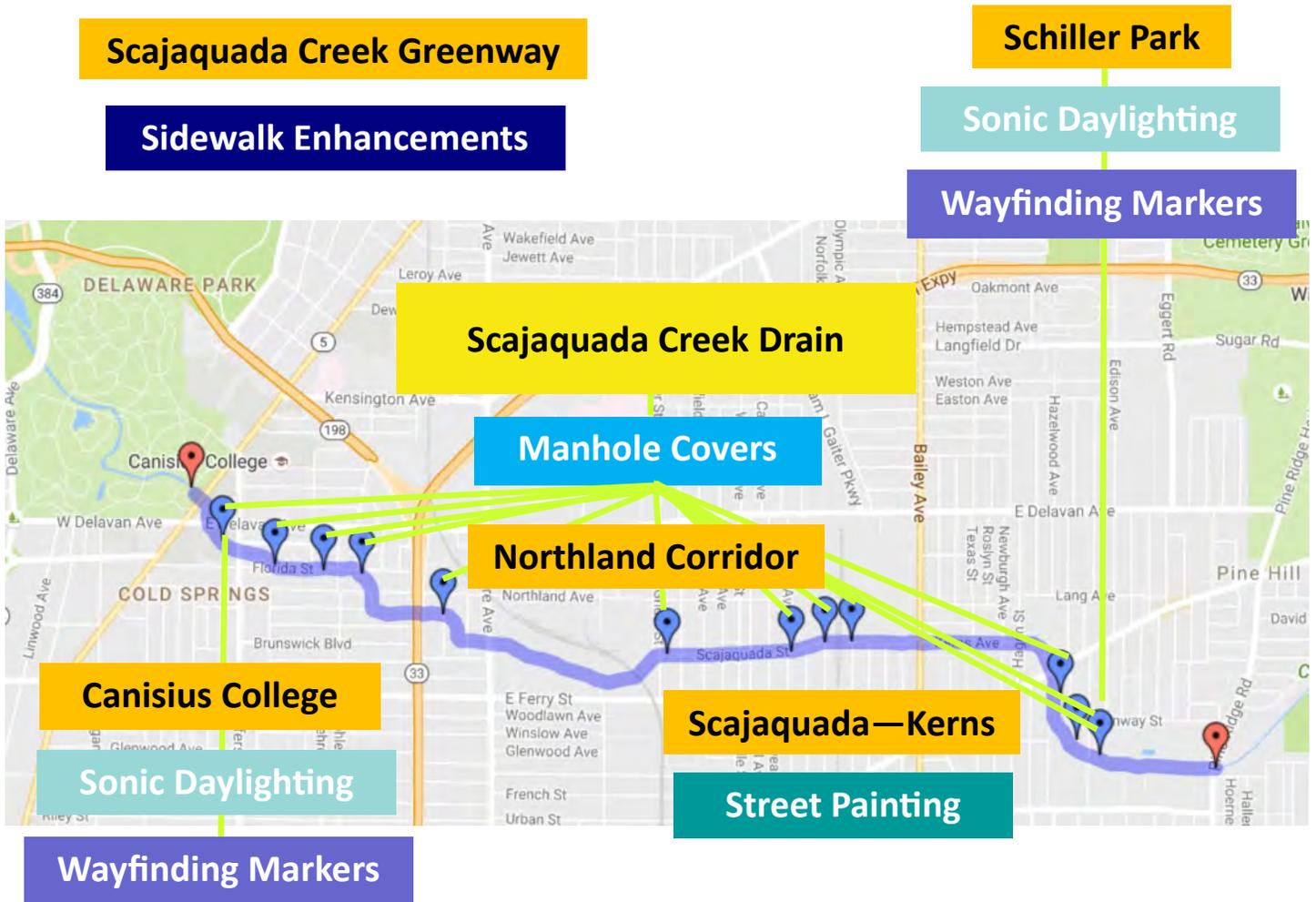
**Manhole covers**

**Vegetation**



Manhole cover (above); industrial building, linear park, street alignment all on top of buried creek path (right). (Source: Jared Parylo)

# Design Proposals for Scajaquada Creek



Given that the Creek is covered, it becomes challenging for the average person in these sections to know that there is a creek buried underground and to follow its path. In some ways, there are already existing wayfinding markers in the environment in the form of ribbon parks that run atop the culverts where the Creek is buried. Additionally, manhole covers that when you walk by you can hear the sound of running water hint at the Creek's presence and can help a person determine where the path of the buried Creek is. Street alignments with sharp twists and turns such as that of Florida Street reflect the path of the Creek and development that built around rather than atop of the Creek. Additionally, the street name of Scajaquada Street provides an indication of the Creek running beneath the street. All of these existing features function informally and somewhat disjointedly to act as a wayfinding system of markers for the Scajaquada Drain. A key design principle and challenge is to create connections among these markers and foster transitions for a more unified and clearly marked physical, visual, and aural experience of the Creek where it is buried. Additionally, the existing features are already embedded into the built environment and possibly community consciousness in such a way that future interventions are building off of and enhancing existing features rather than adding new features to the environment, which does not act to restore the original form and function of the Creek in these areas, but may act to preserve and restore the existing fabric of the community.



Jenna Hart







# **DESIGN INTERVENTIONS FOR THE SCAJAQUADA CREEK GREENWAY**

University at Buffalo  
Graduate Planning Studio  
Fall 2016  
Jenna Hart

## INTRODUCTION

Scajaquada Creek is a 15.7 mile creek in Erie County, of which 6.7 miles flows through the City of Buffalo. Of that, 3.7 miles is a buried stream flowing under a tunnel. The stream was buried starting in 1923 due to major pollution and flooding issues. Pollution stemmed from people using the creek as a trash dump, as well as the combined storm and sewer systems in the City of Buffalo and adjacent Town of Cheektowaga which lead to sewage being dumped into area streams during high precipitation events. The buried stream, the continued combined sewage overflows, and dumping over the years have led to a host of environmental problems in Scajaquada Creek including botulism in animals, poor wildlife habitat, and unpleasant smells.<sup>1</sup> Though some improvements to the corridor have been made, including the installation of the Scajaquada Pathway along the downstream stretches of the creek, as well as stream assessments and stability studies along portions of the creek that flow through Forest Lawn Cemetery, design interventions still need to be made. The biggest remaining issues that plague Scajaquada Creek are the persistent water quality issues, lack of access to the creek for the sections that are above ground, and the disconnection along the creek corridor that fosters unawareness that the creek even exists.

With these problems in mind, three design goals are proposed to improve the health of the creek and improve the relationship between the creek and surrounding residents in the City of Buffalo and beyond. These thematic goals are 1) water quality, 2) access and connection, and 3) branding. In order to best achieve these goals, a better understanding of the project area surrounding the creek is needed. The creek corridor is divided into seven cultural zones, which each have unique characteristics that define their landscapes while still maintaining the overall cultural landscape of the Scajaquada Creek corridor. These cultural zones are A) West Scajaquada, B) Delaware Park, C) Forest Lawn Cemetery, D) Scajaquada Greenway, E) Northland Industrial, F) Scajaquada-Kerns, and G) Schiller Park. Figure 1 depicts the cultural zones in relation to the creek.

The West Scajaquada cultural zone includes the mouth of the creek that empties into the Black Rock Canal and then the Niagara River. This section of the creek also contains the location of the Battle of Scajaquada Creek, which was an American-won battle in the War of 1812 that took

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<sup>1</sup> Margaret Wooster, *Living Waters: Reading the Rivers of the Lower Great Lakes*, SUNY Press, 2009.

place near Niagara Street and the creek crossing during August 1814. Much of the land surrounding the creek in this zone is former industrial land. It also includes Buffalo State College and the Richardson Complex. The Scajaquada Pathway is a bike and pedestrian trail that follows along the northern shore of the creek for all of the West Scajaquada zone, and continues on in zones further east. It is riddled with overgrown vegetation and mass swaths of invasive species that choke the shoreline. The mix of uses in this zone contribute to the diverse character of the zone.

The Delaware Park cultural zone is made up of Delaware Park south of the Scajaquada Expressway, and also includes the Buffalo History Museum and Albright Knox Art Gallery as the architectural, historical and cultural significance of these three places are intertwined. Starting at Mirror Lake on the grounds of the History Museum and throughout much of this zone, Scajaquada Creek is tunneled due to its polluted corruption of both Mirror Lake and Hoyt Lake at Delaware Park. The creek peaks back up at the eastern edge of the zone. Forest Lawn Cemetery inhabits its nominal zone and is characterized by manicured and picturesque grounds, a hardscaped channelized creek shoreline, and is also the zone where Scajaquada Creek goes underground once more entering into the buried section of the stream. The Scajaquada Greenway zone is the first fully buried section of the creek. This zone contains two linear parks that follow the pathway of the buried creek. Much of the rest of this zone is residential, pocket parkland, and streets.

The Northland Industrial zone is made up of current industrial lands that are private and not accessible to where the creek is buried. It is bounded to the north by the Belt Line rail corridor. The Scajaquada-Kerns cultural zone follows the buried creek on its path along Scajaquada Street and Kerns Avenue. There is a section on Kerns Avenue where the pre-buried creek corridor remains undeveloped on due to its use as a City-owned right-of-way. Lastly, the Schiller Park zone is made up of Schiller Park and the grounds of Villa Maria College. The park is mostly an empty field, with a small playground and basketball court on the southern end. A walking path follows above the buried creek through sections of the park, but there is no indication that a stream exists there otherwise. The creek finally emerges from its buried tomb just east of this cultural zone in the Town of Cheektowaga.

With the design goals of water quality, access, connection, and branding in mind on top of the aforementioned cultural zones, design interventions are needed. Figure 1 shows the location of the interventions as well as the cultural zones they are located within. The first design intervention is a shoreline revitalization of the Scajaquada Creek shoreline along the Scajaquada Creek Pathway in the West Scajaquada Zone. The primary goals for this intervention are to increase access to the creek, both visually and psychologically, and to improve habitat and water quality of the creek. The second intervention is to create branding and connection of the various cultural, historic and artistic assets in the Delaware Park zone by creating an Art and History Loop. The loop will be a bikeable and walkable path throughout the zone that will have stops at different institutions and artistic features and will include branded signage with information about each stop. The third intervention touches on branding and awareness of the creek, mainly in buried sections of the creek in the Scajaquada Greenway and Scajaquada-Kerns zones. This branding will include signage and use of manholes to bring awareness and connection to the buried parts of the stream. This intervention also ties into the creek overall, where branding initiatives through logos and signage will connect the entire Scajaquada Creek corridor project area. Lastly, to address water quality issues in the creek, green infrastructure techniques, particularly filter socks surrounding storm sewer grates, will be employed.



As part of the Scajaquada Creek corridor-wide branding initiative, a logo and name for the corridor has been created to more fully connect the corridor and bring a more focused awareness to Scajaquada Creek. The logo shows the creek path throughout the City of Buffalo and borrows the name of one of the cultural zones- the Scajaquada Creek Greenway. It is hoped that the entire corridor can be connected, first psychologically, and later physically through higher-intensive interventions. The logo and derived forms will be used for signage throughout the creek corridor.

Figure 2- Scajaquada Creek Greenway Logo



Graphic by Jenna Hart

## **SHORELINE REVITALIZATION**

Shoreline revitalization of Scajaquada Creek will occur along the Scajaquada Pathway that runs along the downstream stretches of the creek. This section contains a lot of overgrown vegetation (including invasive species) that blocks view of the creek and chokes the pathway. To achieve the goals of water quality, access and connection, there are two important components to implementing a shoreline revitalization of Scajaquada Creek. The components are 1) improving physical and psychological access to the creek, 2) removing invasive species from the shoreline. There are many spots along the Scajaquada Pathway that are overgrown

with vegetation. This overgrowth prevents users of the pathway from enjoying and experiencing the creek. Safety is also a concern, as there are spots that are so secluded by the vegetation that illicit activities occur and are encouraged. Figure 3 shows some of that overgrowth.

Figure 3- Obstructed view of Scajaquada Creek from the Scajaquada Pathway.



Image by Bradley Everdyke

Careful and selective landscaping of the shoreline would be beneficial to improve visual and psychological access to the creek from the pathway. It would also make users of the pathway feel safer, as the illicit activities will likely die down in these areas due to the exposure. It is important to not remove all vegetation from the riparian zone. Riparian vegetation has many benefits including bank stabilization from vegetation roots, better rain infiltration, and it provides habitat for fauna.

The 2005 stream restoration of Eighteenmile Creek in Niagara County can be looked to as an example of a project that improved access for people as well as increasing hydrologic and

ecological function. Eighteenmile Creek is a heavily polluted creek that suffers from heavy metal contamination as well as bacterial pollution from upstream combined sewer outfalls in the City of Lockport. The 2005 project took place on a quarter mile stretch of the creek that was already heavily used for fishing. Fishing activities are very common at this site due to the location being prime spawning ground for salmon. The restoration involved improving water quality and fish habitat in the creek, while also making access for humans easier and safer. Techniques included stream bank stabilization, improvement of existing hiking trails, as well as improving fish habitat.<sup>2</sup> Figure 4 shows the before and after conditions. Though the land uses are different surrounding Scajaquada Creek and Eighteenmile Creek, the Eighteenmile Creek project still demonstrates solid restoration work that made safer access for users, which is one of the major goals of this project.

Figure 4- Stream Restoration at Eighteenmile Creek in Niagara County, New York.



Image source: <http://www.oneregionforward.org/casestudy/revival-of-eighteenmile-creek/>

One major task of the shoreline revitalization of Scajaquada Creek in the West Scajaquada cultural zone would need to be the removal of large swaths of the invasive Japanese Knotweed. The plant grows on either side of the creek along its downstream reach. Figure 5 shows one section of the species' growth. Invasive species spread easily, especially along stream corridors, and overtake native plant species while creating a monoculture. The best management practices of this type of invasive are cutting and use of herbicide. Cutting must be done at least three times a year, and be done over a period of several years in order to achieve

<sup>2</sup> One Region Forward, "Revival of Eighteenmile Creek", 2013, <http://www.oneregionforward.org/casestudy/revival-of-eighteenmile-creek/>

success. Herbicide treatments done in late summer and early fall can be used in conjunction with cutting methods. This type of treatment must be done carefully to only target knotweed, as it can kill other species as well.<sup>3</sup> These techniques have been employed to varying degrees of success at several Western New York places including Joseph Davis State Park, Times Beach Nature Preserve, and Seneca Bluffs.

Figure 5- Invasive Japanese Knotweed growing along shore of Scajaquada Creek



Image by Jenna Hart

In order to ensure that vegetated riparian buffers stay intact after the landscaping and removal of invasives, planting of native species should be done along Scajaquada Creek in the West Scajaquada cultural zone. Grasses such as the Inland Sea Oat or the Virginia Wild Rye are species native to the area that would do well along shadier parts of the stream bank. Shrubs including the Black Chokeberry and the Buttonbush would foster bird habitat. It is suggested that existing trees along the shoreline not be removed. Plantings of trees are still encouraged.

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<sup>3</sup> NYS Department of Environmental Conservation, "Control Methods for Japanese, Giant and Bohemian Knotweed", Accessed 2016, [http://www.dec.ny.gov/docs/lands\\_forests\\_pdf/sfinvasivecontrol.pdf](http://www.dec.ny.gov/docs/lands_forests_pdf/sfinvasivecontrol.pdf)

The Red Maple is a native species that would do well along the stream bank, as well as the Pin Oak. Plants that would provide good ground cover to lessen soil erosion include the Foamflower which would also attract wildlife.<sup>4</sup> As the character of the creek changes between softscape banks to urban hardscape banks in some sections of Scajaquada Creek, examples of both type of shoreline are pictured below in Figures 6 and 7. These examples show pathways that allow ample visual, psychological, and physical access to their waterbodies while still maintaining vegetated riparian zones.

Figure 6- Emajogi River in Tartu, Estonia. Example of softscape riparian zone next to path.



Image by Jenna Hart

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<sup>4</sup> Buffalo Niagara Riverkeeper, *Western New York Guide to Native Plants for your Garden*, 2014.

Figure 7- Pilsetas Canal in Riga, Latvia. Example of urban hardscape riparian zone next to path.



Image by Jenna Hart

Landscaping to tame overgrown vegetation, removal of invasive species, and native planting will help improve water quality, habitat, access and connection throughout the West Scajaquada zone. Overall improvement in water quality by improving green and grey infrastructure in the Scajaquada Watershed to decrease the amount of combined sewer overflow events is also needed at a larger scale, but that is outside the scope of this intervention. Lastly, the Scajaquada Creek Greenway logo will be used on signs throughout the zone and Pathway to ensure branding and connectivity to the corridor as a whole.

### **CONNECTION- ART AND HISTORY LOOP**

The Art and History Loop follows existing pathways and aims to foster connection, access, and branded awareness to Scajaquada Creek, as well as the important features that are highlighted

on the loop. These features include cultural institutions, landscapes, and art. The three institutions are the Buffalo History Museum, the Marcy Casino, and the Albright Knox Art Gallery. These institutions are historically and architecturally connected through their ties to the 1901 Pan-American Exposition. The Buffalo History Museum building was designed by George Cary for the Pan-Am Exposition.<sup>5</sup> While the Marcy Casino was initially designed as a boat house as part of the original plans of The Park (now Delaware Park) by Frederick Law Olmsted and Calvert Vaux, it was reconstructed after a fire for the Pan-Am Exposition.<sup>6</sup> The Albright Knox Art Gallery was designed by E.B. Green for the Pan-American Exposition.<sup>7</sup> These historical links to the Pan-Am Exposition bring opportunities for funding and awareness, as the Exposition is one of Buffalo's proud historic moments in history. Dotted between the three institutions include stops at the Japanese Gardens on the history museum's grounds, a bust of Mozart, a replica statue of Michelangelo's David, the Rose Garden at Marcy Casino, and a statue of young Abraham Lincoln at Delaware Park. The Art and History Loop pathway and stops can be seen in Figures 8 and 9 respectively.

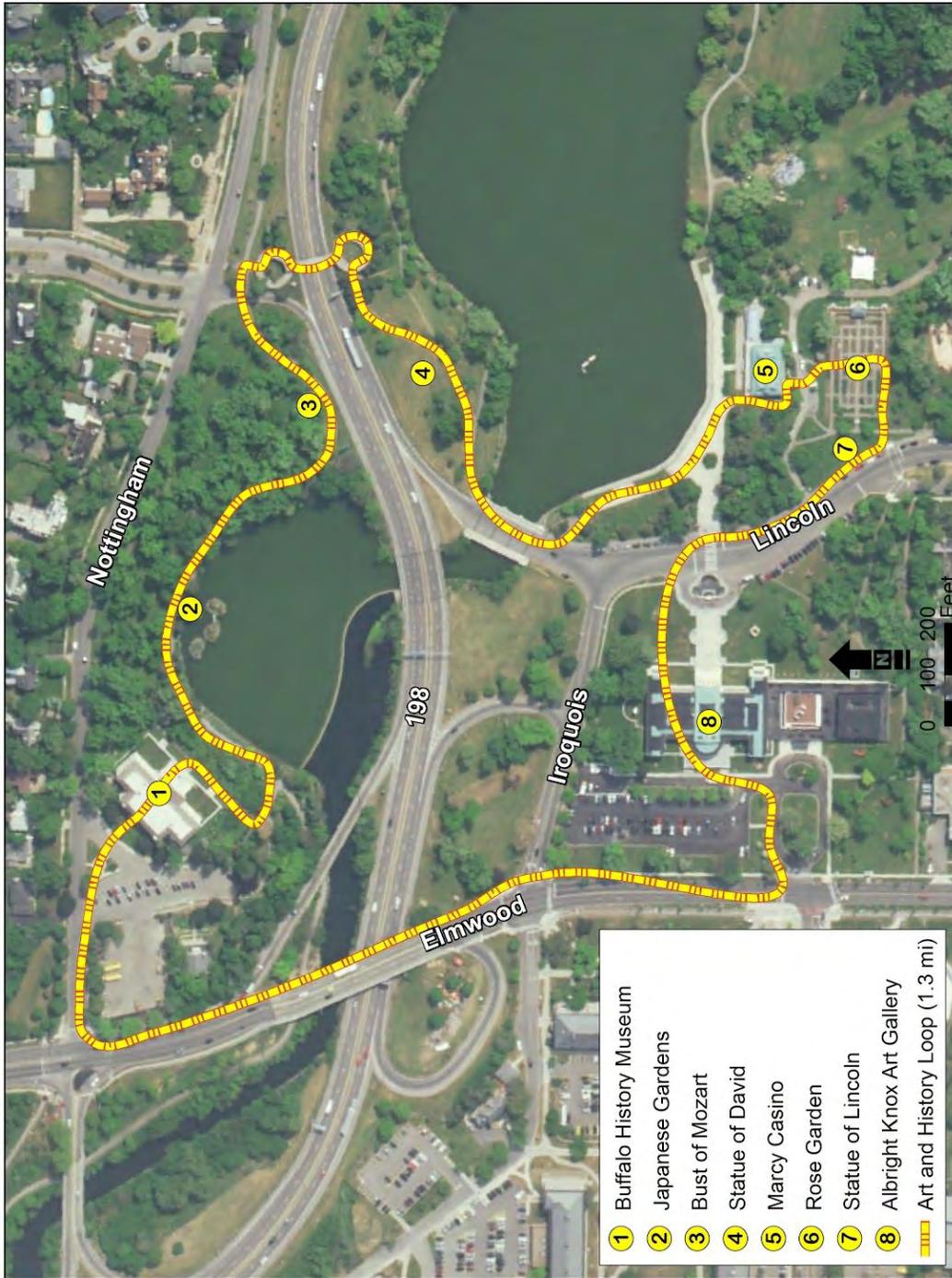
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<sup>5</sup> The Buffalo History Museum, "About the Museum", Accessed November 20, 2016, <http://www.buffalohistory.org/Learn/About.aspx>

<sup>6</sup> Marcy Casino, "Historic Location," Accessed November 20, 2016, <http://marcycasino.com/historic-location/>

<sup>7</sup> Albright Knox Art Gallery, "Our Campus," Accessed November 20, 2016, <https://www.albrightknox.org/about/our-campus>

Figure 8- Scajauada Creek Greenway Art and History Loop Map



Map by Jenna Hart

Figure 9- Scajaquada Creek Greenway Art and History Loop Stops



<sup>8</sup> Image sources. 1- <http://stepoutbuffalo.com/free-museum-days-in-wny/>. 2, 5- Bradley Everdyke 3, 4- <http://www.linquist-in-waiting.com/p/about.html> 6, 7- <http://www.waymarking.com/waymarks/> 8- <http://boredommd.com/place/albright-knox-art-museum-buffalo-ny/>

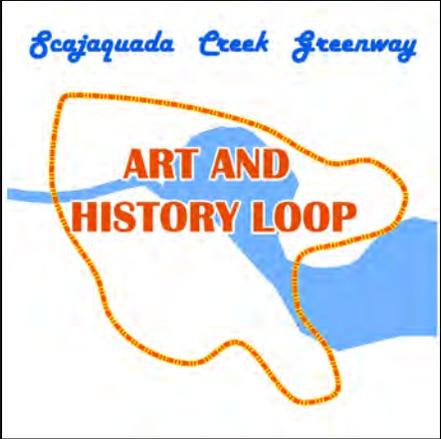
The physical demarcation of the Art and History Loop will be based on precedents, including Boston's Freedom Trail. The Freedom Trail includes two walking paths throughout the City of Boston that make stops at several different important historic locations of events and buildings. The Freedom Trail is branded by stamped plaques in the ground along the trail as well as demarcated by colored bricks that lead the way throughout the trail (see Figure 10).

Figure 10- Boston's Freedom Trail



With this in mind, a logo has been developed to incorporate the larger Scajaquada Creek Greenway, while also branding the Art and History Loop.

Figure 11- Art and History Loop Logo

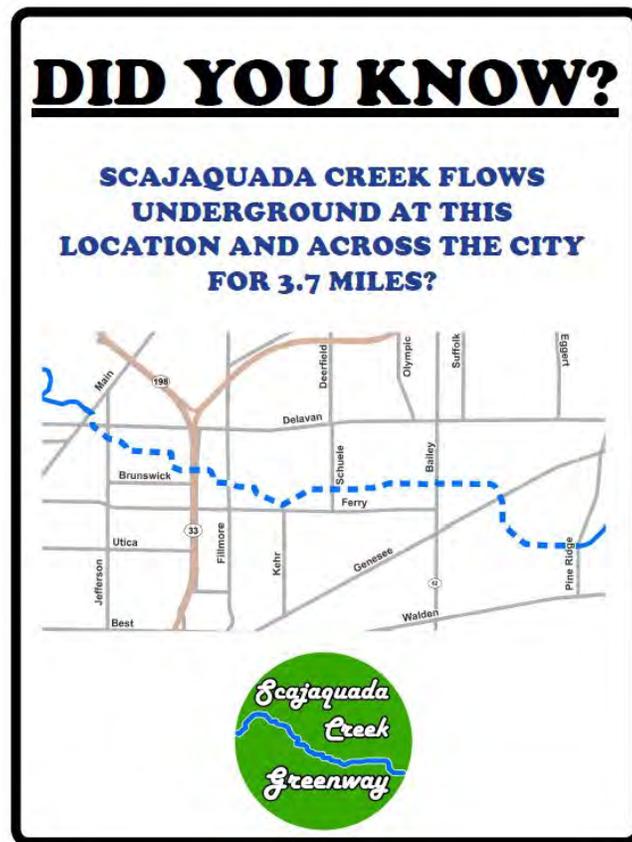


This logo will be used on signs at each stop. Signs will include historic facts and information about each stop including artist/designer/architect and historic significance. In addition to signs, a physical path will be implemented using either paint or colored brick or stone. Brick or stone is recommended over paint due to its resilience over paint.

### **BRANDING- SCAJAQUADA CREEK GREENWAY**

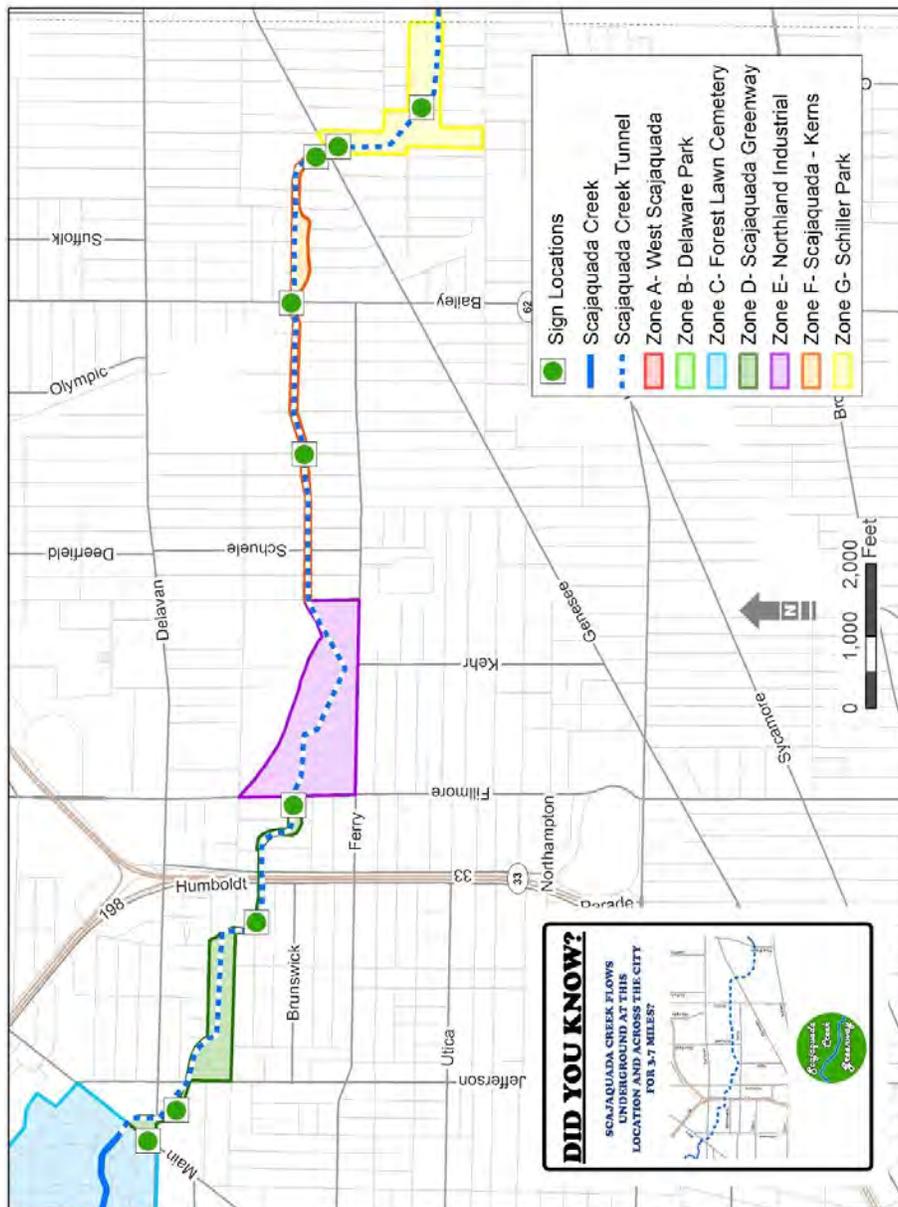
Overall branding will be done throughout the Scajaquada Creek Greenway with the use of signage employing the Scajaquada Creek Greenway logo. In the Scajaquada Greenway and Scajaquada-Kerns cultural zones, branding, connection and awareness needs are higher due to the burial of Scajaquada Creek there. More intensive branding initiatives are needed and will be done by putting up signs that draw attention to the creek all throughout these cultural zones along the buried creek's path (see Figure 12).

Figure 12- Signs to be used along the buried Scajaquada Creek.



Signs will be posted at the NFTA Metro Rail station on Main Street and Delavan Avenue, at the linear park on Florida Street, at both ends of the linear park that starts at Hamlin Park School and ends at Fillmore Avenue, at the corner of Scajaquada Street and Grider Street, the corner of Scajaquada Street and Cornwall Avenue, Scajaquada Street and Bailey Avenue, Kerns Avenue and Bailey Avenue, Kerns Avenue and Genesee Street, and two signs in the Schiller Park zone as well. Figure 13 shows the proposed locations of the signs.

Figure 13- Proposed locations of signs.



Map by Jenna Hart

In addition to sign branding, manhole covers that connect to the buried Scajaquada Creek will be stamped with the Scajaquada Creek Greenway logo throughout the zones that contain the buried creek to increase awareness, connection, and branding even more. Manhole cover branding can be seen in Figure 14.

Figure 14- Branded manhole covers over the buried Scajaquada Creek.



Original image by Bradley Everdyke

### **GREEN INFRASTRUCTURE- STORMWATER INPUT**

Urban stormwater can pollute receiving surface waters. Smaller-scale, low cost methods are needed in addition to larger state-wide strategies and guidelines. The overall stream health and water quality of Scajaquada Creek will not be achieved without a major overhaul of the current storm and sewer system in the City of Buffalo and surrounding suburbs. The presence and use of the combined sewer system will make achieving high water quality standards in Scajaquada

Creek a goal that is out of reach. The current long term control plan that the Sewer Authority is working on under the direction of the NYS DEC includes both green and grey infrastructure improvements. While the larger scale grey infrastructure improvements may be out of touch for the average person, green infrastructure techniques can be applied on a small scale. Rain gardens, use of rain barrels, and green roofs, are all ways that individuals and the City of Buffalo can help to reduce the amount of urban runoff that enters the storm system, thus helping to limit the amount of CSO events that occur.

When asked why the water quality in the buried portion of Scajaquada Creek is worse than that of the open part of the creek when the open part is downstream and both contain CSOs, Josh Bernosky of Buffalo Niagara Riverkeeper answered that is in large part due to the water inputs to both sections. Unfiltered stormwater, which contains motor oil, fertilizer, and other chemicals, is directed directly into the buried creek without any method of cleaning, natural or manmade. While in the open creek, direct rainfall, as well as filtered groundwater and spring water in Forest Lawn all contribute as inputs. One specific step the City of Buffalo can take while also working on their long term control plan is to use compost filter socks around storm sewer grates in the Schiller Park cultural zone to clean input water entering into Scajaquada Creek.

Compost filter socks and natural sorbents (added to the filter socks to absorb more pollutants) are placed around storm sewer grates to prevent pollutants from entering the storm sewers. Filter socks with natural sorbents can remove phosphorous and nitrogen and other pollutants when placed around grates.<sup>9</sup> Figure 15 shows an example of the filter sock in use. In order to start at a smaller scale, it is suggested that the Sewer Authority implement these compost filter socks around storm grates in the Schiller Park area first. Benefits of starting at a smaller scale in Schiller Park is to see if the method would be cost-effective.

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<sup>9</sup> Faucette, Britt, Fatima Cardoso, Walter Mulbry, and Pat Millner. "Performance of Compost Filtration Practice for Green Infrastructure Stormwater Applications." *Water Environment Research* 85, no. 9. 2013.

Figure 15- Example of a compost filter sock surrounding a storm sewer grate.



## **CONCLUSION**

A shoreline revitalization, the Art and History Loop, branding and awareness throughout the corridor, and green infrastructure are all implementable ways to improve water quality, increase access, connection, and branding throughout the Scajaquada Creek Greenway. By integrating these projects under one initiative, a pooling of resources is allowed. Organizations such as Buffalo Niagara Riverkeeper, the Buffalo Sewer Authority, the City's parks division, the Buffalo Olmsted Conservancy, the Buffalo Arts Commission, and more can work together to achieve these goals as well as achieving a healthier more enjoyable Scajaquada Creek.

Kate Hewlings







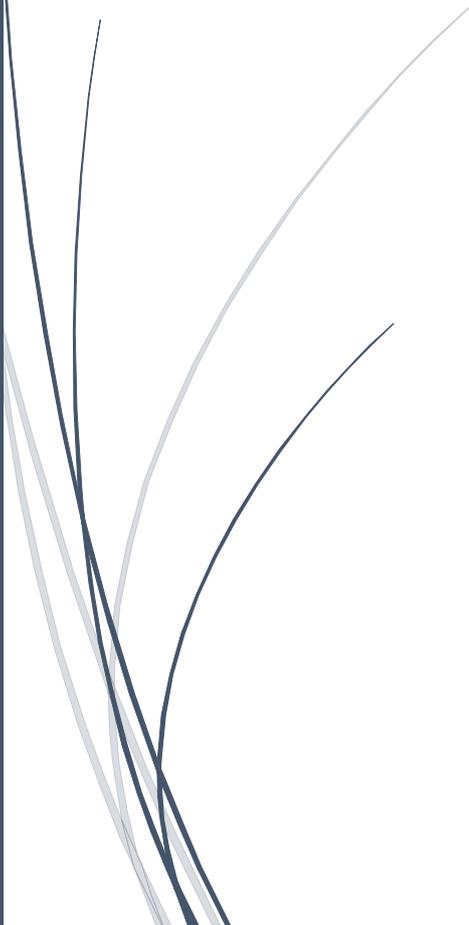
Kate Hewlings

# Creative Forms of Reflection: Interpretation Tools for Scajaquada Creek

Historic Preservation Planning Studio



This proposal focuses on historical and ecological interpretation. The interpretation involves the use of art and branding as a tool to understand and reflect on the past, present and future.



## Introduction and Study Area



There are two main goals of this proposal. One is using historical and ecological interpretation to reconnect and bring people back to creek. The second goal is to increase public awareness by reconnecting pathways to the creek by either the use of interpretation, art or branding.

Scajaquada Creek is located in multiple municipalities including Buffalo, Cheektowaga, Lancaster, and Depew. This creek runs in an east to west direction starting in Lancaster and ends at the Niagara River. This report focuses on the city of Buffalo which has both urban, residential, educational, industrial and cultural resources across its landscape. There are different atmospheres along the creek from tranquil to busy highway intersections. The biggest distinction is that the creek from the west side from Niagara Street to Main Street is uncovered while the East Side from Main Street to Villa Maria is buried.

There are many cases where communities were either daylighting. Daylighting has different definitions but involves uncovering a section of a creek to expose it to the air again. Daylighting in terms of re-exposing the creek is costly. Costs can vary per project but a few examples show the associated costs of daylighting. Arcadia Creek in Kalamazoo, Michigan spent a total of \$18 million and \$7.5 million on the day lighted portion. This was for 1, 550 feet of daylighting space. Another case study in Sawmill River in Yonkers, New York spent \$34 million on daylighting. This included 13, 775 square feet of space to turn a parking lot into an aquatic habitat.<sup>1</sup>

Due to the issues with daylighting, this report focuses on historical and ecological interpretation. The interpretation involves the use of art as a tool to understand and reflect on the past, present and future. This main goal of the use of this strategy is to reconnect people back to certain parts of the creek where daylighting may not be possible at this point in time. Interpretation can also continue to build awareness of the creek while other strategies of ecological restoration and pollution solutions are being addressed.

### Newtown Creek Case Study

Newtown Creek is located in New York City. To the north of the creek is Queens and the southern part is Brooklyn. It is a part of the Hudson Estuary and flows west for 3.5 miles and empties into the East River. A large majority of the current environment is industrial with some natural areas.<sup>2</sup>

This creek, with its industrial past, has problems with polluted storm water runoff, waste transfer stations, industrial waste disposal into it and combined sewer overflows (CSOs). Annually Newtown Creek



collects 14,000 million gallons of combined sewage overflow. There was a large oil spill in this area which further resulted in pollution issues. Newton creek was declared a federal superfund site in 2010 and has numerous brownfields.<sup>3</sup>

Despite all this waste, life still exists at the creek such as blue crabs, fish and waterfowl. Wetland plants were also used where bulkheads and sediment piles were present in order to address the creek's pollution problems. Even though there is pollution and visitors can hear some noise traffic from a local highway that runs around Newtown Creek but it is still considered a relaxing place as its set away from the usual high end traffic of New York City.<sup>4</sup>

Besides decreasing pollution and increasing ecological habitats, Newtown Creek developed a



©NY.Curbed.com

nature walk which interprets and reflects upon the environmental, industrial and historical context that occurred around Newtown Creek. The major advantage of the nature walk is it allowed access for locals and visitors for the first time in decades. The park also uses its past, good or bad, to interpret and allow reflection of historical and ecological issues as visitors move through the space.<sup>5</sup>

The nature walk has multiple areas and related designs to interpret its past. Visitors start at an entry gate in order to access the creek. The entry gate and fencing were shaped like a wave to mimic the shape of water.<sup>6</sup>

Newtown Creek has a 170 foot wall which is shaped like a vessel and mimics old boats used around that area in the 1800s. The wall also had portholes built in it where you could view the industrial buildings. This allows a space for visitors to reflect on the industrial past and see the current state of waste going into the creek.<sup>7</sup>

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The walk also has seven stone circles which are around a central honey locust tree. The stones have native place names from the Lenape Indians before European settlement occurred. The names are put at an angle so you see the place it identifies as you read them.<sup>8</sup>



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As the path continues there is a watershed bollard. This is a 1400 pound granite table shaped like a shipping bollard. The top of the table shows the Newton Creek watershed in its natural state before the arrival of Europeans. A pin also shows where you are located on the watershed map. Another unique feature of the watershed bollard is that the top contains a gradient that allows raindrops to show the natural course of water flow during storms.<sup>9</sup>



©NY.Curbed.com



©Backyard and Beyond

A portion of the walk called Whale Creek Path has native species planted and shows the contrast between natural and the surrounding industrial. This area also has exhibit panels showing historic industrial and medicinal uses.<sup>10</sup>



©NY.Curbed.com



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One of the main features of the walk is the stairs that lead to the edge of the creek. People kayaking use these as an entry point and people relax on and around the stairs. The stairs also have scientific name engravings. The engravings include animals from the Precambrian to the Pleistocene eras. All types of life are included such as snails, people, oysters and mackerel. This gives a glimpse of what natural history was in and around the creek.<sup>11</sup>



©NY.Curbed.com



©NY.Curbed.com

## Other Precedent Studies

### *Fish Cut out Panels*

The American Trail uses fish panels with cut outs to interpret the types of species in the creek. This allows visitors to view through the cut out to see the reflection of the water in the creek and the text below identifies the fish name.



©Americantrails.org

### *Shell of Industrial Building*

The shell of an industrial building was saved to maintain the character and allow residents to reuse the building in another manner. This is located at the Brooklyn Bridge Park and the shell of the brick industrial building is used for corporate functions, weddings and other parties. It also could act like a place of reflection for other visitors walking through the space.<sup>12</sup>



©Brooklyn/Queens Waterfront

### *Railroad Track and Spur Design*

The design below in a public park called High Line in New York City shows how railroad tracks or spurs can be incorporated into modern day landscapes. This brings an element of reflection and offers views of the city.



©nycgovparks.org

### *War of 1812*

Queenston Heights uses different types of plaques, monuments, markers and interpretation panels to help visitors understand the Queenston Heights Battle in the War of 1812. There is one central monument around the major figure Brock who was the leader of the British army.



©HMDB.org



©HMDB.org



©HMDB.org

Queenston Heights Battlefield area also contains a Native American monument to honor the First Nations Allies. Markers along the way give information on the battle including views of where the Americans landed and important contact points of where fighting occurred.<sup>13</sup>

## *Creek Design in Roombeek, Netherlands*

Enschede in the Netherlands has used an artificial creek in order to improve and revitalize a



©Landezine.com

commercial street called Roombeek. The creek used to be underground and was restored to the surface through the use of a unique design. Restoring the creek stemmed from a warehouse explosion which occurred in 2000 and caused damage to 650 houses nearby it. The city rebuilt the area and at the same time restored the creek as a memorial to the warehouse accident. Today this creek has become a central point to the local area and is widely popular among locals and tourists.<sup>14</sup>

The design for the creek starts with a rough structure that reduces the water flow and speed



which makes a reflective pattern on the water surface. It also has stepping stones which refer to randomness of natural processes and also brings a reflective element to the warehouse explosion. The overall shape of the creek also changes along the pathway as it widens and narrows at certain points to indicate its natural spatial features.<sup>15</sup>

People enjoy the design in both summer and winter. In the summertime, people are seen walking across the stepping stones or relaxing nearby. In the wintertime, the stepping stones look like small pieces of ice and create an aesthetic winter scene.<sup>16</sup>

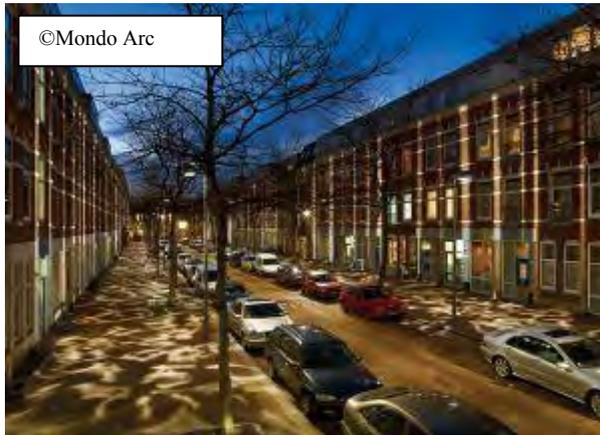
©Landezine.com



©Landezine.com

## Lighting on Atjehstraat Street in Rotterdam, Netherlands

Rotterdam used specialized lighting on a street called Atjehstraat. The project was called Broken Light and the firm Daglicht & Vorm, which stands for Daylight & Form, undertook



the project. The lighting used underwater-like patterns and images which reflect on the sidewalks. Many locals also noted some shapes looked like animals or flower swirls. The lighting was meant to bring a sense of calm and peacefulness.<sup>17</sup>

The street that Rotterdam choose to do this project on was at one time an area of high crime. Today, it is a mixed neighbourhood of immigrants and young professionals. This project was undertaken to show that lighting

could be used to create a physical space with a sense of identity and meaning. The city and the firm doing the work involved the community including a demonstration before it was finalized and a small festival when it was finally lit up.<sup>18</sup>

The street originally had city lighting seen throughout the rest of the area. Now there are street lamps that illuminate the sidewalks, sill lights that keep the street itself evenly lit and lights that illuminate portions of the facades. This plan involved removing former streetlights and replacing them with 18 new streetlights, 9 on each side. Each streetlight stands at 6 meters high and are custom-made. The light fixtures also provided the light for both the underwater like pattern and the lighting on the front facades. The custom-made lights used calculations so each ray of light was hitting in the necessary area for the patterns to work.<sup>19</sup>



The project had another issue of keeping the street evenly light for drivers.



They solved this problem by

adding sill fixtures to every other lamp fixture running down each side of the street. By attaching these fixtures at a height of around five meters and alternating these extra lighting fixtures allowed the road to be evenly light without effecting the patterns on the sidewalk and facades.<sup>20</sup>

©Mondo Arc

## Storm Drain Markers



©Philadelphia Water

Tookany Tacony Frankford Watershed Partnership, Inc is a local organization in the Philadelphia, Pennsylvania area. This organization uses storm drain markers to bring public awareness about watersheds and where drains go. They worked with 7<sup>th</sup> graders to put 150 storm drain markers throughout Philadelphia residential areas.<sup>21</sup>

These storm drain markers are easy to install and they are more eco-friendly than other alternatives such as spray paint and last longer. They are very cost effective and difficult to remove. These markers are 4 inches in diameter and are made from white plastic that have UV inhibitors and a layering of materials for resistance. In addition to the layered materials of resistance there is a final layer of polyurethane which creates a duracast surface and protects the markers against cars, chemicals and weather related conditions.<sup>22</sup>

The adhesive needed to apply to these surfaces requires no mixing and no surface preparation. The adhesive can be used on multiple types of surfaces including concrete, asphalt and metal. It is suggested that you apply the markers when it 40 to 90 degrees Fahrenheit out. In general, it takes 2 hours for the markers to become firm and 18 hours to be permanently fixed.<sup>23</sup>



©Berntsen

The storm drain markers are available at a company called Berntsen. Berntsen manufactures survey markers, survey monuments and other related products and can be purchased at <http://www.berntsen.com/Utilities/Plastic-Utility-Markers/Storm-Drain-Markers>. The cost effective prices are indicated in the table below.<sup>24</sup>

### Marker Prices

Price per marker	Quantity
\$9.55	10 to 24
\$6.15	25 to 49
\$4.55	50 to 249
\$3.75	250 to 499
\$3.15	500 or more

### Adhesive Prices

Oz. Amount	Quantity	Price	Application Amount
5 oz. tube	1 to 11	\$8.50	Appx. 30 markers
	12 or more	\$8.00	
11 oz. cartridge	1 to 11	\$14.30	Appx. 60 markers
	12 or more	\$13.30	

### *Wave Shaped Bench Seating*



©Woodscape.co.uk

Woodscape located in the United Kingdom makes outdoor benches such as the Clifton Bench. They are meant to be simple and bring a modern design to landscapes. They are made of a durable hardwood for the seating while the legs have an option for different types of steel. These benches bring an element of simple and natural with the wood like appearance. They also can be purchased in the s-shaped style which has a wave like look to it.

These benches were built for the outdoors. They are long lasting, easy to clean and low on short term and long term maintenance costs. The materials used for these benches are high quality and were picked for all types of weather.

Woodscape makes benches in all different types of designs, shapes and styles.<sup>25</sup>

## Scajaquada Creek

One of the first steps need in order to install art sculptures and interpretation panels along the Scajaquada Creek is to remove extra vegetation, high weeds, overgrown grasses, dead trees, tree stumps, and graffiti. Also, some areas need maintenance of the concrete pathways and fencing. This is recommended for all zones and along the Scajauaqada Creek especially areas of high traffic. In particular, Serenity Falls in Forest Lawn, Scajauaqda Bike Pathway from West Avenue to behind Wegmans, the pathway by the Railroad Bridge off of Niagara Street, the Linear Parks by Route 33 and Schiller Park should have this addressed. This would increase access and allow visitors to experience the creek views.



Fallen and Dead Trees need to be removed.  
©Kate Hewlings



Concrete Pathways need to be restored.  
©Kate Hewlings



Brush, overgrown weeds and vegetation need to be removed.  
©Kate Hewlings



Litter needs to be removed and disposed off.  
©Kate Hewlings



Graffiti needs to be removed from surfaces.  
©Kate Hewlings

## All Zones

Branding and the consistent use of symbols across a natural landscape will help to develop public awareness for both locals and tourists. It is used to reinforce the same message in order to attract businesses, tourists and residents to use the space. There are a few reoccurring symbols and designs that were discussed are useful to use for branding purposes in all zones along Scajaquada Creek.

### *Watershed Bollard*

The Watershed Bollard which was used in the Newtown Creek Case Study is a strong symbol to use for branding purposes. This would be highly useful for branding along the creek and could also be placed in other spaces nearby that have high traffic in order to draw people in. Branding brings awareness and can become a symbol that is recognizable when used for other programming and events.



©Backyard and Beyond

©NY.Curbed.com

### *Wave Shaped Benches*

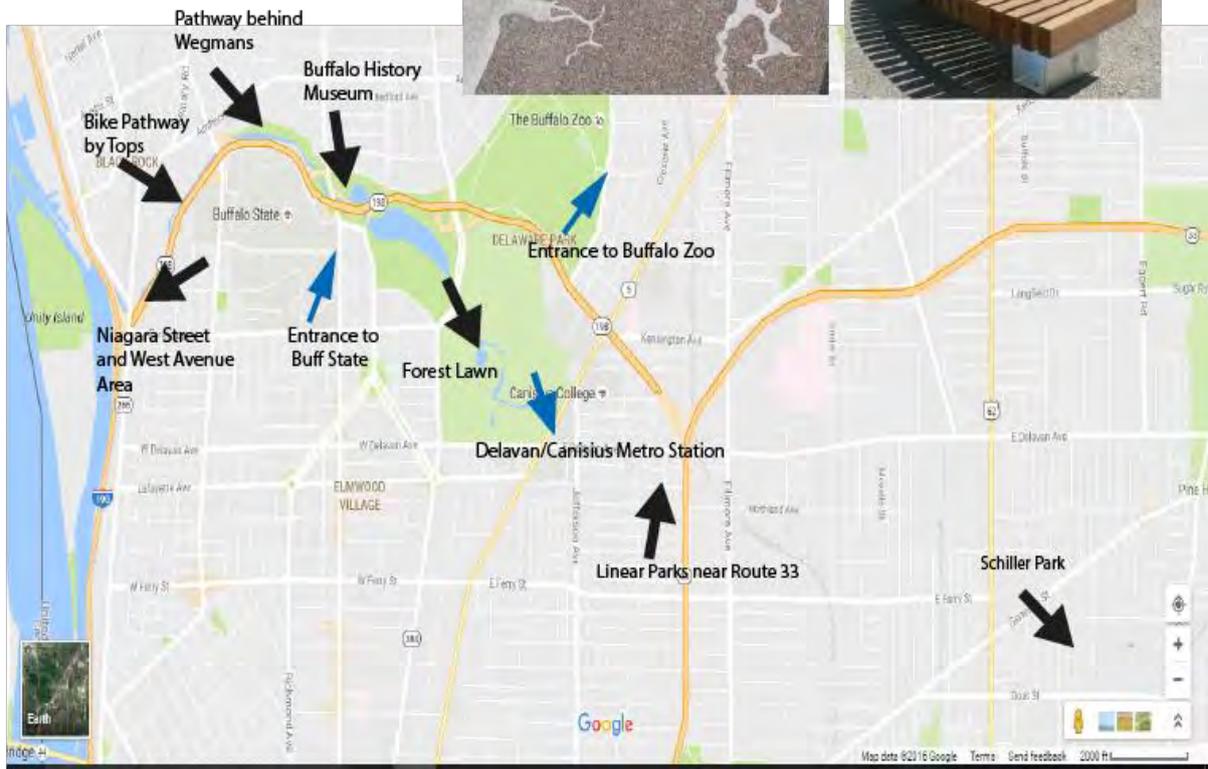
The wave shaped benches from Woodscape could be used in multiple places and again could become associated with Scajaquada Creek. A local or visitor will start to realize which creek they are at by the type of benches. The placement of the benches have a design that would allow the benches to act as connectors and lead from one point to another.



©Woodscape.co.uk

The following diagram shows places where these branding designs could be installed.

- ➔ Both Benches and Bollards
- ➔ Bollards Only



The Watershed Bollards could be placed in the following specific locations along the creek:



At the entrance to Schiller Park off of Genessee Street.  
©Kate Hewlings



By the pedestrian bridge over Route 33 that runs through the linear parks.  
©Kate Hewlings



At the end of the linear parks off Fillmore Avenue.  
©Kate Hewlings

Additional locations for placement include:



In forest lawn in the small section next to the creek and across from the Birge Memorial.  
©Kate Hewlings



By the picnic tables at Tops.  
©Kate Hewlings



In front of the Railroad Bridge on Tonawanda Street.  
©Kate Hewlings

The Watershed Bollards could also be placed at high traffic areas that are nearby the creek including Buffalo History Museum, Delevan/Canisius Metro Station and Buffalo Zoo Entrances.



*Entrance to Delevan/Canisius Metro Station.*

©buffaloah.com



*Entrance to Buffalo Zoo*

©WBFO News/Mike Desmond

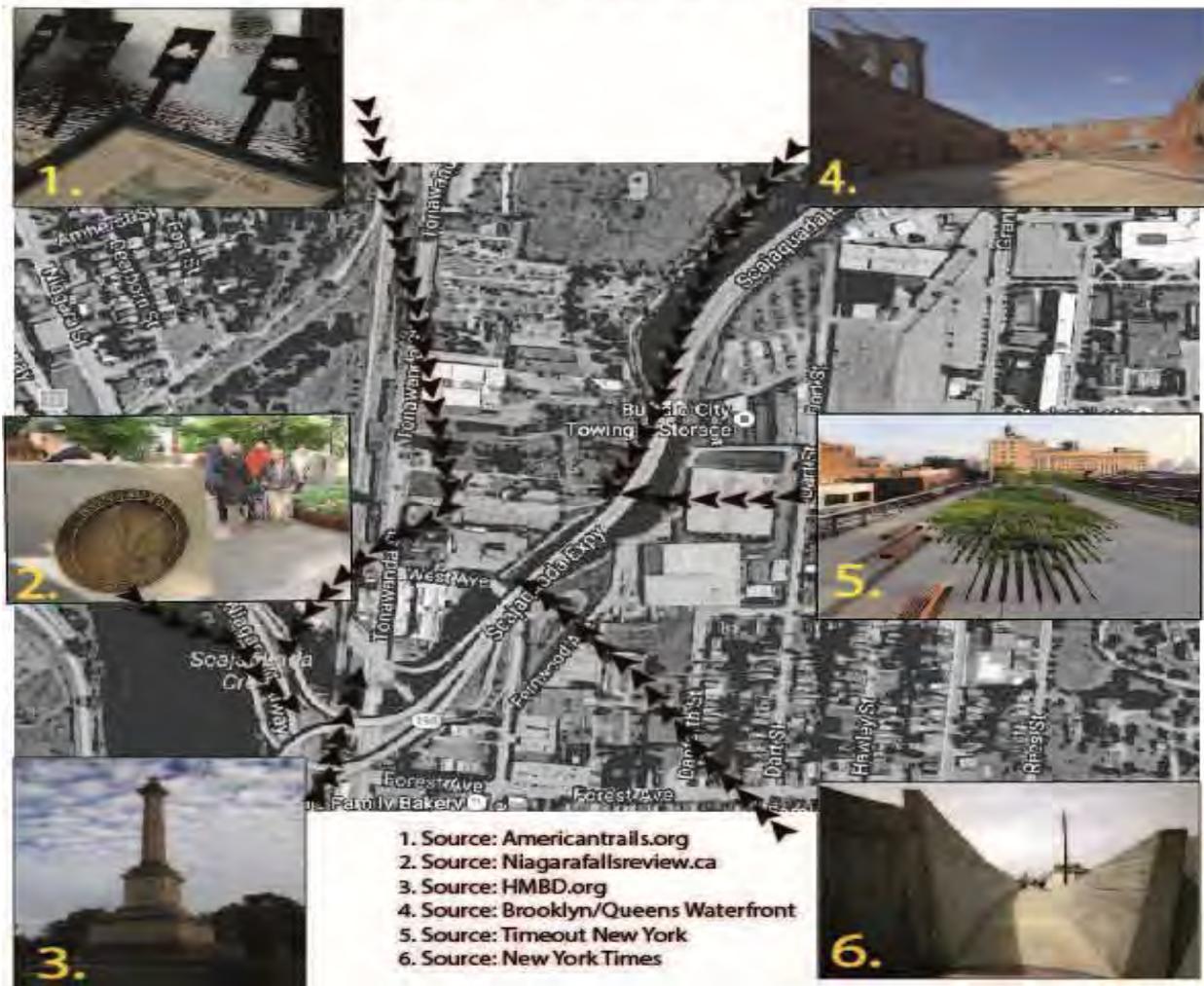
## Interpretation within Zones

Each zone has its own defining features. Due to the different features in each cultural zone, art installations and interpretation may vary in some areas. This section will cover the different interpretations that can be used when you have a defining feature or specific event that occurred.

*This report focuses on Zones A, C, D and G. Each zone section is composed of aerial and ground views. Further details of each design placement can be found at the bottom of each zone. The numbers in the lower right hand corner of the graphics correspond to the details you will find at the end of each zone section.*

### Zone A: War of 1812 and Industry

#### Zone A: Aerial View War of 1812 and Industry



## Zone A: Ground Views War of 1812 and Industry



1. Sources: [Americantrails.org](http://Americantrails.org) and Kate Hewlings
2. Sources: [Niagarathisweek.com](http://Niagarathisweek.com) and Kate Hewlings
3. Sources: [HMDB.org](http://HMDB.org) and Kate Hewlings

## Zone A: Ground Views War of 1812 and Industry



4. Source: Brooklyn/Queens Waterfront Group and Kate Hewlings  
5. Source: TimeOut New York and Kate Hewlings  
6. Source: New York Times and Kate Hewlings

1. *Fish Cut-outs.* The idea of using small panels with cut-outs for the fish's shape could be implemented at the foot bridge which is located behind the railroad bridge on Niagara Street. This bridge also offers views of the highway on one side and the Railroad Bridge and Creek on the other side.



Views of highway from small foot Bridge  
©Kate Hewlings



Views of Railroad Bridge and Creek from foot Bridge  
©Kate Hewlings

2. *Native Allies Monument.* The second design in Zone A is a monument to commemorate the Natives that fought in the War of 1812. This monument from Queenston Heights could be used on a smaller scale near the foot of the bridge where the fish cut-outs will be located. This is one of the only green spaces available down the path near the Railroad Bridge.
3. *Brock's Monument.* The Queenston Heights Monument that we saw is another commemorative monument. This would be used for a historical figure and would fit in with the Battle of Scajauada Creek since Morgan Tucker was seen as the hero of it. This would be placed at the green space right off of Tonawanda Street and next to the railroad bridge over Niagara Street.

4. *Shell of Historic Building*. As seen in the Brooklyn Bridge Park shells of historic buildings could be saved. There is an abandoned building located down the Scajaquada Bike Pathway near West Avenue. This area also offers views of the creek, the highway and a railroad spur.



Views of highway over bridge with railroad spur  
©Kate Hewlings



Another view from the other side of the bridge with railroad spur which shows the creek.  
©Kate Hewlings

5. *Railroad Spur*. In front of the historic building there is a railroad spur which could be repaired for its views and incorporated into an aesthetic design.
6. *Vessel Shaped Walls*. This design should be used on the Scajaquada Pathway where it ends at West Avenue in Zone A. The area allows for views of industrial at this point and also has a views of the creek at West Avenue.



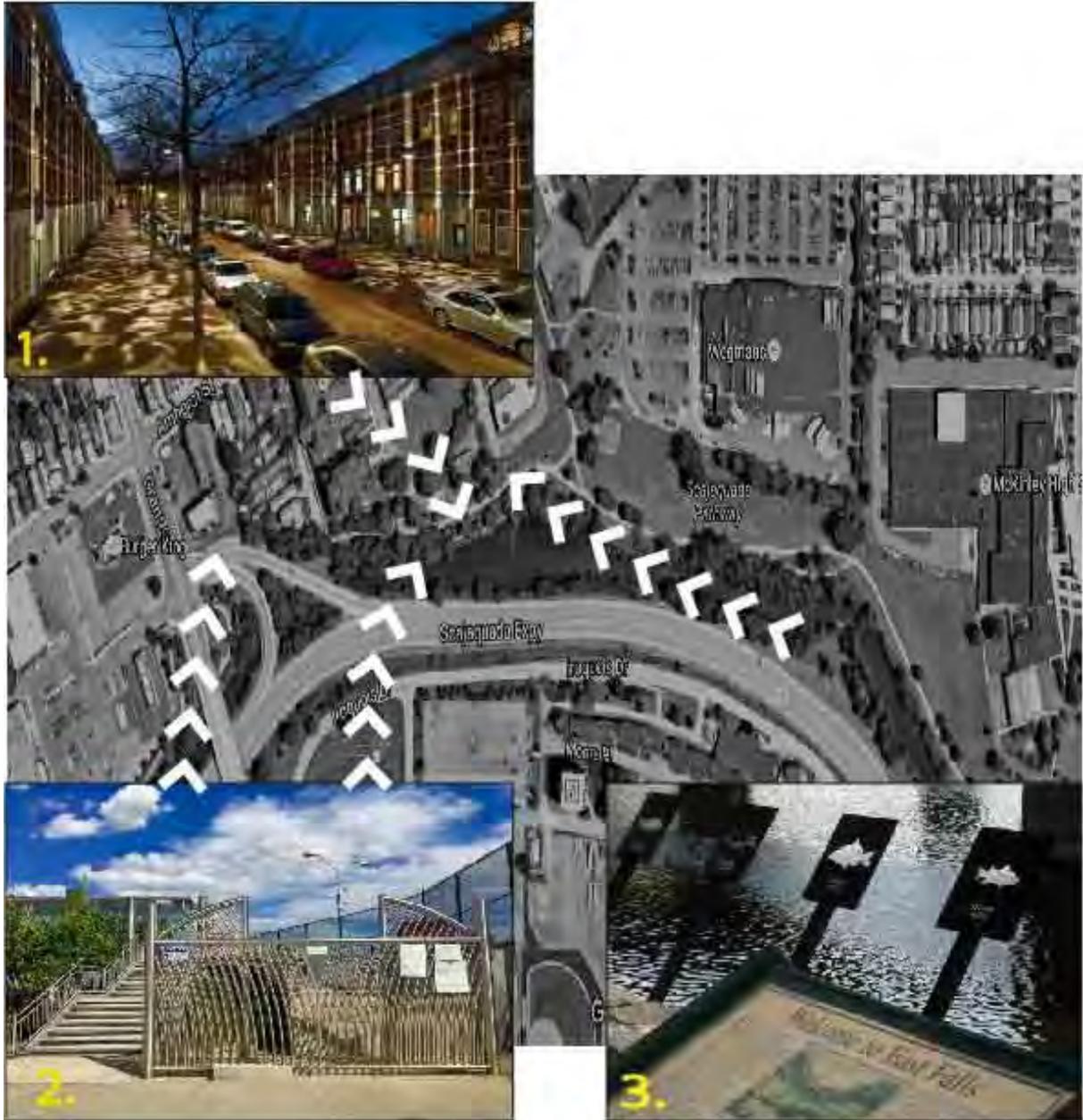
View of highway and creek from West Avenue  
©Kate Hewlings



View of Industrial Buildings from the Scajaquada Pathway near West Avenue.  
©Kate Hewlings

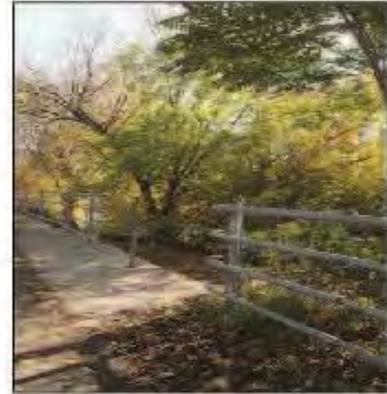
Zone A: Wegmans Area

Zone A: Aerial View  
Wegmans Area



1. Source: Mondo Arc
2. Source: NY.Curbed.com
3. Source: Americantrails.org

## Zone A: Ground Views Wegmans Area



1. Source: Mondo Arc and Kate Hewlings
2. NY.Curbed.com and Kate Hewlings
3. Americantrails.org and Kate Hewlings

1. *Lighting*. The lighting used on Roombeek Street in the Netherlands could be used down the side path that slopes down and has views of the creek.
2. *Fencing*. The water shaped fencing could replace some current fencing and/or railings which were not maintained. The Wegmans Area has a guardrail by the highway exit where fencing could be used. In addition the railing along the pathway behind Wegmans which leads down to the creek is another option for replacement.
3. *Fish Cut-out Panels*. This is another opportunity along the creek to use the fish cut out panel interpretation.

Zone C: Forest Lawn

## Zone C: Aerial View Forest Lawn



1. Source: [Americantrails.org](http://Americantrails.org)
2. [QRPartners.com](http://QRPartners.com)

## Zone C: Ground Views Forest Lawn



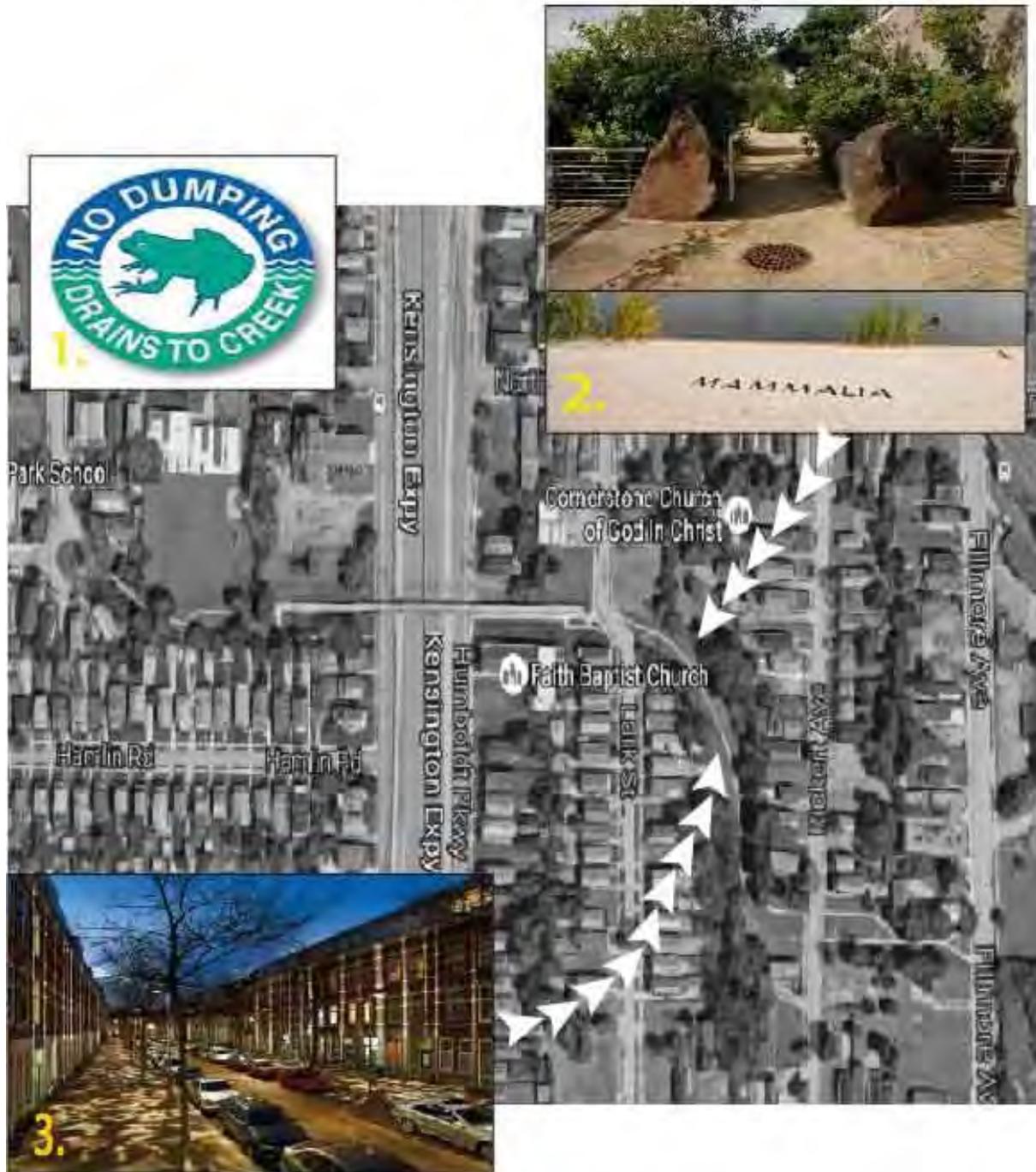
1. Sources: QRPartners.com and Kate Hewlings
2. Sources: Americantrails.org and Kate Hewlings

1. *Native American Place Names Monument.* The Native American Place Names Monument needs a space where you can have several views. This allows visitors to move around the stones and face the area where the Indian place names were. Forest Lawn has open green space on the hill above Serenity Falls. It is close to the unused parking lot and tunnel entrance to the culvert which is located to the east and Veterans graves to the south.

2. *Fish Cut-outs.* The fish cut-outs could be used in Forest Lawn along the small section and strip which is located near the pond and across from the Birge Memorial. This area receives more traffic than other spaces in Forest Lawn and is easy for visitors to have access too.

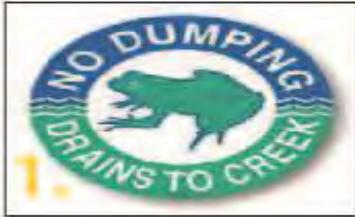
Zone D: Linear Parks

# Zone D Aerial View Linear Parks



1. Source: Bermtsen.com
2. Source: MondoArc.designandgo.net
3. Source: NY.Curbed.com

## Zone D: Ground Views Linear Parks



1. Sources: Berntsen.com and Kate Hewlings
2. Sources: NY.Curbed.com and Kate Hewlings
3. Sources MondoArc.designandgo.net and Kate Hewlings

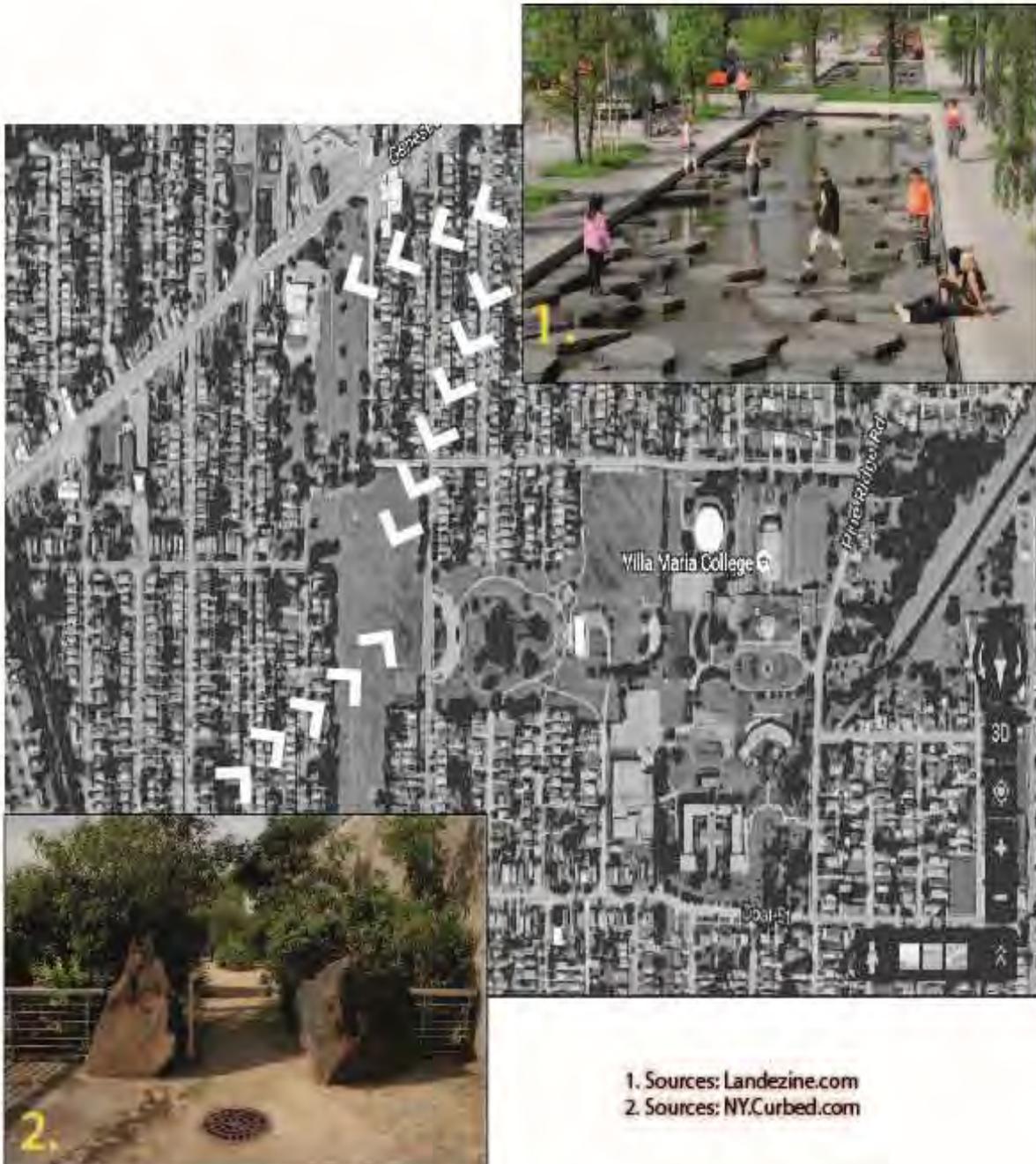
1. *Storm Drain Markers*. These markers can be placed on man-hole covers or storm drains on the east side. There are man-holes and drains on the pathways and along the linear parks.

2. *Native Plants Area*. The one linear park at Lark Street splits into two pathways. One leads down Lark Street while the other goes to public green space. This area is narrow and could have native plants and rocks lining both sides of the pathway through to Rickert Avenue on the other side. The rocks could be engraved with inscriptions of different animal species such as Mammalia.

3. *Lighting*. The lighting used in Rotterdam could also be used on the same pathway as noted in number 2. The lighting on the sidewalks which represents water and other natural patterns could line the concrete pathway. Additional lighting could highlight specific native plants and boulders at night-time.

Zone G: Schiller Park

## Zone G Aerial View Schiller Park



1. Sources: Landezine.com
2. Sources: NY.Curbed.com

## Zone G: Ground Views Schiller Park



1. Sources: Landezine.com and Kate Hewlings
2. Sources: NY.Curbed.com and Kate Hewlings

1. *Restored Artificial Creek.* The restored stream design that we see from Roombeek, Netherlands would work in the open green space in Schiller Park. In particular, the large green space bordered by Sprenger Street to the east has the space to accommodate this. The creek also passes through Schiller Park and is buried underneath parts of the park.

2. *Native Plants and Rocks Area.* Schiller Park is another potential area for a native plants and rocks section. This could be located at the front entrance of Schiller near the Senior Citizen Center which has open green space. Alternatively, this design could work with the artificial creek and work its way down and around the sides of the landscaped creek beds.

## **Conclusion**

Scajaquada Creek would benefit from the use of historical and ecological interpretation as well as branding. These types of interpretation can use art as a tool to attract locals and visitors to the area. By attracting and bringing the general public back to the creek it will raise awareness of the resources the creek can offer. Public awareness of Scajaquada Creek is the first step in the restoration and challenges that have surrounded it in the past and present.

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- <sup>4</sup> Ibid.
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Hongkai Li







# **Design Proposal: Scajaquada Creek Linear Park and Cultural Trail**

**URP 581**

**Phase 4**

**Hongkai Li**

**Introduction:**

This report documents a list of character defining features along Scajaquada Creek within the scope of the study area. The study area is divided into different zones, and each cultural zone consists of features that shape its identity. There are seven different cultural zones along Scajaquada Creek, but this study focuses on the first three cultural zones which are the mouth at black rock canal to Elmwood Avenue, Elmwood Avenue to Delaware Avenue through the Delaware Park, and Delaware Avenue to Main Street. The precedent analysis shows how the other cities deal with similar cultural landscape problems. The last section provides the design guidelines for the Scajaquada Creek revitalization.

**Cultural Landscape:**

According to the National Park Service, Cultural Landscape is defined as “a geographic area including cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.”<sup>1</sup> A cultural landscape includes both natural and manmade environmental factors, and also shows the results of changes from developments that occurred over time. The study area of the Scajaquada Creek is a vernacular landscape, which is defined as “a cultural landscape that evolved through use by the people whose activities or occupancy shaped that landscape.”<sup>2</sup> The changing needs of the residents in the surrounding areas of the creek, made the Scajaquada Creek area has change over time.

### **Introduction of the Scajaquada Creek:**

The Scajaquada Creek is a 13-mile Creek from the Town of Lancaster through the Town of Cheektowaga, and into the City of Buffalo. The Creek is a key component of the development of the Buffalo Metropolitan Area because it not only provides the environmental values along the watershed, but also it has great historical value for the City.

### **Introduction of the Study Area:**

From Figure 1, the study area is the exposed portion of the Scajaquada Creek, and it contains three zones which are Zone A (from the mouth at Black Rock Canal to Elmwood Avenue), Zone B (from Elmwood Avenue to Delaware Avenue), and Zone C (from Delaware Avenue to Main Street).

Cultural Zone:

#### Zone A

The defining character features in this zone consists of industrial buildings, historical buildings, transportation infrastructures, open spaces, and vegetation character (Figure 2). The Black Rock Zone is predominantly covered by industrial use and most of the industry is no longer in use. There is an opportunity to transform the vacant industrial zones for recreational use for the people. For example, constructing a playground with swings, slides, and other new infrastructures. The open spaces under the NY-198 gives an opportunity for creating a linear park. A pathway for pedestrians and cyclists would be needed, and the choice of plants in the linear park will be based on the local conditions, which means using some hardy plants. Since the vegetation

grows wildly, clearing overgrowth and removing invasive plants along the path to allow visual access to the creek are essential. Riverkeeper is planning a kayak launch at the mouth of the creek, which is another strategy for revitalization.

### Zone B

This cultural zone is surrounded by a mix of commercial, residential and educational facilities (Figure 3). The pathway for pedestrian and cyclists is well designed in this zone, and the vegetation has appropriate management. Most of the recognized landmarks near the Scajaquada Creek are located in this zone, including Hoyt Lake, Japanese Garden, Marcy Casino, Albright Knox, and the Buffalo Historical Museum. These are valuable assets that can attract more people to visit the creek area. Figure 4 (Historical Image showing people boating on the lake) shows people boating on Hoyt Lake. The historical image shows the opportunity for recreational uses of the lake, which supports the idea for opening a kayaking program on the Hoyt Lake.

### Zone C

The serenity waterfall inside the cemetery has a picturesque view. However, it is currently hidden by dense vegetation. The possibility of clearing out undergrowth would give people more chances to enjoy the view. The stairs in Figure 5 (Picture of defining features) shows that there was an intention to give people access to walking along the creek. The historical stair is evidence for showing how people used the area, and how the cultural landscape changed over time.

These features of different zones show the potential use for the exposed Scajaquada Creek area for recreational activities.

## **Precedent Studies:**

The precedent analysis is provided in this report to use as a reference to best practices to deal with similar cultural landscape problems in other cities. The precedent projects reviewed can be the lesson learned for conducting the design strategies for the Scajaquada Creek revitalization.

### **Cheonggyecheon Stream, Seoul City**

The Cheonggyecheon Stream is a 7-mile urban Creek from the west to the east side of Seoul, South Korea. During the 1950s to 1960s, Seoul experienced an economic bloom, the size of the City and the amount of the population increased rapidly. At the same time, environmental problems were brought to the City. The sanitary wastewater and industrial wastewater discharged into the Cheonggyecheon Stream caused degraded water quality. Also, the elevated highway above the stream brought air pollution and noise to the stream area. The government operated the restoration project for the Cheonggyecheon Stream from 2003 and finished in 2005, and this project was a part of Soul urban renewal programs.

Cheonggyecheon Stream (Figure 6) used to have similar environmental conditions as Scajaquada Creek has now. The major accomplishment of the Restoration project is that is not only improved ecological conditions along the creek, but also connecting nature and people. The restoration project designed the creek into three zones, which are the history and tradition zone, cultural and modernity, and nature and future. There were several major strategies the project used for restoration. The highway was removed to uncover the creek. The water treatment facilities were used to clean up the

stream. The stream restoration was separated into three sections due to the different types of topography, and each section has its own identity. The average width of the upstream is 25 meters, and there are pathways along the sides of the upstream. The pathway is made of granite, and the grade is slightly steep. There is a pathway at the north part of the middle stream, and there are big rocks and plants located on the south side. The average width of the downstream is 40 meters. The goal of restoring the downstream was to maintain the natural conditions. The grade is slightly steep, and the vegetation on both sides of the stream are local plants.<sup>4</sup>

The restoration project brought three significant benefits from the environmental, social and economic aspect. The project provides flood protection for 200-year flood event and sustains a flow rate of 118 mm/hr. Compared to the pre-restoration period, the project increased overall biodiversity by 639%. The project contributed to 15.1% growth in bus ridership and 3.3% in subway ridership in Seoul, and there are more than 64,000 visitors to the stream daily. The price of the land within 50 meters of the restoration project increased 30-50% compared to the pre-restoration period and brought 3.5% growth in business in Cheonggyecheon area.<sup>5</sup>

There are many strategies that could be shared from the Cheonggyecheon Stream Restoration project when considering the Scajaquada Creek Revitalization. First of all, improving the environment is a major goal for the restoration. A better environment can not only provide a sustainable habitat for natural species, but can also attract more visitors to the site. Secondly, the restoration could provide flood protection for the area, which in turn creates better living conditions for the surrounding

neighborhoods. Thirdly, increased of visitors could bring more business opportunities to the area, and the property value in the vicinity could increase. The restoration can not only improve the environment along Scajaquada Creek, but could also bring economic benefits to the surrounding neighborhood. Lastly, recovery along the creek could bring opportunities for reusing vacant lands along the creek, and could provide a chance for people to learn the history of the area.

### **The Freedom Trail, City of Boston**

The freedom trail (Figure 7) is a 2.5-mile long red-lined route that leads visitors to 16 historically significant of the United States.<sup>6</sup> There are some major benefits for creating a trail, for example, the trail helps people especially for who come to the place for the first time to navigate easily to the major attractions, the walking trail is often even and uncovered with obstacles, so it provides a safe environment for all different groups of users. Furthermore, the walking trail could make the communities more liveable, and attract more people to visit the area, and it will have the positive impacts on the economy through the tourism.

A trail is the best way for wayfinding the creek. A possible walk trail could set along the Scajaquada Creek, and the trail should connect the major attractions, the viewpoints, and the historical sites.

### **Design:**

#### **Scajaquada Creek Linear Park and Cultural Trail:**

This proposal plans to design a linear park with walk trail (Figure 8) along the Scajaquada Creek in a way not only preserve the Creek and the surrounding areas but

also attract the people to visit the Creek. The aims of the design are to make the Scajaquada Creek area become a place that has value in environmental, social and economic aspects.

#### Design Proposal:

The main goals of the design include:

- Preservation and restoration of the major historical sites, open spaces, and cultural landscape that encompasses both natural and man-made environmental factors
- Using the existing features to create a friendly environment for people to visit
- Creating a better environment for the natural species including animals and plants
- Providing the opportunities to public to learn the history and significance of the creek and the surroundings
- Creating the economic benefits to the surrounding area
- Making the surrounding community more liveable
- Providing opportunities for physical activities that improve the physical and mental health

#### Strategies:

- Creating a trail in the linear park that connected the major landmarks, the viewpoints, and the historical sites
- Turning the brownfields and open spaces under the highway to park
- Setting up signages on the major point of the attractions

- Cleaning up the creek
- Constructing a small water treatment facility on the Creek
- Removing the invasive species, and overgrown vegetation
- Connecting the open spaces and green spaces from different zones
- Setting up a kayaking program at the mouth of the creek and the Hoyt Lake
- Creating accesses to the linear park

Guidelines:

- **Creating a trail**

The trail will be a red-lined route that leads people to fourteen points which including major landmarks, the viewpoints and the historical sites along the Scajaquada Creek.

Explanation of the points of interest:

Point A. View of Unity Island

This is the starting point of the trail, and the mouth of the creek has distinct view from other parts of the creek where it is a meeting place between two streams. It offers a view of Unity Island from the creek shore standing point.

Point B. Railway Bridge

A warren truss type railway bridge at Niagara Street is the only rail bridge crossing over the creek that remains standing today in piece.

Point C. Niagara Street Bridge

Niagara Street Bridge that has through girder structure has historical value of the 1812 Black Rock War where the battle occurred between the British Army and the American Army.

#### Point D. Open Space Under Scajaquada Expressway

A bike lane under the intersection of elevated highways offers connectivity for biking activities along the creek.

#### Point E. Rail Spurs & Brownfield

A vacant industrial building and a remnant of the old spur under the Scajaquada Expressway is hidden from public access

#### Point F. War of 1812 Signage

A number of signs showing historical story of particular objects associated to the creek are planted in some section of the creek bank.

#### Point G. Buffalo Historical Museum

The Buffalo Historical Museum, which is located nearby the creek, has distinctive architectural style among its surroundings. It has historical values because it is the only remaining building from the 1901 Pan American Exposition. The building character could attract people and encourage people to walk around creek.

#### Point H. Japanese Garden

The Japanese Garden is a landmark adjacent to the creek that has picturesque view. It could attract and encourage people to walk and bike nearby the creek.

#### Point I. Hoyt Lake

The Hoyt Lake has a picturesque view, and there is a dam shows the lake and the creek are separated.

#### Point J. Albright-Knox Art Gallery

The Albright-Knox Art Gallery is a landmark and it could attract the people to visit the site.

#### Point K. Marcy Casino

The Marcy Casino is a historical building, and it is a landmark for Delaware Park. It could attract and encourage people to walk and bike nearby the creek.

#### Point L. Steps to Bridges (Historic):

The stairs show there was an intention to give people to access to walk along the creek.

#### Point M. Serenity Falls

This is a hidden part of the creek due to the low elevation and dense vegetation. It has a beautiful view and there are some waterfalls.

#### Point N. Channelized Creek

This is the end of the drain project, and also is the end point of the trail. The history of the Scajaquada Creek Drain Project could learn from here.

#### Proposal of Zone A (Figure 9)

- **Turning the brownfields to park**

Turning the brownfields to the open spaces could bring benefits in different aspects, for example, to the health, environment, social and economy. The precedent study for the brownfield redevelopment is Manchester Street Park in City of Lawrence, Massachusetts. The area was a former vacant industrial site, after the redevelopment of the site, the park offers great new green spaces and serves as a spectacular anchor for the Spicket River Greenway. And the Manchester Street Park has facilities for different

users, for example, a playground for the little kids, the riverside walk for the adults, and there are picnic tables for all users.<sup>7</sup> There are some infrastructures could share from the precedent, for example, the playground includes swing, the slide could add in the park, and the pathway could add near along the creek. People can easily find the playgrounds since it is on the trail.

- **Turning the open spaces under the highway to park**

The precedent study is for reusing the open spaces is Miami Underline design. The goal of the project is to transform the underutilized land below Miami's Metrorail, from the Miami River to Dadeland South Station, into a 10-mile iconic linear park, world-class urban trail and living art destination.<sup>8</sup> Although the Cheonggyecheon Stream had great success from removal the highway, removing Scajaquada Expressway is hard to achieve, developing the open spaces under the expressway to a linear park is a suitable option for using the spaces and wayfinding the creek. The open spaces are on the Scajaquada Creek Trail, so it is easy for people to visit the park under the highway. There are some design strategies could share from the precedent, for example, constructing some new public infrastructures such as paved pathway for pedestrian and cyclists, benches along the pathway and plants on the sides of the pathway, but the choosing of the plants need to base on the local conditions, which means planting some hardy plants, such as yarrow, juniper and so on.

- **Setting up signages on the major point of the attractions**

The signages along the trail are extremely important as it can not only help people to navigate themselves but also people can get the introduction of the landmarks, the viewpoints, and the historical sites.

- **Kayaking program at the mouth of the Creek**

The Riverkeeper is planning a kayak launch at the mouth of the creek, this is an opportunity to revitalize the creek. The kayaking program will bring more people to use the area, and it could become a new point of interest for the Scajaquada Creek Trail.

- **Removing the invasive species, and overgrown vegetation**

Clearing overgrown vegetation and invasive species along the pathway of the creek not only allow visual access to the creek, but also it could improve the environment. The invasive could bring some negative impacts to the environment. The most important one is the invasive plant will pollute and destroy the native environment, it will influence the growth of local plants. For example, the Japanese knotweed is a kind of invasive plant which affects the local plants. The Japanese knotweed can grow up to 10 feet, the local plants near the knotweed can't get enough sunlight since the knotweed block the sunlight. And the root of Japanese knotweed is very strong that can absorb a lot of the nutrient from the soil, and other plants can't get enough nutrient. Another major one is that the invasive plants will increase or reduce the diversity of plants, and it might break the balance of the ecosystem. Some strategies could apply to manage the invasive species, which are manual control strategies like digging, hand-pulling, burning, Mechanical Control like Cutting, Mowing, chopping, Chemical control such as basal bark, bundle and cut, and Cut-stump treatment.<sup>9</sup>

### Proposal of Zone B (Figure 10)

- **Constructing a small water treatment facility on the Creek (Cleaning up the creek)**

According to the precedent study of the Water Treatment Plant, Australia, the water treatment facility brought great positive impacts on improving the water quality.<sup>10</sup> Constructing small water treatment machines on the Scajaquada Creek should be done for the restoration purpose. The water treatment facilities include four major instruments, which are an automatic micro fibre filter, a pressure measurement, a level measurement and a pH measurement for the clean water. The water treatment process not only produces clean, reusable water but also has the potential to produce energy and fertilizer.<sup>11</sup> The dam shows the lake and the creek are separated the suitable position to place the water treatment facility because the water treatment plant could clean up the two water body at the same time

- **Connecting the open spaces and green spaces from different zones (better design for the sidewalks and bike lanes)**

The pathway in Delaware Park is well designed, however, the pathway does not separate pedestrians and cyclists. This could bring potential safety hazards if the number of users was increased. The separation of the paved sidewalks and bike lanes is needed.

### Proposal of Zone C (Figure 11)

- **Creating access to the linear park**

The hidden part of the creek in the Forest Lawn Cemetery has a picturesque view, and there are waterfalls. However, it is hidden due to the low elevation and dense vegetation, the possibly clear out undergrowth plants gives people opportunity to enjoy the view. The water flows very fast comparing to other zones, that brings the worries of the flooding issue, putting the big rocks along the creek is a tool to prevent the flooding. Also creating the stone path across the creek not only can slow down the water flows but also it can contribute to accessing the two sides of the creek. The better management the undergrowth plants not only can create an opportunity for people to enjoy the view but also can help to control the erosion. When clear out undergrowth plants, at the same time, some new plants need to plant along the creek, the plants must tolerate an excessive amount of water in the soil. The plants need to choose from evergreen plants like white spruce, eastern white pine, and hetz midget arborvitae, deciduous plants such as Red maple, sugar maple, and river birch. The plants chosen along the Scajaquada Creek are eastern white pine and sugar maple.<sup>12</sup>

- **Setting up signage at the major points of the attractions**

The end of the drain project point is also the end point of the trail. Therefore, there should be signage that provides the history of the Scajaquada Creek Drain Project as well as a warning that the area after this point is restricted for public use due to safety issues.

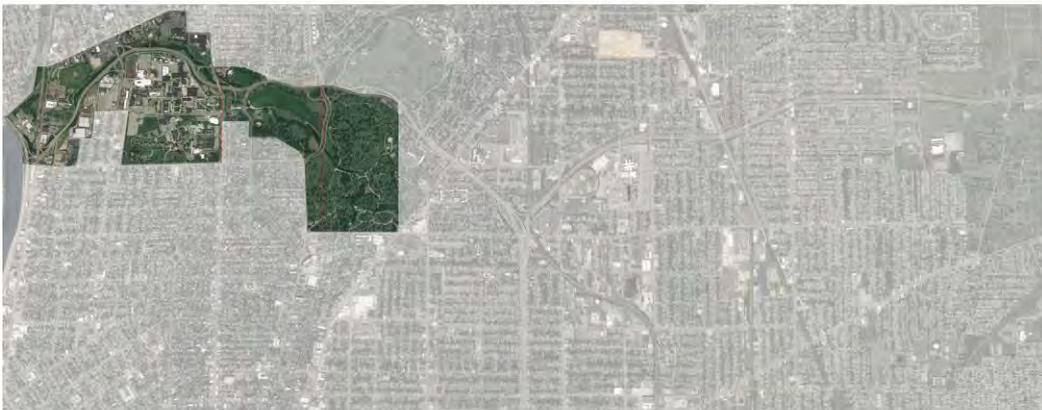
**Conclusion:**

In closing, this study documents major character defining features along the Scajaquada Creek within the scope of the study area. The study area is the exposed

portion of the Scajaquada Creek, and it contains three different cultural zones. The precedent studies provide a major theory of the restoration of the creek which is creating a linear park with a trail, and making the Scajaquada Creek area into a place that has values in environmental, social and economic value.

Appendix:

Figure 1. Study Area (The Exposed portion of the Scajaquada Creek)



Zone A (Mouth at Black Rock Canal to Elmwood Avenue)



Zone B (Elmwood Avenue to Delaware Avenue through the Park)



Zone C (Forest Lawn Cemetery at West End (Delaware Avenue) to Main Street)



Figure 2. Defining Features from Black Rock to Elmwood Avenue

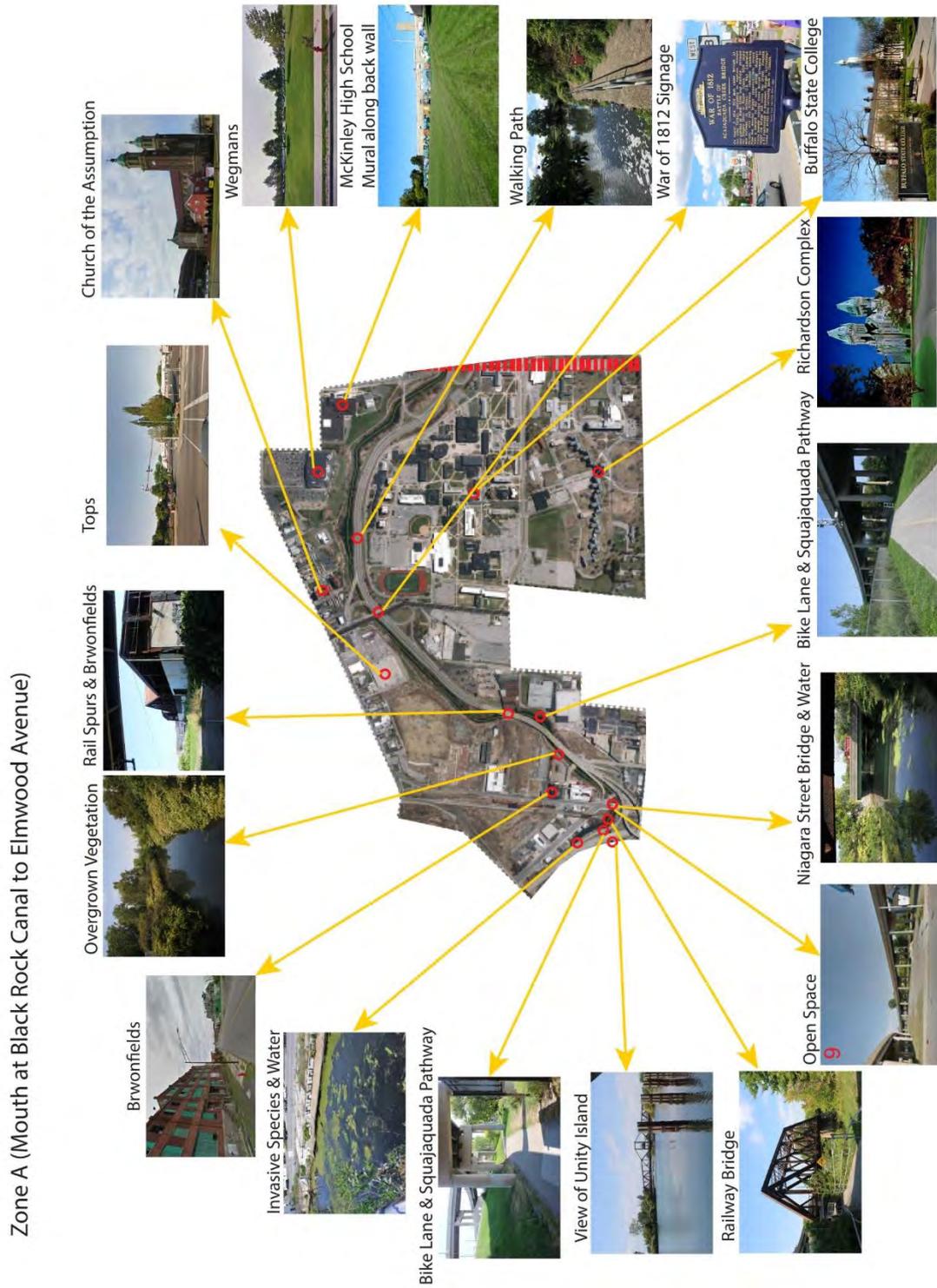


Figure 3. Defining Features from Elmwood Avenue to Delaware Avenue

Zone B (Elmwood Avenue to Delaware Avenue Through the Park)

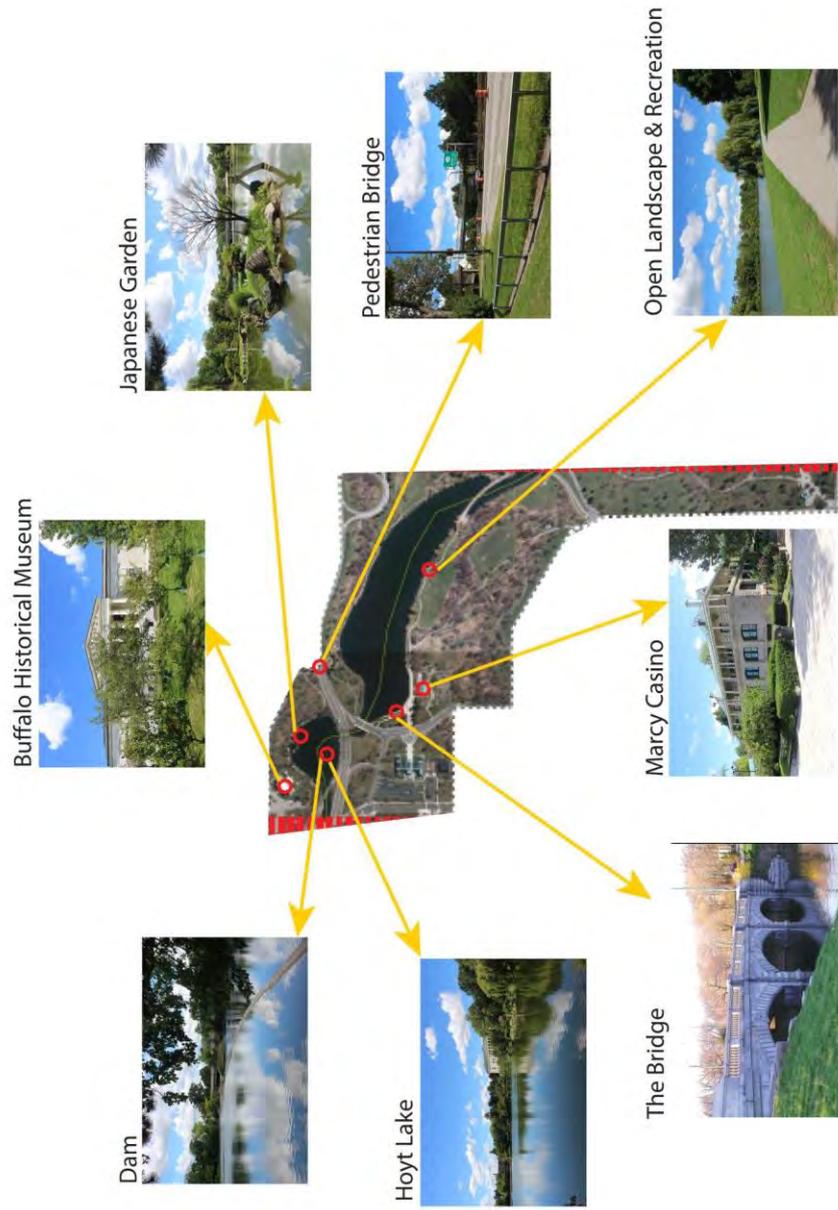


Figure 4. Historical Images shows people boating on the lake



Source: <http://www.buffaloresearch.com/>

Figure 5. Defining Features from Delaware Avenue to Main Street

Zone C (Forest Lawn Cemetery at West End (Delaware Avenue) to Main Street)

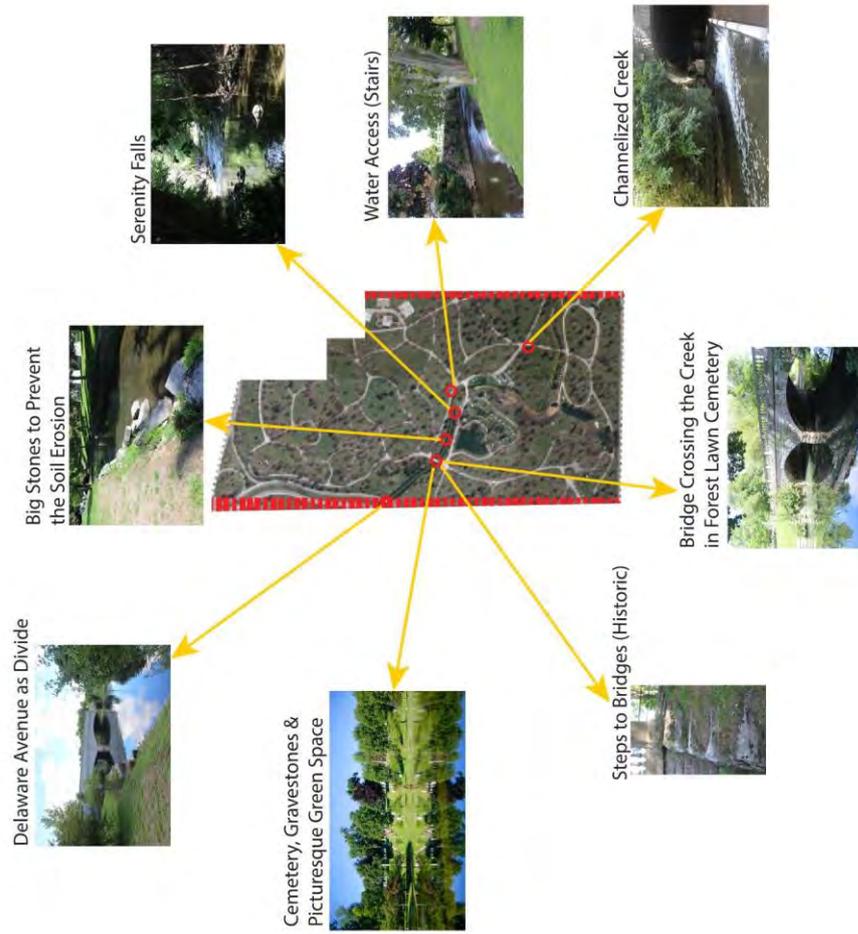


Figure 6. Cheonggyecheon Stream Before & After



Source: <http://2014-2015.nclurbandesign.org/uncategorised/cheonggyecheon-river-restoration-project-restoration-environmental-social-economic-seoul>



Source: <http://www.vigorousnorth.com/2009/01/cheonggyecheon.html>

Figure 7. The freedom trail



Source: <http://www.touristsbook.com/boston/things-to-do/freedom-trail/>

Figure 8. The Scajaquada Creek Trail Map

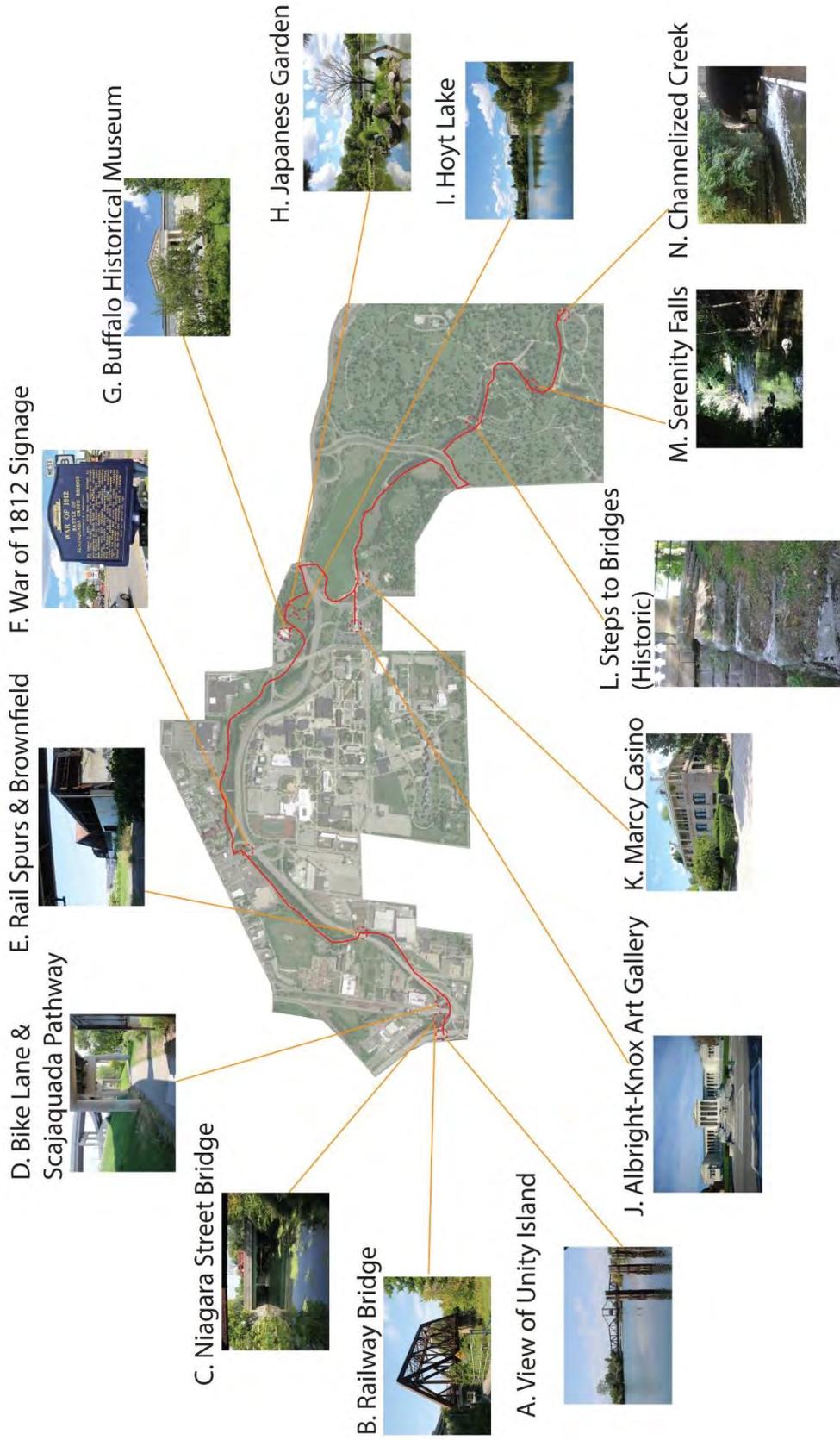


Figure 9. The Proposal of zone A

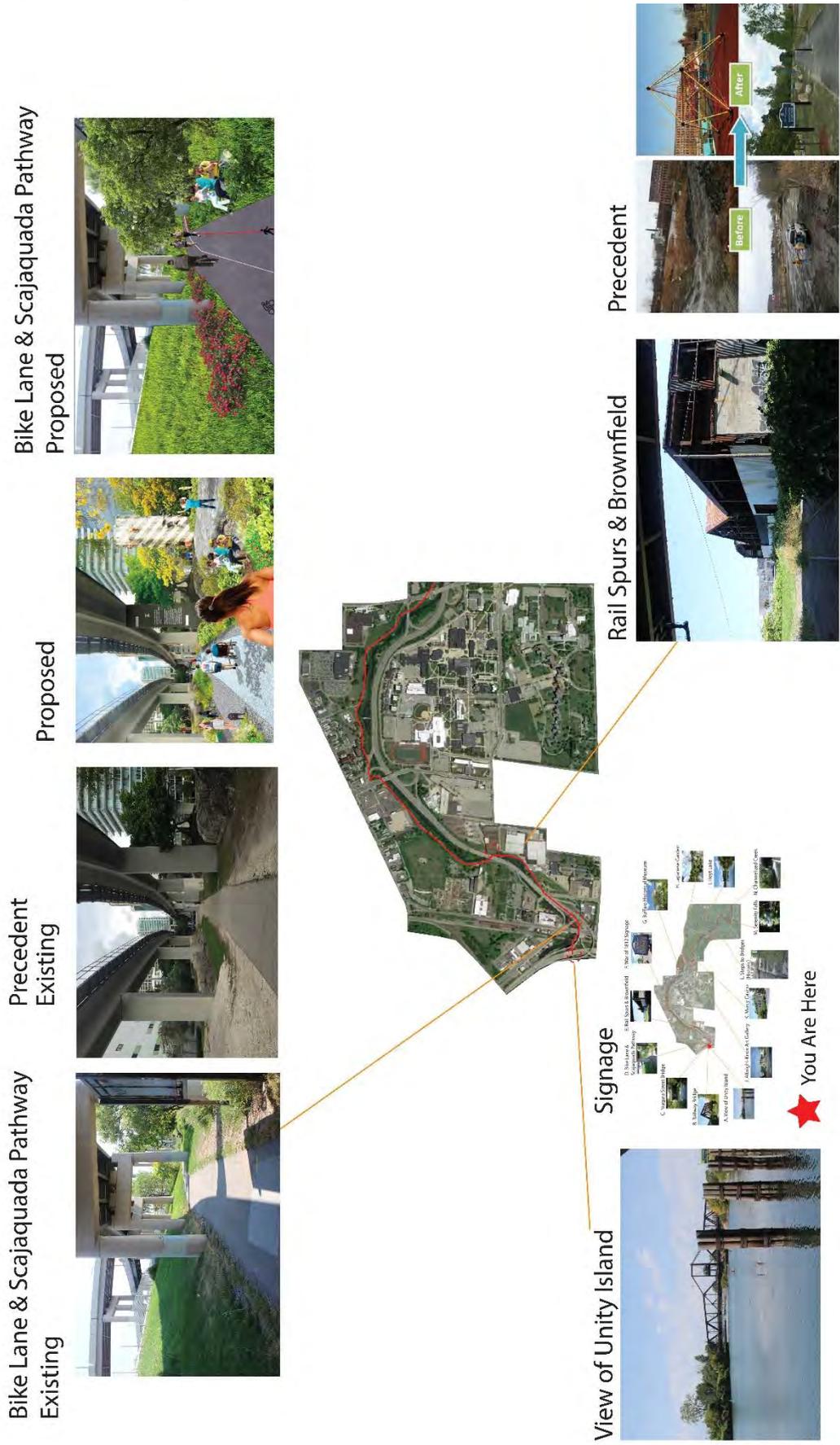


Figure 10. The Proposal of zone B

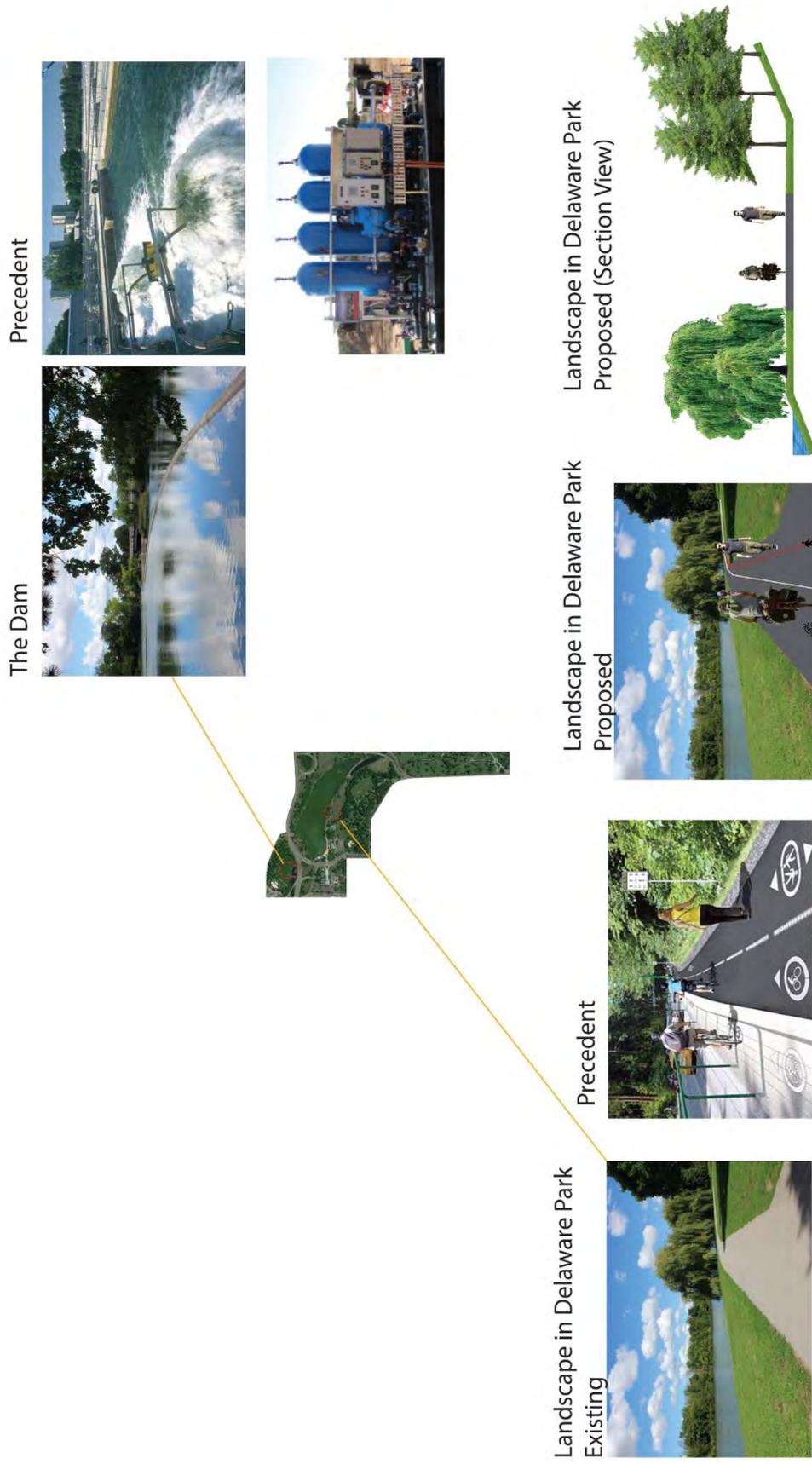
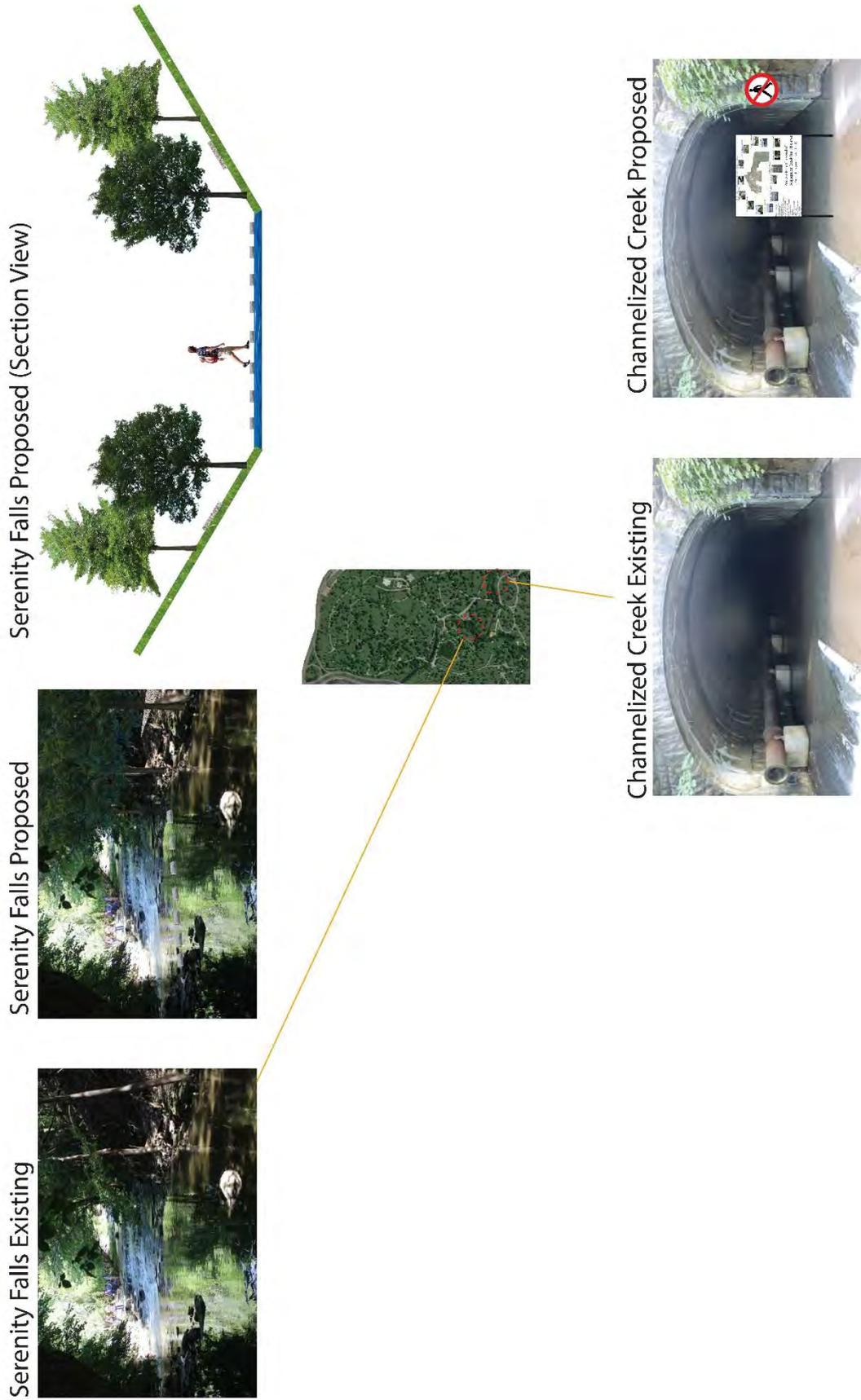


Figure 11. The Proposal of zone C



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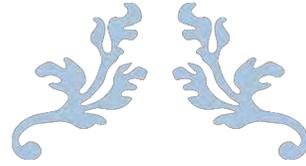
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Crystal Middleton







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# REVITALIZING THE SCAJAQUADA CREEK

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By: Crystal Middleton



NOVEMBER 28, 2016  
UNIVERSITY AT BUFFALO – URP 581 STUDIO

# The Scajaquada Creek

The Scajaquada Creek and its immediate surroundings have a very rich history that is well worth telling. With a portion of the creek having been buried below the East Side of Buffalo for decades, it is highly likely that its presence is unknown by many. This brings about an opportunity for many projects to take place along the creek. Not only could these projects help to raise awareness regarding the existence of the creek's underground waters, but furthermore gain support for potential daylighting and maintaining the cleanliness of the water. Daylighting and restoring urban waterways can provide massive benefits, both ecologically and socially. There are at least ten reasons why cities should daylight. Daylighting is said to reduce flooding, conserve groundwater, boost ecology, tackle pollution, create green corridors, reduce urban heat island effect, provide recreational space, drive urban regeneration, provide economic benefits and allow for a connection to the past.<sup>1</sup>

## Daylighting the Scajaquada Creek

Schiller Park, which is a neighborhood on Buffalo's East Side is a great place to implement the idea of daylighting. The Scajaquada Creek is channeled underground just beneath the park's vast open green space where it is very well maintained, but hosts little to no activity. Schiller Park is located in the midst of an urban area surrounded by residential housing. Daylighting the Scajaquada Creek in this area would not only benefit the natural environment, but it would also provide an active public space for residents to enjoy while simultaneously increasing the economic value of the surrounding neighborhoods.



*Figure 1: Schiller Park on Buffalo, New York's East Side. Source: Daily Public. 2016.*

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<sup>1</sup> "10 Reasons Why Cities Should Daylight Rivers." Landscape Architects Network. 2015. Accessed November 26, 2016. <http://landarchs.com/10-reasons-why-cities-should-daylight-rivers/>.

Precedent: [Bishan-Ang Mo Kio Park](#)



*Figure 2: Bishan-Ang Mo Kio Park in Singapore.*

There are many examples wherein ecosystems in the midst of urban settings have proved to be successful. One particular case is highlighted in Bishan-Ang Mo Kio Park, formerly known as Bishan Park in Singapore. This park is one of the most popular parks in Singapore and developed as the result of a much-needed upgrade to improve the capacity of the channel along the edge of the park. Works were carried out to transform a practical concrete channel into a naturalized river, creating new spaces for the community to enjoy. The project is part of the Active, Beautiful, Clean Waters Program (ABC Waters), which is a long-term initiative to transform Singapore's water bodies beyond their functions of drainage and water supply, into vibrant, new spaces for community bonding and recreation.

At Bishan Park, a 2.7 km straight concrete drainage channel has been converted into a sinuous, 3.2 km long natural river, that meanders through the park. Sixty-two hectares of park space has been aesthetically redesigned to accommodate the dynamic process of a river system which includes fluctuating water levels, while providing maximized benefits for park users. Three playgrounds, restaurants, a new vantage point constructed using the recycled walls of the old concrete channel, and plenty of open green spaces complement the natural wonder of an

ecologically restored river in the heartlands of the city.<sup>2</sup> In relation to Schiller Park, there are a few notes that can be taken from this precedent. Since Schiller Park also features a wide open green space in an urban setting, the area could be used to stimulate a social atmosphere with a small waterway that goes through the park for residents to enjoy and interact with the water. The idea of implementing a bridge over the waterway is also something that residents and visitors can use as a viewing point. The daylighting of the actual Scajaquada Creek may not be feasible, however incorporating some type of artificial waterway may work in Schiller Park.



*Figures 3 and 4: Overhead bridge in Bishan-Ang Mo Kio Park.*



*Figures 5 and 6: Park goes enjoying waterway in the midst of an urban setting.*

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<sup>2</sup> Ng Keok Poh, Leonard. "Bishan-Ang Mo Kio Park." Ramboll Group. Accessed November 27, 2016. <http://www.ramboll.com/projects/singapore/bishan-park>.

Precedent: [Arcadia Creek](#)



*Figure 7: Daylighted portion of Arcadia Creek in Kalamazoo, Michigan.*

Arcadia Creek is located in the downtown area of Kalamazoo, Michigan and has a watershed that is mostly urban. The City of Kalamazoo has a core population of 80,000 people; however, it is the center of a total population of approximately 250,000 people in southwestern Michigan. Arcadia Creek has been underground for the better part of 100 years. As impervious areas increased, so did the frequency of flooding as the culvert that contained Arcadia Creek was not large enough to handle the increased runoff according to the City of Kalamazoo. City engineers examined the cost of replacing the culvert but discovered that daylighting the creek and placing it in a canal would be cheaper. Construction of the project took place between 1989 and 1992, and finished in 1995.

This project was part of a major downtown redevelopment campaign that included five blocks of a daylighted Arcadia Creek. Three of those blocks are concrete walled, while the remaining length is a storm water pond with landscaped, grassy slopes and re-creation areas. A concrete channel was used, as the groundwater levels in Kalamazoo are too low for a creek to exist at the surface. It was not in the budget to create a riparian corridor or more naturalized creek. The total cost of the project was \$18 million US, \$7.5 million US specifically for daylighting Arcadia Creek. The total length daylighted was 1,550 feet, equal to five city blocks. The primary objectives for daylighting Arcadia Creek, was to address a serious flood problem and to create a downtown amenity that could leverage more redevelopment. **Kalamazoo** is now protected from anything up to a 500-year flood. It's new "Festival Site" now hosts five major

summer festivals that generate annual revenues of \$12 million US. Property tax revenues near the creek have risen from \$60,000 US to \$400,000 US annually.<sup>3</sup>

Precedent: [Cow Creek](#)



*Figure 8: Daylighted section of Cow Creek in Hutchinson, Kansas.*

Hutchinson, a city of 40,000 people in rural Kansas northwest of Wichita, relocated Cow Creek in 1997. Previously the creek ran through a major thoroughfare through downtown; effectively, the four-lane avenue was built on a bridge which, instead of crossing Cow Creek, ran on top of it for a considerable distance. The aged structure needed to be replaced, but building a similar new bridge directly over the stream would have taken three years and rerouted traffic for an unacceptably long time to downtown businesses. Instead, the city made the now-daylighted 800-foot section of creek the centerpiece of a new park there. The old creek bed was filled and Avenue A rebuilt on solid earth, allowing for timely reconstruction. The entire project cost \$4 million, most of which was supported by an 80-percent cost share from the Bridge Replacement and Transportation Enhancements Programs of the federal Intermodal Surface Transportation Efficiency Act (ISTEA). The park portion of the project came to \$1.25 million.

Cow Creek curves through the park in a concrete channel about 10 feet wide and 30 inches deep. A wide path made of concrete paver blocks follows the edge of the channel. A grassy amphitheater and a stage face each other from opposite sides of the creek. The park also has a large water play area with many fountains and water features fed by city water. While the state fish and wildlife agency wanted a naturalized, earthen-bottomed channel, the city felt this would be inappropriate for this downtown park, and would create a maintenance problem. Due to

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<sup>3</sup> Peifer, David. "Daylighting Streams Finding Buried Treasure Close to Home." Association of New Jersey Environmental Commissions. Accessed November 26, 2016. <http://www.anjec.org/pdfs/Presentation-DaylightingStreamsDPeifer.pdf>.

Cow Creek's low gradient (1 foot drop per 1,000 linear feet), it drops a lot of sediment in this area. City crews can easily remove this sediment with periodic scraping of the concrete channel.<sup>4</sup>

### Implementation

Each of these case studies offer insight into how successful waterways can be in urban settings. If Schiller Park were to be daylighted, it would be in the most cost efficient and timely manner. Removing the culvert would not be the most proficient way of implementing a water body, however an artificial waterway with a natural filtering system could be constructed overtop of the path of the Scajaquada Creek (possibly similar to a smaller version of Hoyt Lake). This could serve as a reminder of the Creek's existence and give people a place to socialize and embrace nature.

### Challenges

There can be many challenges to actual daylighting. Challenges may include finding the original channel, working with a limited amount of space to create a natural channel, hydraulic issues, finding a successful method of natural filtering to maintain cleanliness, extra community education or outreach to help people visualize potential, and it may involve a great deal of earthmoving, which can be expensive. Although daylighting may not be one of the most readily implementable projects because of funding, it is still one that may be achievable in the future of the Scajaquada Creek's restoration.

### Other Projects

Further research resulted in more feasible ideas that could be implemented around the Scajaquada Creek in a timelier and more economical fashion. The following projects all relate back to the idea of essentially raising awareness of the buried creek and gaining interest amongst residents and organizations, to stimulate change.

Precedent: [Creek Stenciling, Berkeley](#)

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<sup>4</sup> "Daylighting: New Life for Buried Streams." Rocky Mountain Institute. Accessed November 27, 2016. [http://www.rmi.org/Knowledge-Center/Library/W00-32\\_DaylightingNewLifeBuriedStreams](http://www.rmi.org/Knowledge-Center/Library/W00-32_DaylightingNewLifeBuriedStreams).



*Figure 9: Creek stenciling in Berkeley, California.*

In 1988, Richard Register came up with the idea to mark streetside curbs around Berkeley with “creek critters” to let people know where their waterways flowed: 85% were under the streets and sidewalks, yards and buildings and only two blocks have been liberated since then. Two years later, Alameda County came out with “Don’t Dump – Drains to Bay” curb stenciling program. The concept spread rapidly to other cities and states.<sup>5</sup> This would be useful on the curbs throughout the entire length of the Scajaquada Creek, especially along the underground portion on the East Side to help raise awareness and serve as a constant reminder for people to keep the waterways clean.

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<sup>5</sup> "Creek Stenciling, Berkeley." Ecocity Builders. Accessed November 26, 2016. <http://ecocitybuilders.org/projects/past/creek-stenciling/>.

Precedent: [Griggs, O'Shaughnessy & Hoover Reservoirs](#)



Figure 10: Interpretive signs in Columbus, Ohio at Griggs, O'Shaughnessy & Hoover Reservoirs.

Signage installed at Griggs, O'Shaughnessy & Hoover Reservoirs in Columbus, Ohio invites park visitors to take a self-guided tour along the shoreline & learn about the green infrastructure installed there. The interpretive signs educate visitors on how to improve the quality of storm water entering the reservoirs that supply their drinking water. Interpretive signs could be used throughout the Scajaguada Creek to let people know it exists and educate them. Good places to place signage along the creek include at Villa Maria College, Schiller Park, at the intersection of Bailey and Kerns, the Northland Corridor, the NFTA metro Rail Station (which is frequently travelled), Forest Lawn Cemetery, Hoyt Lake, along the bike path, and at Niagara near the mouth of the Creek. The signs could give a brief history of the creek, designating the route the creek takes in each neighborhood and what people can do to reduce pollution, and support the movement.

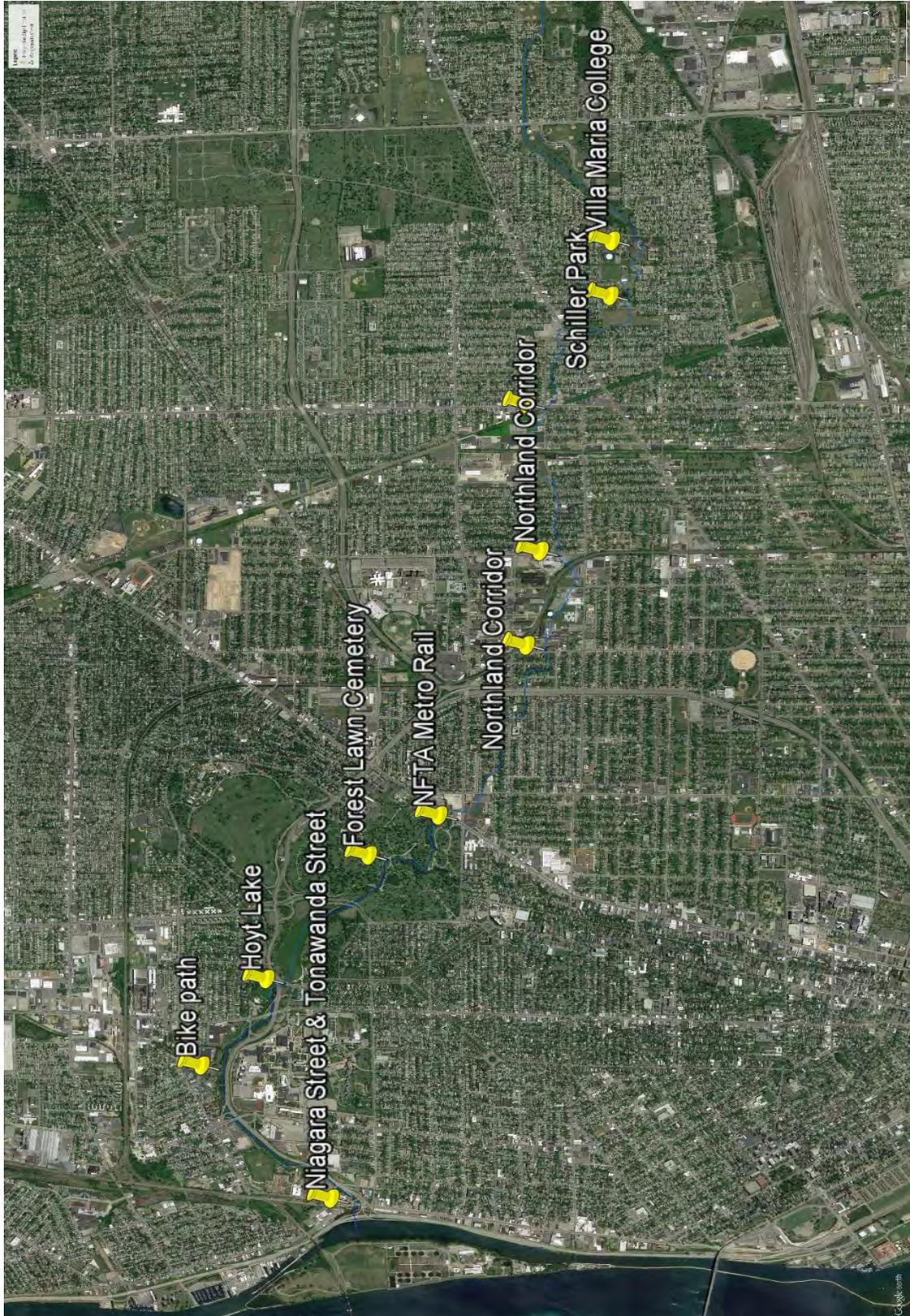


Figure 11: Map showing places of historical marker implementation and/or storm drains. Source: Google Earth.

Precedent: [San Francisco Bay](#)

This design for San Francisco's streets was meant to solve the ongoing problem of people dumping automobile oil into the storm drains and polluting San Francisco Bay. Stenciled warnings near existing drains, the designer felt, need constant maintenance and do little to deter people who already know they shouldn't dump. The proposed grate, shaped like a fish, would graphically challenge people by making their dirty deed concrete: dumping oil on a fish.<sup>6</sup>



*Figure 12: Fish storm drain in San Francisco Bay.*

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<sup>6</sup> Makowski, Ann. "Gratefish Storm Drain." SEGD. Accessed November 29, 2016. <https://segd.org/gratefish-storm-drain>.

Precedent: [Watershed Brush Creek](#)

Other designs simply just attract people and educate them based on art – a project which can be implemented with little to no budget.



Figures 13 and 14: Street art to attract attention to maintain the cleanliness of Brush Creek in Illinois.

Precedent: [Public Art Vs. Pollution](#)



Figures 15 and 16: Street art in Reno, Nevada drawn to fight pollution of underwater creek.

## Shoreline Restoration



*Figure 17: The bike path along the Scajaquada Creek showing overgrowth of plants. Source: Bradley Everdyke 2016.*

The bike path along Scajaquada Creek suffers from overgrown plants and a vast amount of invasive species. This obstructs pedestrian and biker views of the creek while also decreasing the diversity of plants and animals. Among these issues, the creek also suffers from other environmental issues including poor aesthetic conditions, excess sedimentation, the need for flood management, combined sewer overflows and a host of other things.<sup>7</sup> Stabilizing the shoreline is a major step to restoring the creek and improving its water quality. The precedents below help to visualize ideas regarding the feasibility of restoring the Scajaquada Creek's shoreline and what it takes to do so.

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<sup>7</sup> "Scajaquada Creek." Buffalo Niagara RIVERKEEPER. Accessed November 26, 2016. <http://bnriverkeeper.org/places/scajaquada-creek-2/>.

Precedent: Fairmount Park - Natural Lands Restoration & Environmental Education



*Figure 18: Fairmount Park in Philadelphia.*

In an unprecedented effort to restore, renew, and protect one of the largest municipal parks in the U.S. for future generations, the Fairmount Park Commission selected The Academy of Natural Sciences to work on the Natural Lands Restoration and Environmental Education Program (NLREEP). This five-year special initiative was initially funded by a \$26 million grant. NLREEP is designed to restore portions of the natural landscape in the seven watershed parks of the Fairmount Park system.

The Academy prepared the master plan for environmental restoration in the park system. The master planning process included assessment of vegetative health and invasive plants throughout the park, assessment of stream conditions in the many streams within the park system, and a review of historical information on ecological conditions. Public meetings were held with community groups throughout the city to document local community interests and needs, and to discuss potential restoration activities. The master plan documented important ecological sites throughout the park system and described a variety of restoration activities which should be implemented and made site-specific recommendations for restoration. Recommended activities include invasive plant control and revegetation by native plants, creation of meadows and wetlands to reduce stormwater runoff and increase wildlife habitat, construction of berms and other techniques to increase infiltration, repair of erosion gullies and erosion control to reduce erosion, bioengineering approaches to stream bank protection, improvements of trails, stream crossings, and culverts to reduce bank erosion, and reintroduction of selected animal taxa. Many of these activities have been implemented following preparation of the master plan.<sup>8</sup>

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<sup>8</sup> "Fairmount Park Restoration." The Academy of Natural Sciences of Drexel University. Accessed November 27, 2016. <http://www.ansp.org/research/environmental-research/projects/fairmount-park/>

Precedent: [Meadow Creek](#)

One of the Charlottesville, Virginia's major waterways was selected to undergo a significant stream restoration. The restoration has resulted in a stable stream system and improved water quality, as well as enhanced aquatic habitat and aesthetic values.



*Figures 19 and 20: Before (left) and after (right) photos of restoration in Meadow Creek.*

Restoration work involved restoring 9,000 linear feet of degraded stream, preserving 10 acres of wetlands, over one mile of the Rivanna Trail, and a total of 72 acres of land. The work entailed reducing the steep height of the stream banks, realigning the stream channel, adding meanders and in-stream habitat structures, removing invasive plant species, and planting native plants and trees to enhance the forested buffer along the stream. Extensive data collection, surveying, and modeling was completed to aid in the development of the project design and subsequent construction. Citizen and neighborhood input was solicited throughout the process and played a vital role. To permanently protect the stream, wetlands, and forested buffer, conservation easements have been placed over the project area. A trails plan is being developed that will work in concert with the new easements and stream alignment.<sup>9</sup>

Restoring the Scajaquada Creek may be a challenge, but can definitely be done. The idea of reducing the height of the stream banks, realigning the channel and removing the invasive species (such as the Japanese Knotweed along the Bike Path) can be achieved with the right processes and funding. These changes would result in improved water quality and a stronger consciousness of the Creek. Data collection can be done by professionals, students and even volunteers to develop a design and implement it. Lobbying for residential support and participation would also be helpful. In addition, a conservation easement could be placed along Scajaquada Creek to permanently protect it.

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<sup>9</sup> "Meadow Creek Restoration Project." City of Charlottesville : Meadow Creek Restoration Project. Accessed November 29, 2016. <http://www.charlottesville.org/departments-and-services/departments-h-z/public-works/environmental-sustainability/meadow-creek-restoration-project>.

## Historical Monuments



*Figure 21: Old historical marker that should be replaced on Niagara Street near Tonawanda Street in Buffalo, NY. Source: Bradley Everdyke 2016.*

Lastly, is the idea of implementing a monument to reference the Battle at Scajaquada Creek and the significant role the creek actually played. The theme would revolve around raising awareness and honoring our past. Below are historical marker ideas that could possibly be placed on Niagara Street and at the battle site to replace the existing historical marker. These sites make sense because they are highly visible, historically significant and frequently travelled.

Precedent: [Baltimore, MD](#)



*Figure 22: War of 1812 monuments located directly in front of the Patterson Park Pagoda in Baltimore, Maryland.*

Precedent: [Little Rock, AR](#)



*Figure 23: Water fountain that memorializes 56 veterans who are buried in Arkansas following the War of 1812.*

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Google Earth Software.

Jared Parylo





# Daylighting Scajaquada Creek

## Philosophy and Background -Jared Parylo

Daylighting is a broad concept, and can include a wide variety of activities and approaches. In general, it describes projects that deliberately expose some or all of the flow of a previously covered river, creek, or storm water drainage. Daylighting projects liberate waterways that were buried in culverts or pipes, covered by decks, or otherwise removed from view.

Specifically, it can involve both Natural Restoration and Cultural Restoration, and there are variations and different approaches even within these classifications.

*Focus on what is possible, at any scale.*

Table 1. Stream Daylighting Average Cost Breakdowns by Le

Small Scale = < 250 linear feet	
Average length	144 lin. ft
Average cost	\$9,800
Cost/lin. foot	\$68.05

Medium Scale = 250 - 1,000 linear feet	
Average length	480 lin. ft
Average cost	\$48,250
Cost/lin. foot	\$100.50

Large Scale = > 1,000 linear feet	
Average length	2,287 lin. ft.
Average cost	\$1,857,250
Cost/lin. foot	\$812.09

Issues of cost alone of 'natural' daylighting can be prohibitive, and can be a tough sell for local and state governments.

### Natural Daylighting



**Hastings Creek**  
Creekway Park, Vancouver, B.C.  
*Cultural Daylighting*



**Dock Creek**  
Independence Park, Philadelphia, PA

### Architectural Daylighting



**Cheonggyecheon Creek**  
Cheonggyecheon, Seoul, South Korea

Improving the water quality of Scajaquada will work to bring about a healthier ecosystem, improving plant and animal life. It will allow the creek to be seen as a positive asset in the surrounding community, while it has been largely viewed as a problematic feature for nearly 150 years.

Improving the water quality of Scajaquada will work to bring about a healthier ecosystem, improving plant and animal life. It will allow the creek to be seen as a positive asset in the surrounding community, while it has been largely viewed as a problematic feature for nearly 150 years.

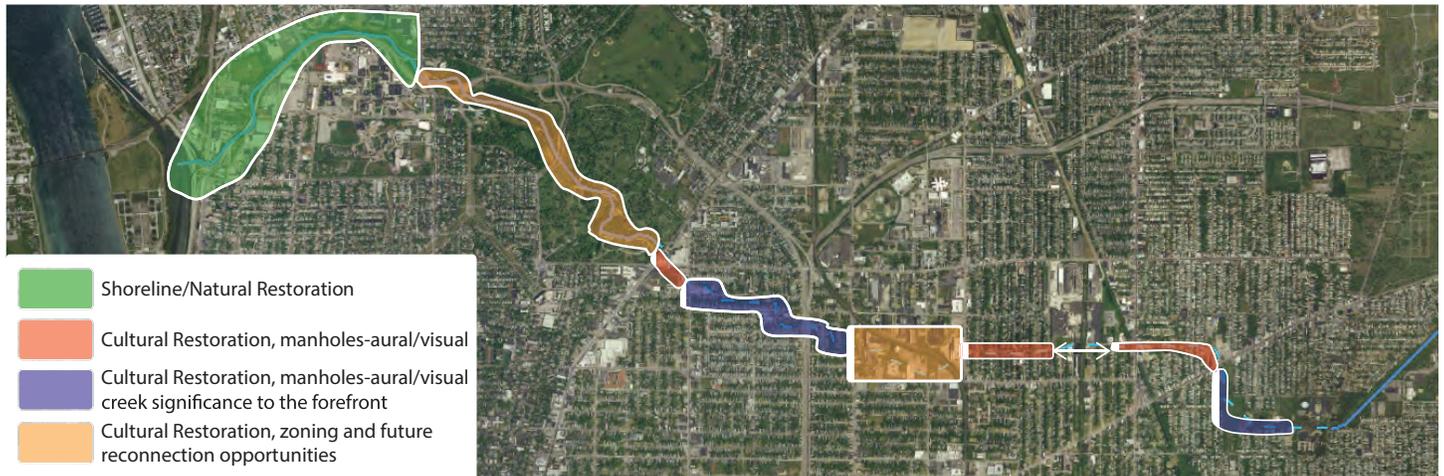
Simple shoreline restoration efforts can be done on various scales at a number of places along the creek. Collectively, these efforts can work to re-establish a strong riparian zone along the creek, improving water quality and aesthetic value.



**Before: Mission Creek**  
Union Gap, Washington



**After: Mission Creek**  
Union Gap, Washington



With costs widely ranging from \$68 to over \$812 per square foot, daylighting, when referring to the uncovering and natural or architectural restoration of the creek, can easily become multi-million dollar projects for only small portions of creek.

The creek has become polluted over the years from a variety of sources including industry, sewage, and wetland destruction. It is not reasonable, financially or socially, to invest millions of dollars in physically uncovering a polluted creek running through urbanized areas.



Establishing a connection to the creek and its nautical history through cultural daylighting can be a worthwhile move near the mouth of the creek, where much of this history has been lost.

*Left:* Launch of the Seabreeze near the mouth of the creek, 1907. (buffaloah.com)

The public has become increasingly aware of the region's aquatic assets, and flourishing areas such as Canalside, and activities such as kayaking down the Buffalo River, while difficult to imagine even twenty years ago, have now become a reality.

Rather than spending millions to uncover a very small portion of the (highly polluted) creek, likely in areas where public awareness and concern for the creek is low or entirely nonexistent, it is recommended that resources and efforts work towards comprehensively improving the quality of the creek where it is currently uncovered. In fact, it seems like work is already happening loosely (and perhaps entirely unintentionally) following this pattern.

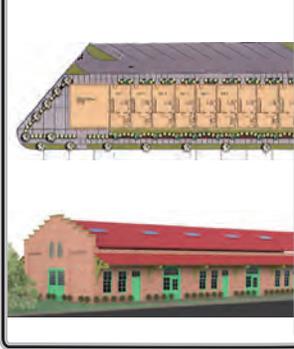
# Daylighting Scajaquada Creek

# West Scajaquada



West Scajaquada offers a diverse set of opportunities in terms of shoreline restoration, reestablishing a cultural connection, all leading to a stronger and more meaningful connection to the creek.

A proposed development in the former rail depot along Tonawanda St involves a mixed-use conversion into a residential/commercial space. This project could act as an important impetus of change.



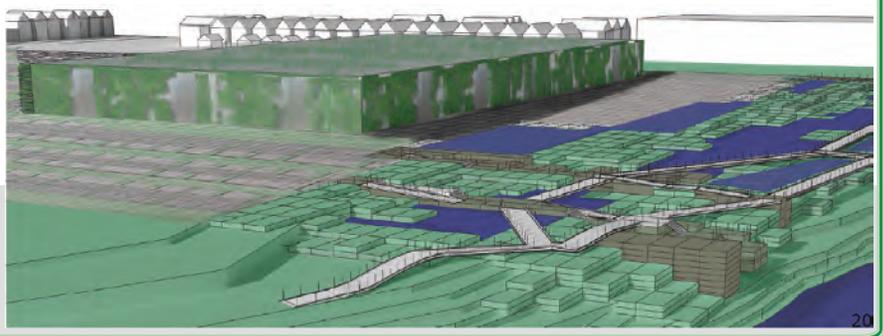
A system of terraced constructed wetlands can act as means of bringing the public down to the creek level, while improving water quality and increasing large-scale awareness of the creek as it runs through this highly developed area.



Pathways and Connections



Flooding and Water Management



Buffalo Niagara Riverkeeper future kayak launch site

Residential Reuse: Redevelopment of former industrial spaces

Architecture: Ecological Practices Research Group: Technical Methods

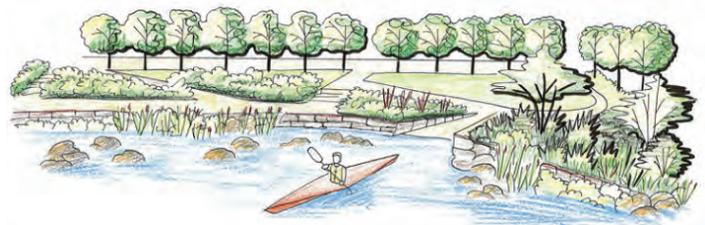
## Proposals and Ongoing Work

Increased programming and public access, integrated into ecological cleansing processes, was a the overarching theme in the Architecture Ecological Practices GRG, for both studio and technical methods. The site at the mouth of the creek was re-imagined as a public gathering and fishing access area, while the site to the south of Wegmans was re-imagined as a terraced garden-like structure, designed to bring people down to the water level while cleaning water/runoff from surround impervious surfaces, reducing CSO events into the creek.



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**BUFFALO NIAGARA RIVERKEEPER®**

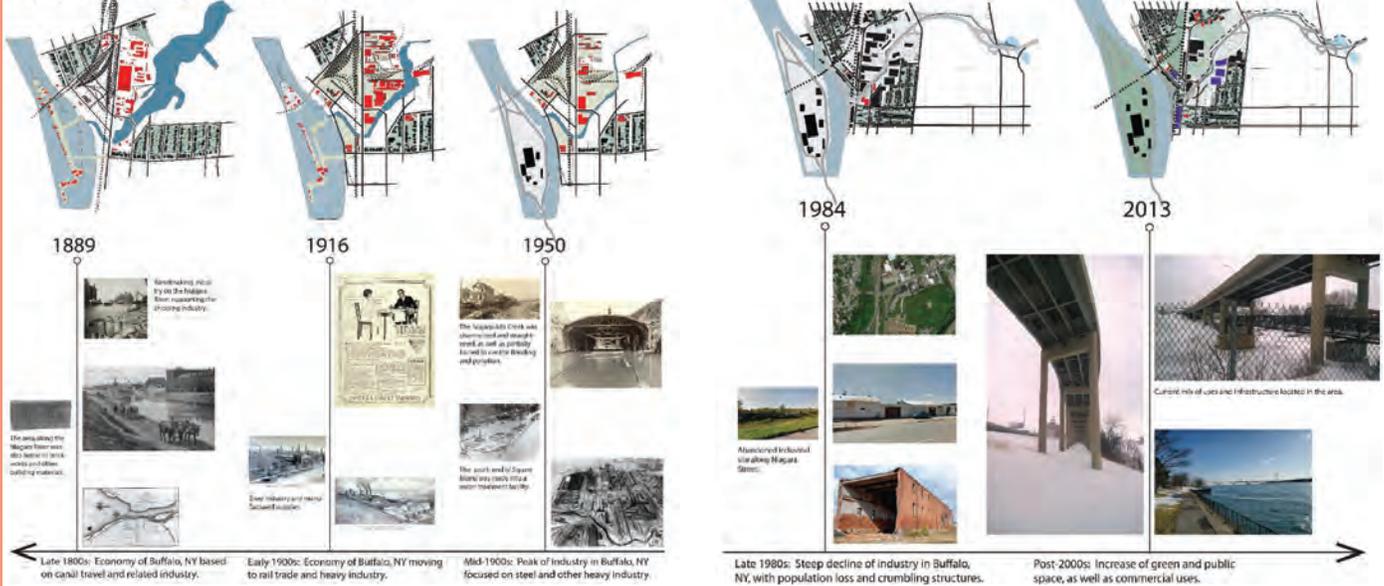


# Daylighting Scajaquada Creek

# West Scajaquada

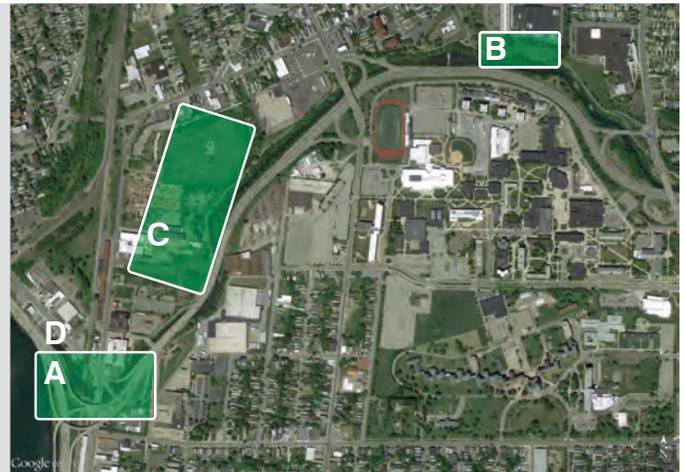
The West Scajaquada area is an area rich in history, and an area that has undergone a significant amount of modifications and alterations over the course of history. Although the area currently has a number of uses, intersections, and forms of transportation running through it, this zone is still a popular area for recreation and water access.

Scajaquada and Niagara: History of Uses and Conditions



Brownfields, Creekside-water access, connections to the rich and multifaceted history of the creek and its surroundings

## Strengthen Connections, Improve Access, Highlight History



Access to the creek near the mouth of the creek is already existing, but can be improved, labeled, and made more accessible



The mouth of the creek is open to the Black Rock Canal and is a popular fishing spot.



Brownfield sites near the creek are now becoming heavily wooded, yet are still entirely inaccessible.

# Daylighting Scajaquada Creek

# Main to Fillmore



Delaware Park and Forest Lawn, although having seen many changes over time, still largely reflect their original historic design from the 1800s. There is a need to improve the park, especially in regards to the Scajaquada Expressway (198) running through it, and there has been many proposals regarding this. It is important to consider the creek in future plans, and not consider it as an incidental occurrence.

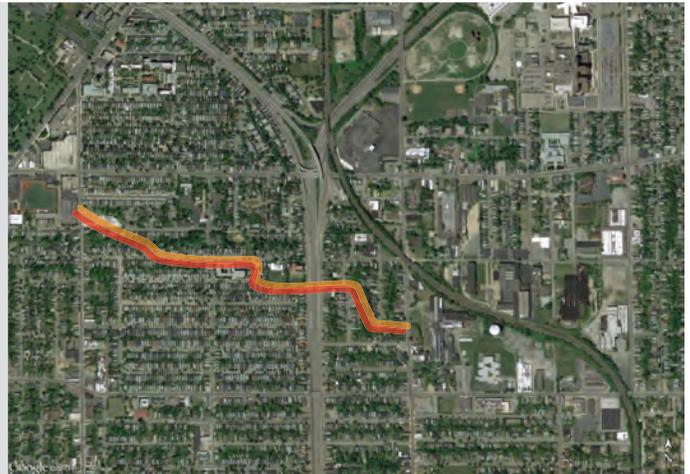
*Awareness and connections.*



The neighborhoods directly east of Main Street, through to Fillmore, historically had a relationship to the creek, and the areas' roadways, housing, and built form had to conform to the creek. Even after the creek was buried, the neighborhoods' form remained largely unchanged, and the creek is now a series of linear parks, pathways, and playgrounds. These spaces are already well-used, but there is little understanding of the creek flowing underneath. Adding signage, better wayfinding devices, can help both residents and visitors better understand and travel through the area.

Historic Parks, Unrecognized potential

**Strengthen Connections, Advertise the Creek and the Linear Park Experience, Highlight History**



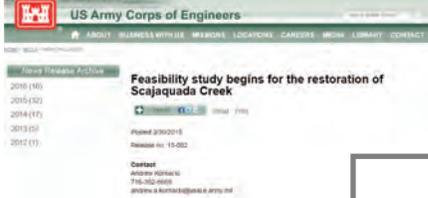
Linear parks in the Main to Fillmore neighborhoods are located on top of the buried creek. Despite these paths meandering through the neighborhood in a rough form resembling the natural creek path, there is no clear or marked connection to the park in these linear parks. Previous studies and analysis has identified the ability to hear and follow the creek through the manholes. The auditory conditions are a strong feature not commonly recognized by people in the neighborhood as well as passerbys. (scajaquada.org)

# Daylighting Scajaquada Creek

# Delaware Park & Forest Lawn

Scajaquada Creek clean-up extends into Forest Lawn  
About 13,000 tourists visit Forest Lawn as a nature park

By Ross Conte, News 4 Investigates Producer  
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There are a number of plans and initiatives already in place in regards to Delaware Park and the Scajaquada Creek. These plans have originated from the Olmsted Conservancy, the City of Buffalo, and the Army Corps of Engineers.





Delaware Park, although historically using Scajaquada Creek as a means of creating carefully designed water features, is now physically disconnected to the creek due to pollution and water-quality issues.



Despite these issues, Delaware Park maintains much of its historic character and still is an extremely popular destination in the City of Buffalo.

Historic parks, revitalization and restoration plans

## Strengthen Connections, Improve Access, Highlight History



Delaware Park was dramatically impacted by the Scajaquada Expressway running through the park. The park essentially became split in two, and created a dangerous and hard to navigate area. There is the hope and plan of restoring a calmer and safer parkway through Delaware Park in the coming years.

Delaware Park offers a mix of old and new features, all of which tell the story of the Scajaquada Creek and development of the city and its impact on the creek and park. These features can be integrated into a wayfinding/historical marker/timeline sense, adding a layer of understanding and culture to the park. This is something discussed in the Olmsted Parks Comprehensive Plan.



# Daylighting Scajaquada Creek

# Northland Corridor



The most recognized aspects of the Northland Corridor is the current plans and funding in place regarding the workforce training center and new advanced industries



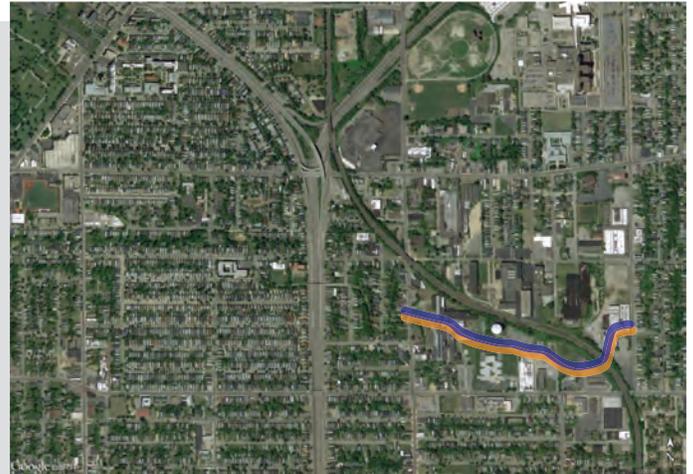
The Green Code has proposed new zoning for the City of Buffalo. It includes a number of special zones and corridors that consider the unique characteristic and aspects of various neighborhoods throughout the city. There is an opportunity, especially with recently proposed developments in the Northland Corridor, to utilize the creek code to create a special district that ensures that future developments considers the buried creek, even if it is simply in the form of open space requirements

There are a number of plans and initiatives already in place in regards to Delaware Park and the Scajaquada Creek. These plans have originated from the Olmsted Conservancy, the City of Buffalo, and the Army Corps of Engineers.



Redevelopment, Investment, Potential Moves to Acknowledge the Creek

**Create connections, provide access, prepare for intelligent future development**



Northland Corridor redevelopment plans can bring much-needed investment into the area, but more can be done to establish a connection to the creek.



Northland is home to some recent residential development, as demonstrated with the True Bethel Town Homes

# Daylighting Scajaquada Creek

# Scajaquada Street through Schiller Park



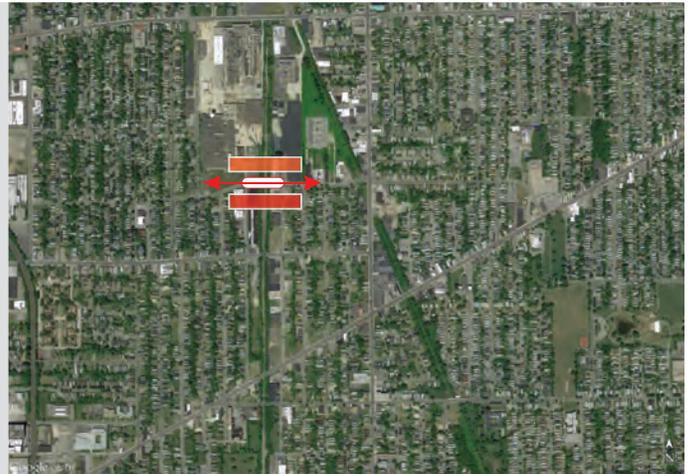
Effective cultural daylighting initiatives may include painting or otherwise indicating the presence of a buried creek on the surface streets. These may include painting or other surface artistic interpretations of the below creek.



The Eastern portion of the Scajaquada Creek contains Scajaquada Street and Kerns Ave, which were built to their current form when the creek was buried. This area has experienced significant development over the years, mostly in the form of residential development.

Redevelopment, Investment, Potential Moves to Acknowledge the Creek

## Create Connections, Improve and Facilitate Access



Gap in industrial structures where the buried creek passes through. Although this area is not designed to be accessible, and a fence and raised rail line partially blocks access, people have still found ways to access this site, as it acts as an important connection between Scajaquada St and Kerns Avenue.



Tunnels elsewhere in the site allow for access from one side to the other, giving potential options for reconnecting neighborhoods that have historically been disconnected.

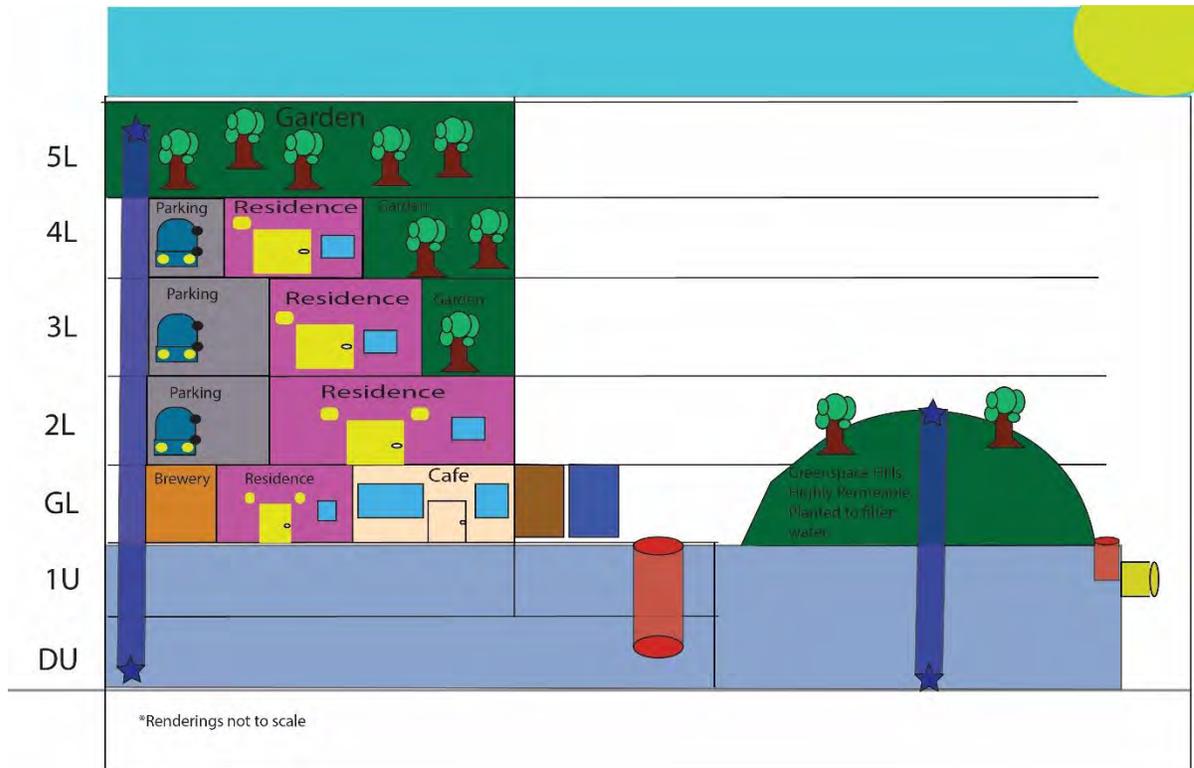


Richard Rogers





Black Rock Stormwater  
Infill Redevelopment Plan



Richard Rogers

Introduction

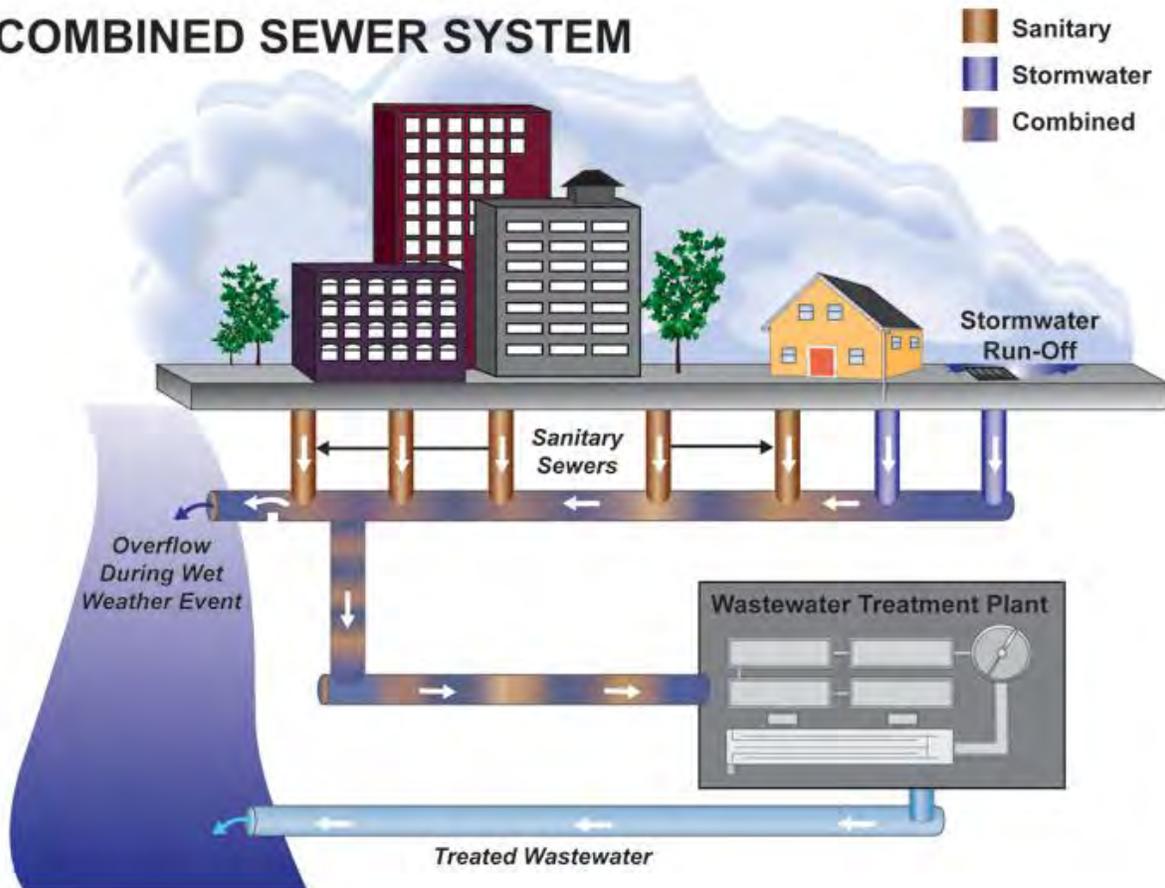
The Scajaquada Creek, which runs east to west in Buffalo, New York and empties into the Niagara River is in relatively poor condition, mostly due to deficiencies in the sewer systems of the municipalities through which it runs. However, the creek does feature a number of current assets, including a bicycle path, proximity to cultural institutions and parks. Vacant areas near the creek are intriguing as their improvement could catalyze a drastic change in the perception, functionality and access to the Creek. Through successful implementation of this project the creek could become a recreational asset for residents and visitors.

### Problematic Existing Conditions

#### *Combined Sewer Overflows*

The Scajaquada Creek (the “Creek”) in the City of Buffalo (the “City”) is extremely polluted to the point where it is unsafe for humans and many animals to inhabit limiting the possibility. This pollution is caused by the City’s extremely old “combined sewer system.” Like many cities in the northeast United States the combined system is designed to initially separate storm and sanitary sewers; however when an extreme rain event occurs the sewers overflow. To prevent sewage from backing up into residents homes, the system is designed to instead dump the combined storm water and human waste into water bodies, including the Creek.

## COMBINED SEWER SYSTEM



(Image courtesy of the Buffalo Sewer Authority, retrievable at: <http://bsacsoimprovements.org/wp-content/uploads/2011/05/combined-sewer-system31.jpg>)

The City of Buffalo is currently under a consent order with the New York State Department of Environmental Conservation to modernize its sewer system by 2020.

### *Bike Path*

Currently a bike path runs along the Western portion of the creek. While it is frequently used it is not being maintained at a high level and is limited in size and scope. While the path is fairly well maintained it is poorly lit and generally devoid of surrounding uses, leaving it feeling desolate. The graffiti on the signs in this section and poor existing lighting, leave the bicycle path feeling potentially unsafe.

### *Vacant Contaminated Land*

Nearby the Creek and abutting the bike path is a large contaminated land parcel. The site was initially home to a variety of Pratt and Lambert factories in their vertically integrated operation. It later served a variety of industrial uses until eventually the site was cleared. It was proposed to be a "tee to green" golf course and appears as though some attempts were made in that regard but were ultimately unsuccessful. As is noted in the November issue of the

American Planning Association Magazine “Planning,” while traditionally thought of as a great way to increase land values, golf courses are not a wise public investment where more golf courses are being closed than opened around the country.

The site currently sits vacant and is a blighting influence on the surrounding establishments on Amherst and Tonawanda Streets.



### *Nearby Development Activity*

An old train station building on Tonawanda Street nearby the Creek and the vacant site is proposed to be redeveloped into a combination of retail and residential space by a local development group. Plans are still preliminary at this time, however the proposal is indicative of development interest on Niagara Street continuing toward this area.



Artist rendering for proposed redevelopment project at 68 Tonawanda Street. Image and additional information available at: <http://www.bizjournals.com/buffalo/news/2016/11/14/frizlen-yots-prep-68-tonawanda-street-project-for.html>

### Redevelopment Plan - Implementation

This unique combination of problems merits a customized and comprehensive solution. The following steps provide one potential framework for implementation, although slightly similar approaches could be utilized to achieve a similar result. This approach would utilize a combination of funding mechanisms, including bonding against future tax revenues to improve the site with stormwater infrastructure and mixed-use development.

#### *Phase I: Site Control & Easements*

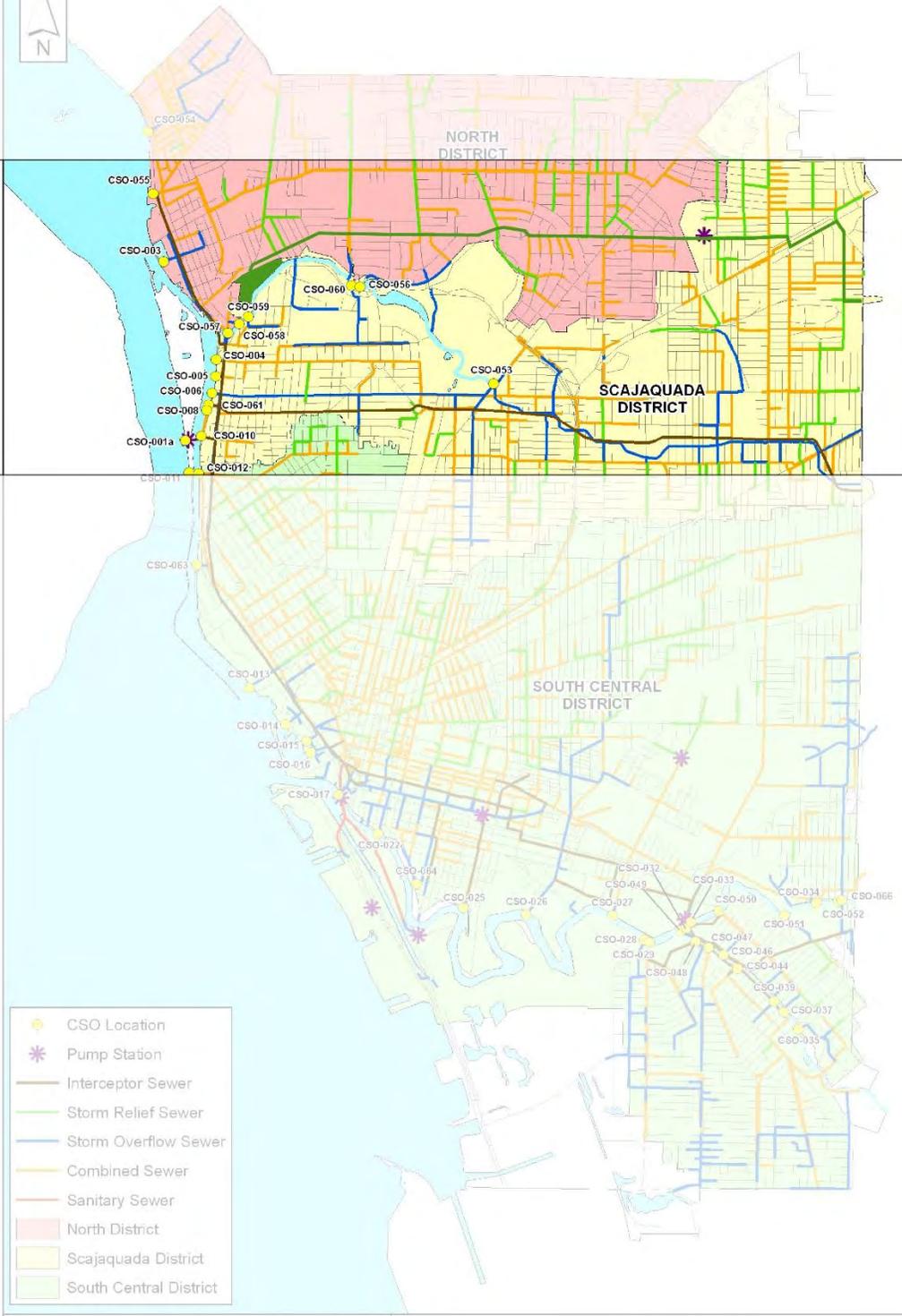
The City of Buffalo has created a number of Public Benefit Corporations and Agencies that would be uniquely suited to take on this challenging task. Such agencies include the Buffalo Brownfield Restoration Corporation, the Buffalo Urban Development Corporation and possibly the Buffalo Urban Renewal Agency. The tax exempt nature of these entities would facilitate the redevelopment of the site while limiting liability to the City itself.

The City should attempt to gain control of the site either through a direct purchase, tax lien foreclosure, or perhaps through eminent domain proceedings. In order to implement this plan the City of Buffalo Sewer Authority would need an easement across a portion of the parcel. After the City creates an easement for the sewer authority on the portion of the site containing the stormwater infrastructure, the City could deed the parcel to any of the aforementioned entities (for this plan, the Buffalo Brownfield Restoration Corp (“BBRC”) is likely the most fitting). According to the City of Buffalo GIS map the northern (main) parcel site is currently owned by “Golf and Recreational,” a seemingly defunct LLC. The Southern portion of the site is still owned by Pratt and Lambert, Inc.

#### *Phase II: Stormwater Retention*

Once site control has been established the Buffalo Sewer Authority should create a large, underground stormwater retention chamber on the site. The chamber should include pumps and pipes to feed the water to both rooftop and at grade sprinkler systems, allowing the water to cycle through to plants that store a lot of water. This would prevent stormwater from overflowing the existing combined sewer system and pushing sanitary waste into the creek. Also, construction of this infrastructure would remediate any existing brownfield issues on the site.

The Buffalo Sewer Authority should also run a stormwater overflow sewer line down Amherst Street, connecting the existing stormwater overflow lines, all the way to the City line and make any and all efforts, including political pressure, to encourage neighboring municipalities to tie into this system. This will prevent additional combined sewer overflows and will provide the opportunity for the creek to be returned to productive use following a dredging procedure.



### BSA LTCP Update Collection System



Stormwater Diversion. The dark green in the image above indicates how a new stormwater diversion pipe would fit into the existing sewer system and could prevent stormwater from overflowing the combined sewer system.

The funding mechanism (further explained below) for the stormwater infrastructure would primarily be comprised of grants from New York State’s Environmental Protection Fund and could be supplemented by bond issuance from the Buffalo Sewer Authority secured by future “user fees” paid by residents and businesses who utilize the Buffalo Sewer system.

The Buffalo Sewer Authority would issue request for proposals for the design and construction of the new stormwater retention chamber and associated pumps and pipes. Some preliminary design features are included below.

### Phase III: *Public Space*

The BBRC should create a public space at the site, extending the bicycle trail through the center of the public space to Tonawanda Street. The public space should include plant species known to absorb a large amount of water on 4 hills which would be designed to filter the water before it is returned to the drain and cycled back through the system.

Pedestrian scale lighting should be added throughout the public space and along the bicycle trail. Such lighting, particularly on the bike trail, could include “luminous stones” as were utilized in the Van Gogh-Roosegaarde Cycle Path in Eindhoven (Netherlands), pictured

below.





This Bicycle path, designed by Daan Roosegaard in Neunan, Netherlands uses paint and solar panels to illuminate the road. Other similar projects have utilized “glowstones which are bioluminescent and consume no energy. Images available at: Dezeen.com (<https://www.dezeen.com/2014/11/12/daan-roosegaard-van-gogh-bicycle-path-glowing-patterns-nuenen-netherlands/>)

The pumps running along the interior of the hills (in the central circle) should be translucent and lit with blue lighting so that visitors understand the water is being pumped up through the system. To create the final design and construct the public space improvements the BBRC will have to issue Requests-for-Proposals (RFP) to find a qualified design firm and a qualified construction firm. Financing of these improvements is discussed below.

#### *Phase IV: Sub-division and Additional Development*

The City should subdivide the area around the public space in a manner similar to what is shown in the images below. The city should create a “Redevelopment Plan” pursuant to General Municipal Law Article 18-c throughout the area. The BBRC could then issue RFPs or RFQs (Request for Qualifications) to identify developers to create mixed-use, but primarily residential developments that align with the basic design concepts discussed below.

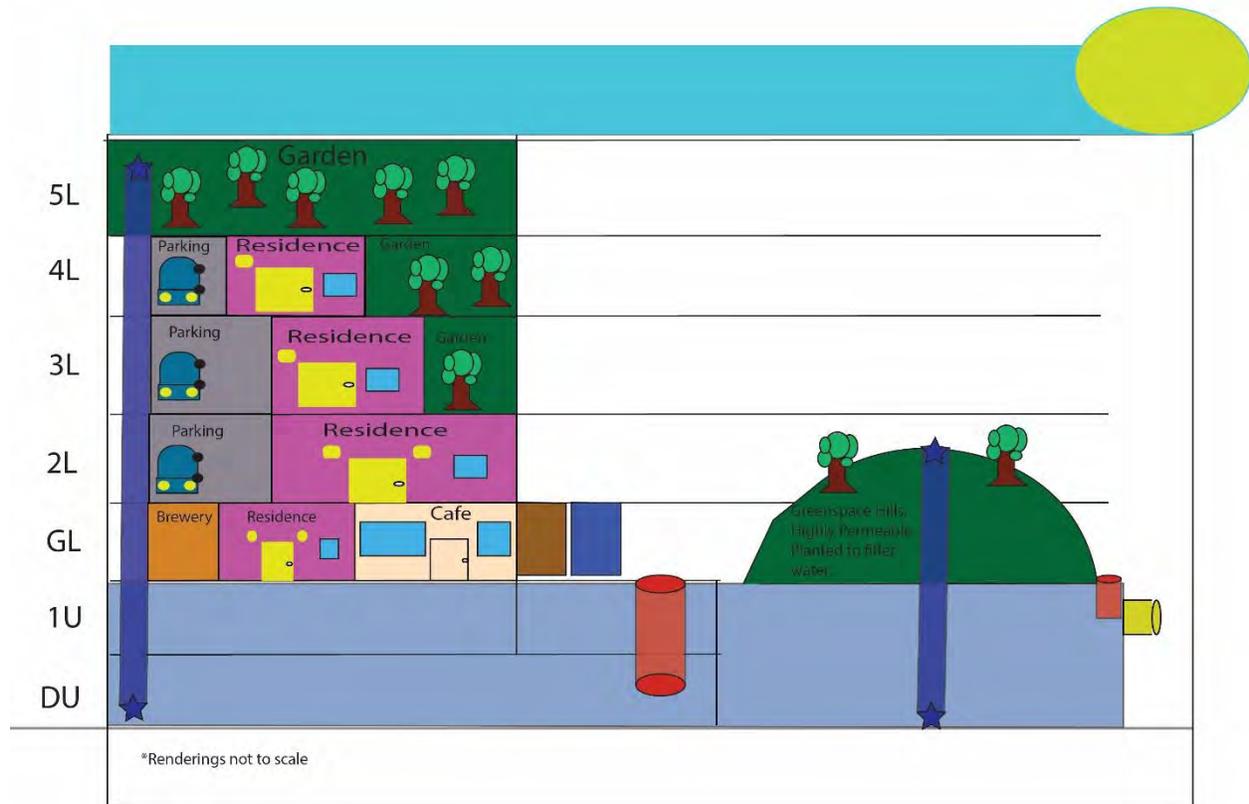
Commercial space should be constructed where the buildings front the public space but should be limited so as to ensure the increased viability of nearby commercial space on Amherst and Tonawanda Streets. Residential units should front both the public space and the bicycle trail.

There should be access to a limited amount of structured parking accessible from Tonawanda Street but screened from the public space and bicycle trail by light industrial and other uses that can be coordinated with the commercial space (i.e. food processing, breweries, coffee roastery).

### Design

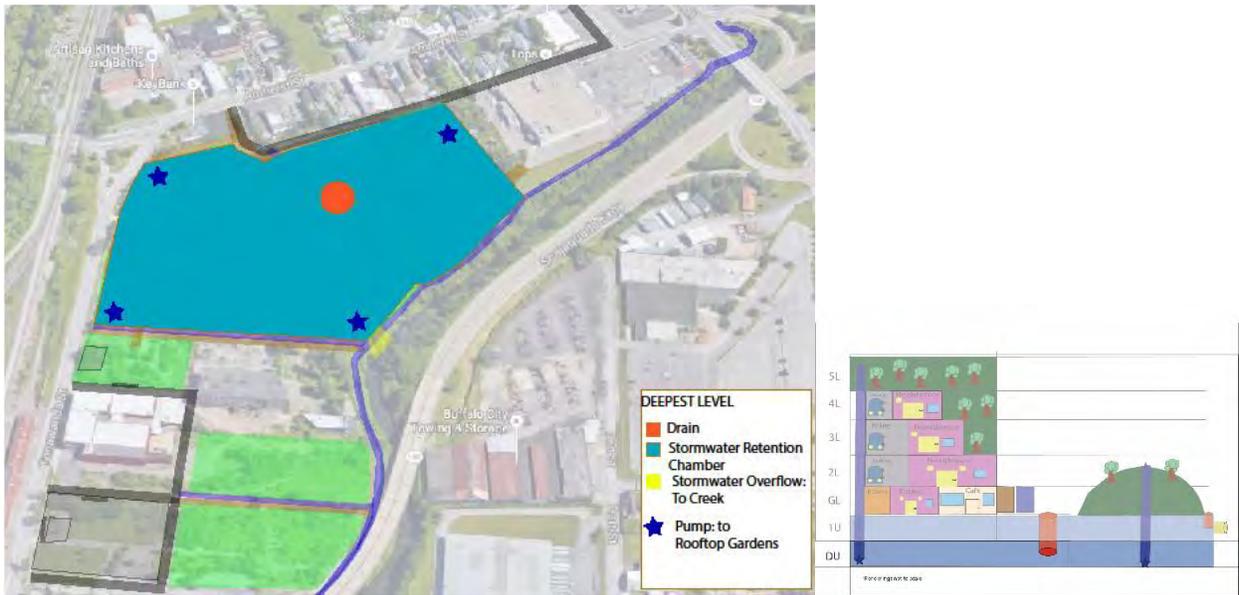
To ensure functional urban form the City should subdivide the lots in the manner demonstrated below. The BBRC should issue RFPs to Development Companies to build buildings with the uses noted below. The City or Industrial Development Agency may wish to consider paying for parking and other shared public infrastructure to address the concerns of Developers who may be reluctant to build structures without parking immediately on-site.

*Conceptual Section (not to scale)*



By carefully and intentionally drafting RFPs requiring stormwater retention features such as rooftop gardens and structured parking the City will hopefully be able to find developers to create a vibrant, mixed-use (but primarily residential) community in what is currently a vacant space. The future tax revenues from this community can fund additional improvements that will make the creek more enjoyable and accessible for all of the city's residents and visitors.

*Deepest Level*

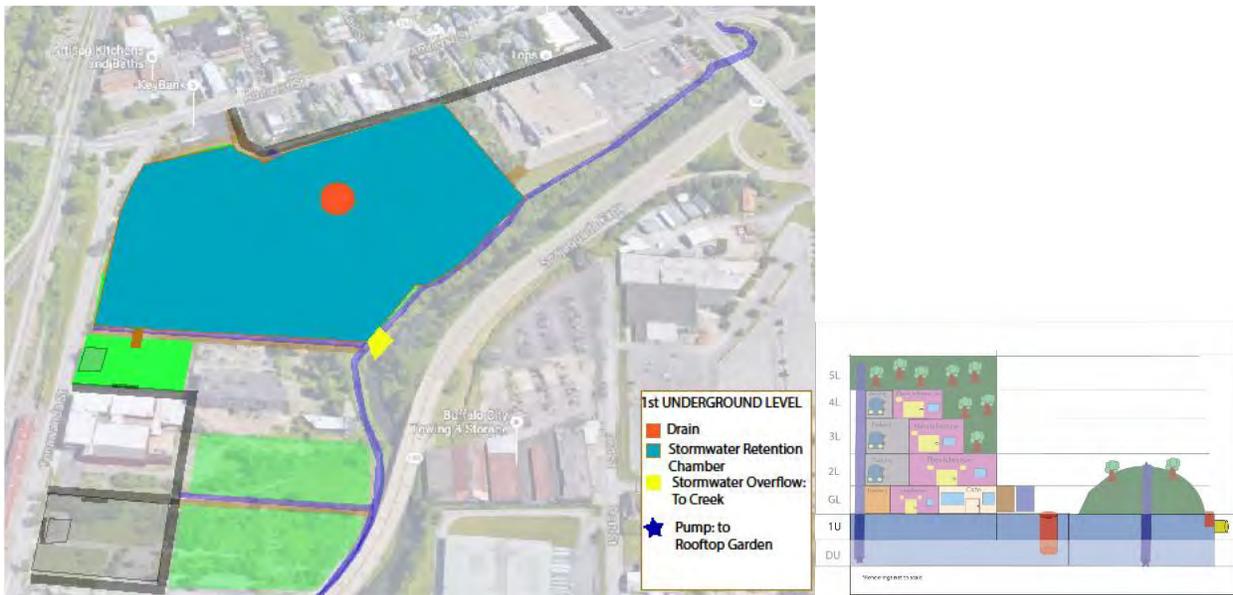


Underneath the building foundations the Buffalo Sewer Authority should construct a large stormwater retention chamber. Such structures exist around the country as a way for municipalities to combat issues related to combined sewer overflows. Below is an image of a large stormwater retention chamber in North Royalton Ohio.



While this type of “grey” infrastructure is sometimes criticized as being less efficient and less ecologically friendly, combining this infrastructure with the “green infrastructure” discussed below presents an opportunity to incorporate the best of both worlds into one project. In this example the Buffalo Sewer Authority should include pumps at the bottom of the chamber but should also include an overflow system to allow stormwater to the creek if the amount of stormwater exceeds capacity. The BSA chamber would differ from this in that this is a large pipe where the BSA chamber would be essentially “closed” with an overflow mechanism. It would likely be deeper and wider, but not as long as what is pictured here.

*Below Ground (Level 1)*



Immediately below the ground is the overflow mechanism to prevent the buildings from being flooded in heavy rain events. If constructed correctly, it should rarely, if ever, need to be used. It is not as problematic as the existing combined sewer overflows as it is stormwater and does not include any human waste.

## Ground Level



The ground level of the district should be comprised of two public green spaces. The northernmost green space will essentially be a “cap” on the stormwater management chamber. The green spaces will be sloped and graded to direct stormwater to the central square (brown circle on the map) which will drain excess stormwater back into the tank, from which it will be pumped back into the green spaces at the ground level and the rooftops.

Other uses include four new buildings which will feature primarily residential apartments and condos. However, some additional retail space should be included, fronting the pedestrian pathways. The amount of residential space will create a surplus demand for retail, reenergizing struggling businesses along Amherst, Tonawanda and Niagara Street.

Two other buildings should be constructed on the site that add industrial space. While industrial space is not necessarily in high demand generally, a variety of small scale, clean industrial uses have emerged in Buffalo recently, including breweries, distilleries and food production. If nothing else, these spaces should see use for warehouse and logistics functions given the proximity of this site to transportation corridors like the I-190.

The majority of additional transportation infrastructure on the site will include new bicycles lanes and pedestrian walkways. However, there should be two roads constructed on the site to facilitate parking, access and industrial use.

## Second Level



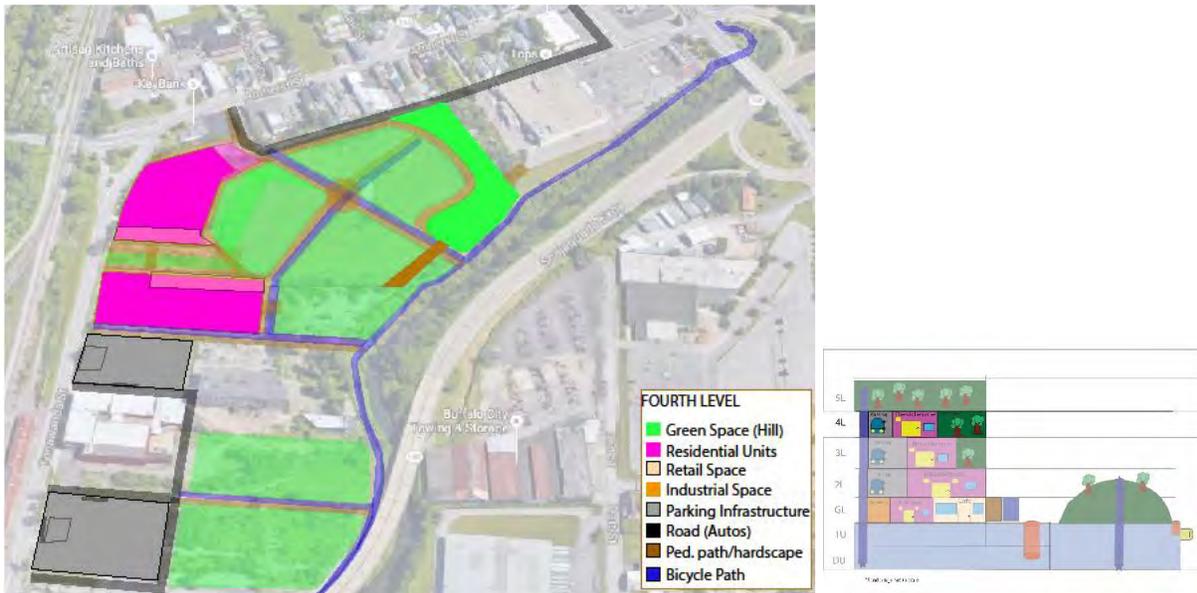
The second level differs from the ground level as the northmost buildings will feature residential space while the southern buildings will feature parking (above the industrial space). Elevated walkways will connect the second level parking to the residential space to protect residents and visitors from inclement weather.

*Third Level*



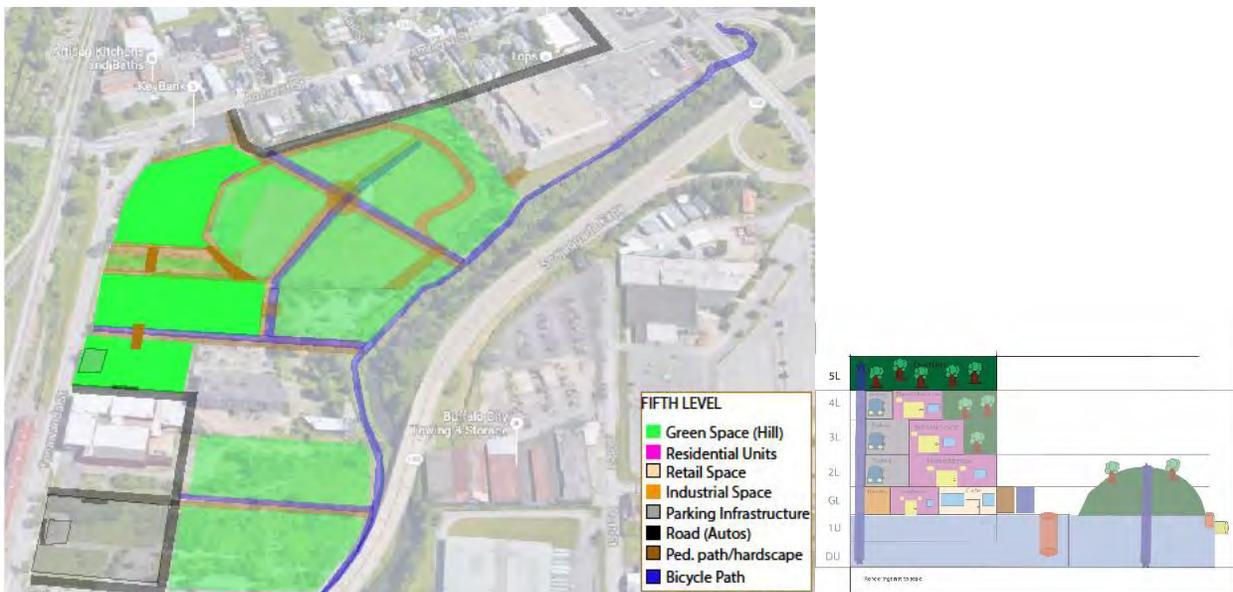
The third level will be primarily the same as the second level; however, one of the buildings will feature a green roof on the third level, with an elevated pedestrian walkway connecting that public space with the other building, which has access to the parking ramp (see “side view” image above).

### Fourth Level



The Fourth level is similar in use to the Third level, with the difference being a rooftop garden on another of the buildings. An angled, elevated walkway could connect the third level rooftop garden with the second level rooftop garden above the adjacent building.

### Fifth Level



The fifth level will feature a rooftop garden on all of the buildings (including at least one parking garage) and pedestrian walkways connecting the three buildings. These walkways will also provide cover from precipitation for those walking on the ground floor below. The plants in the rooftop gardens will store a large amount of water and as shown in the image above the site will be almost totally covered in green space, leaving the site capable of storing at least the same

amount of stormwater as today without including the large amount stored in the tank and cycled through.

Each of the green spaces will feature a sprinkler connected to a pump system as shown in the above diagram allowing the stormwater to slowly be recycled through the system during dry periods.

## Financing

### *Grants*

The Buffalo Sewer Authority should pursue “green infrastructure” grant opportunities through the State and Federal Government. This should include, *inter alia*, the New York State Consolidated Funding Application process and the Environmental Protection Fund. The New York State DEC’s Environmental Protection Fund has previously been utilized as a source for Sewer Authority Initiatives. The Buffalo Sewer Authority should also submit a “Consolidated Funding Application to Empire State Development for additional financial assistance to install stormwater infrastructure and potentially bicycle and pedestrian walkways. The State annually funds similar projects through grants and loans to municipalities, counties and nonprofits throughout the State.

The Buffalo Sewer Authority should also seek assistance from the New York Power Authority and should issue bonds backed by future “user fee” payments to fund the local match to any Federal or State grant money.

Funds derived from these methods should be used primarily to fund the stormwater retention chamber and new stormwater overflow sewer lines.

### *Tax-increment Financing Bonds*

While seldom used in New York State, the City should issue tax-increment financing bonds to fund the creation and maintenance of the above ground public space. This financial mechanism is one of the most commonly used for economic development in other states. In California there is more taxable value within tax increment financing district than there is otherwise. In New York it was successfully utilized in Victor, NY for the expansion of the Eastview Mall.

This process would involve issuing bonds secured by the increase (above where it stands today) in the future tax revenue of the nearby train station conversion project on Tonawanda Street in addition to the new residential and commercial development on the site. Additionally the City may wish to consider leasing, rather than selling the land for the development during the term of the bonds.

It may be more practical to alternatively create property tax exemptions either through BBRC ownership with a lease and purchase option to developers or to create an exemption

through the Erie County Industrial Development Agency. In either case the developers selected from the RFP/RFQ process should be required to enter into a “Payment in Lieu of Taxes” (or “PILOT”) Agreement with the City or the Erie County Industrial Development Agency for the amount of the taxes that would be due had the property not been exempt. The City could then issue bonds backed by these future tax or PILOT revenues. The PILOT structure may create additional security resulting in a lower interest rate on the bonds.

These “PILOT Increment Financing” approaches are not uncommon and have been featured in many recent development projects in the City. One example is the 500 Seneca Street redevelopment. Future payments in lieu of taxes on that project will pay for improved infrastructure on Seneca Street.

Bonds backed by future PILOTs or tax revenues would pay for the extension of the bicycle path and other pathways, the installation and maintenance of the plants and other green space features and new lighting, and could potentially be used to fund the parking structures as well.

### Motivations and Precedents

#### *Co-creativity Approach*

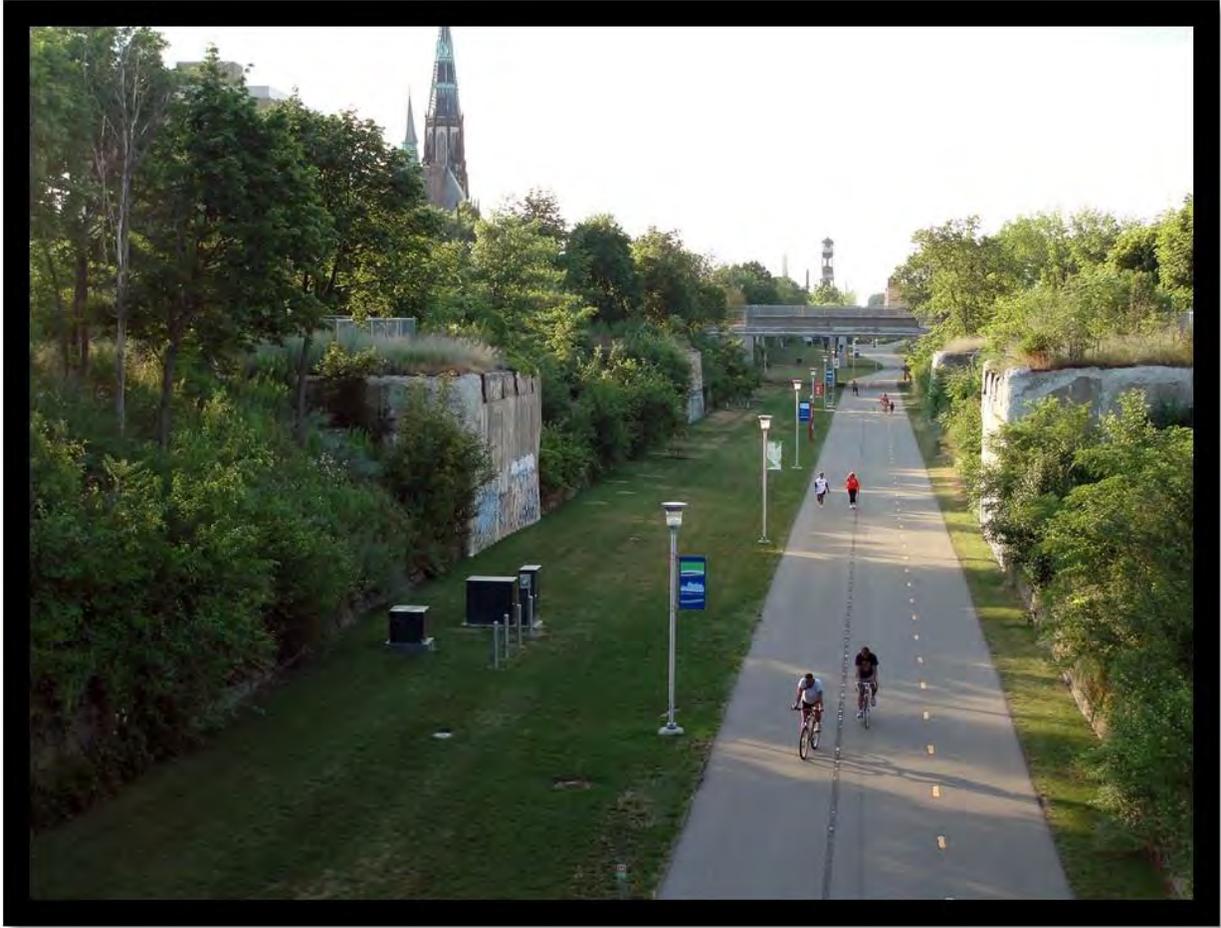
City planning in Nordic Cities typically attempts to view problems holistically and to develop approaches that address more than one problem within a single solution or project. Given the multitude of problems facing the Creek itself, the bike path and this vacant parcel a holistic approach that solves multiple problems, while ambitious, will eventually pay dividends. One additional benefit is that it gives Buffalo State College students an additional place to live near the campus that is accessible even with limited transportation options.

It is also a more efficient use of land than simply installing “grey infrastructure” for handling wastewater or simply developing the land for commercial or residential purposes. While an expensive investment the value of the project increases by combining each of these elements. This is also a unique opportunity as it is a large vacant area which is uncommon in this portion of the City. This would also allow for remediation of the site through the installation of the stormwater retention system. This would allow funding sources to achieve multiple functions as contaminated sites can typically be expensive to remediate without the utilization of tax credits which are not always ideal.

#### *Dequindre Cut*

A primary component of this plan is the increased emphasis on bicycle infrastructure. The Dequindre Cut is a Bicycle “highway” that occupies an old rail right of way in Detroit Michigan. It is an amenity for the surrounding residents and visitors. It is devoid of cars and Detroit now seeing residential development that fronts the Multi-use Path.







This type of development would result in more use and popularity for the existing Scajaquada Creek bicycle path. It would integrate the bicycle network in a safe way through the public space and would be a very calm and peaceful neighborhood.

*Soul of Norrebro*

SLA Architecture has proposed a project called the “Soul of Norrebro” in the City of Copenhagen. The plan recently won the Nordic Built Cities Challenge design competition hosted by the City of Copenhagen. As reported by DesignBoom.com:

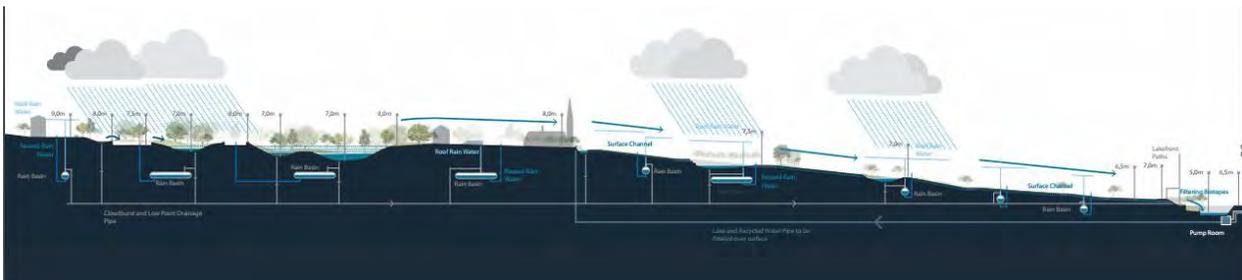
“When completed, Hans Tavsens park will serve as a rainwater catchment for the inner ‘nørrebro’ neighborhood with a maximum capacity of 18,000 m<sup>3</sup> at any given time. Excess will drain outwards, via korsgade, into the Peblinge Canal. Along the way, introduced greenery will purify water, enabling a unique urban environment heavily influenced by biological systems.”



The plan includes constructing a park which doubles as a water retention mechanism. On July 2, 2011, the City was devastated by a “1,000 year rain event” as a result of a “cloudburst,” largely attributed to changing climate conditions across Scandinavian countries.



While serving as a motivation, this is not exactly like the project proposed above. In many ways it is more complex (and expensive) as the ponds constructed actually have additional “levels” that can open to increase stormwater capacity. Also, rather than having one large retention chamber, it includes many.



This section view of the project demonstrates the way in which the stormwater is directed to prevent flooding.



### *Northeast & Midwest United States*

Buffalo is not the only city facing the issue of combined sewer overflows. Other cities, particularly older cities in the Northeast and “Rust Belt” are also dealing with this problem. For example, North Royal (near Cleveland) (see above) is installing high capacity pipes so the combined sewer waste can be held until it can be treated.

Many cities install storage tanks that hold the water until the sewer system can handle it. Other cities, including Boston have focused on installing green infrastructure. Green infrastructure solutions tend to focus on permeable surfaces and “green roofs” to capture and store rainwater, thus preventing it from hitting the sewer system.



Green Infrastructure Solutions at Boston College.

*Other Practical Considerations*

The Buffalo Sewer Authority is currently investing in Smart Sewer Technology that will back up during high rain events to cut down on combined sewer overflows. This will likely help considerably, however a dedicated stormwater line could provide water to be used as an asset for significant public space. This would also help by keeping the stormwater out of many of the existing sewers, preventing combined sewer overflows, a potential first step for further dredging/cleaning and eventual recreational use of the creek.

Buffalo State College is nearby and improvements to an existing unsafe bridge over the creek, replete with holes and an old railroad track (pictured below) could be incorporated into this project. Converting vacant rail right-of-ways to bicycle paths (see “rails to trails”) is an increasingly common approach both locally and nationally, like the Dequindre Cut project mentioned above. Expanding accessibility, particularly among students, to the project area may

improve the market conditions for rental housing and may make the project more appealing to potential developers.



(Bridge crossing the creek between the bicycle path and a vacant factory building)

### Conclusion

The vacant site under consideration near the Scajaquada Creek, one that few people ever consider, is very large. It presents the opportunity to build upon the existing bicycle path, which is a community asset but has not reached its full potential. It provides the opportunity to develop more residential and commercial space in a responsible, “smart growth” manner while expanding the existing ability of the site to absorb stormwater. Additional medium to high-density housing in this area, while it does not comport with the existing land use plan would prove beneficial to the continued viability of commercial establishments on Amherst, Tonawanda, Grant and Niagara Streets. It would work in concert with the increased residential development nearby as well. The residents will be well served by nearby grocery stores. They will have extremely safe multi-modal transportation options that do not exist elsewhere in the City. This could be a catalytic, high-quality project to move the City forward, a model for future development and a huge step towards cleaning the creek (with dredging to follow).

Shawn Rooney





2016

# Historic Scajaquada Creek Greenway

Rooney, Shawn

University at Buffalo

11/28/2016

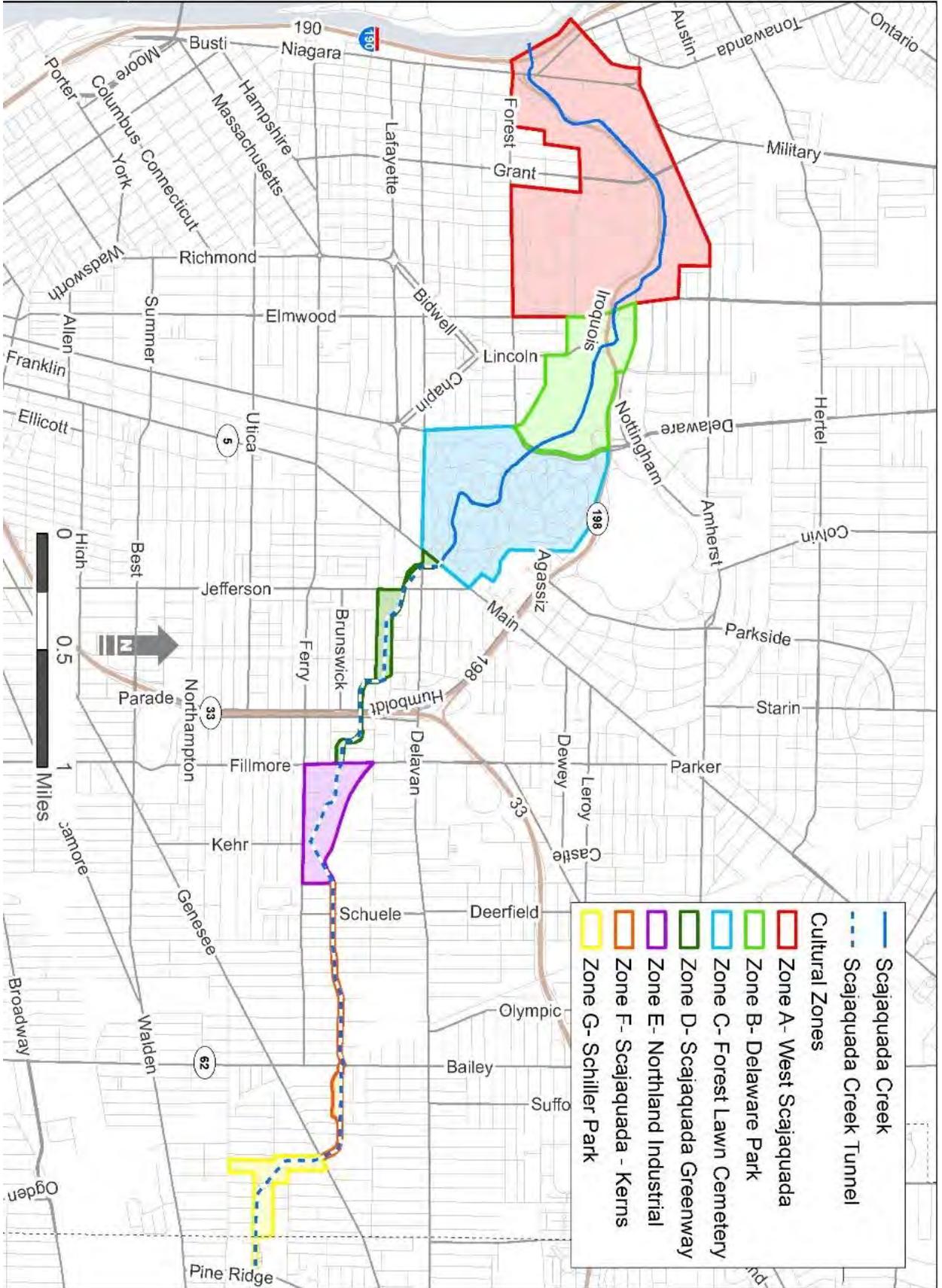
## Introduction

The definition of a cultural landscape is unclear or not universally defined among specialists in the field of Historic preservation. However, when separating “cultural,” and “landscape,” an idea of what the two terms combined can mean. “Cultural” can be defined as the longstanding traditions of human influence on the natural environment overtime. “Landscape” could represent the natural environment with or without human influence.

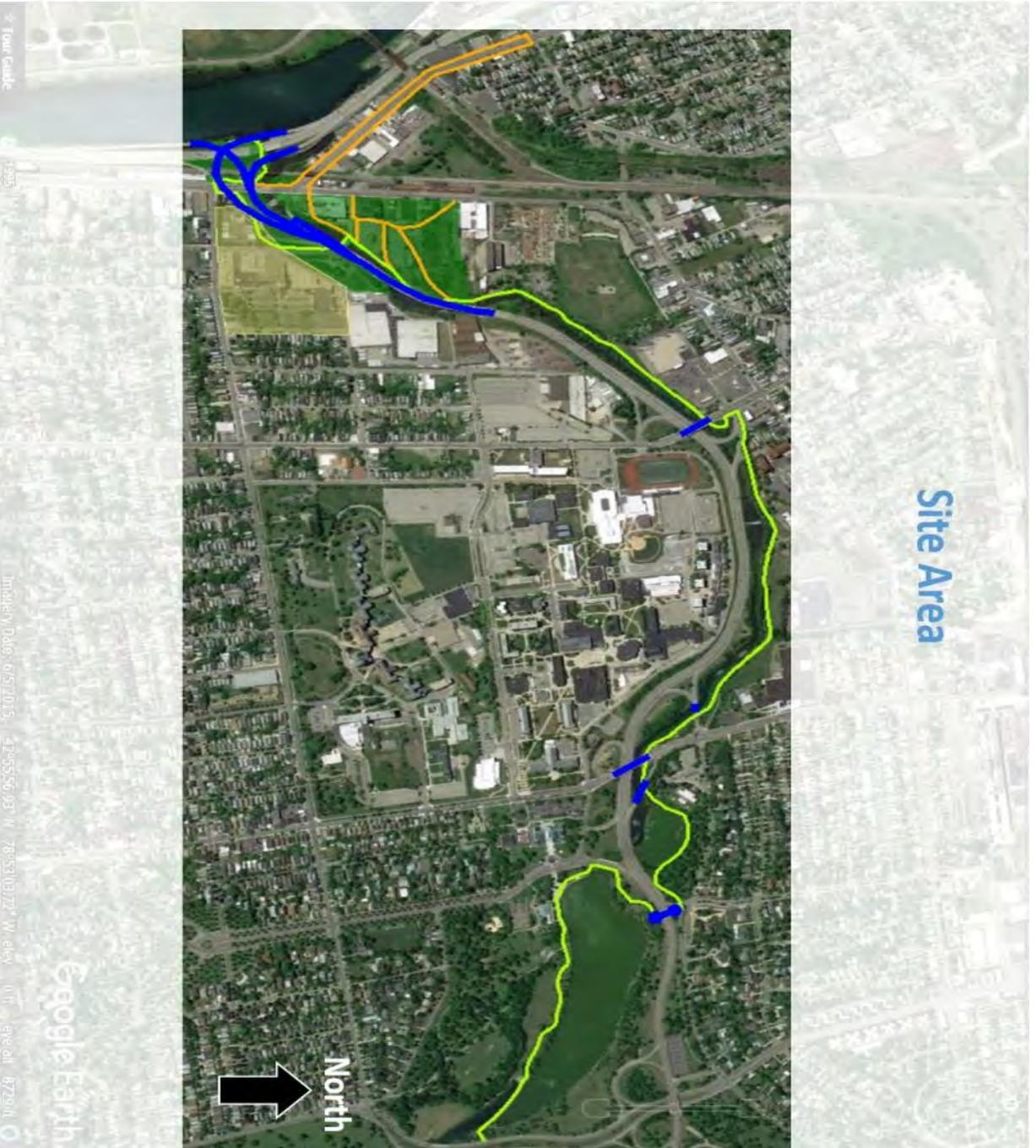
Cultural landscape encompasses a variety influences on an environment. For example, there is natural environment, and the human - built environment. Each environment systematically is altered though time, and universally doesn't stay the same. In addition, the natural environment can impede the human - built environment, and the human - built environment impedes the natural environment. The human - built environment also changes itself overtime, for example roads turning into highways or an urban block transforms into a towering complex. The natural environment also changes itself overtime through its own processes. For example, rock is eroded by falling water to create a canyon, or an earthquake alters a natural coastline. Again, the human - built environment can alter the natural environment, and vice versa. When the two processes fuse, it can, and most likely will have a significant impact. The example of the human - built impact on the natural environments are significantly seen in every urban place on the globe.

The human - built impact is knowingly observed in the case of Scajaquada Creek. Scajaquada Creek is an urban creek deriving from streams and confluences, stretching about thirteen miles to the Niagara River in Buffalo, New York. Before annexation by Buffalo in the 1850s, Black Rock was the last town Scajaquada Creek would flow through. From the mouth of the creek at the Niagara River, to its springs and confluences, the interactions of human - built environment are predominantly present. Industry, landfilling, shoreline alterations, residential developments, and creek burial have morphed the creek into is un - inviting state it currently represents. A much-needed rehab is required to restore the life of a once vibrant, free flowing creek.

Historic Scajaquada Greenway will incorporate two out of seven developed cultural zones in the following design proposal. The established cultural zones were developed by a team of students alongside Professor Kerry Traynor at the University at Buffalo.



- Legend**
- Path Network
  - Proposed New Paths
  - Overpass Lighting
  - Proposed Park Green
  - Existing Residential Development



# Existing Conditions



Poor Creek Health and Invasive Japanese Knotweed  
Photo Credit: Shawn Rooney



Fencing limits greenspace potential, and abandoned industry buildings dominate  
Photo Credit: Shawn Rooney



Overgrowth and invasive species impede aesthetic relation to Sciaj Creek  
Photo Credit: Shawn Rooney



Pipe under bridge, feeds water and pollutants directly into Sciajquada Creek  
Photo Credit: Shawn Rooney



Vandalism is present on current educational signs.  
Photo Credit: Shawn Rooney

The Historic Scajaquada Greenway design proposal focuses on the West Scajaquada Zone A, and the Delaware Park Zone B.

### *Existing Conditions*

Below is an illustration depicting the many disparities that the current condition of the design area currently represents. Expressway overpasses, vegetation overgrowth, vandalism, and human inflicted barriers are just a few noted abnormalities that hinder the health and vibrancy of Scajaquada Creek, existing pathway network, and known historical elements such as the war of 1812.

### **Design Goals**

Primary design elements are actions to be taken firsthand before considering the secondary design proposals. Below are listed Primary design goals.

#### *Primary Design Goals*

- Remove invasive plant species
- Work to restore overall health of Scajaquada Creek
- Open fencing along western pathway to promote open park like feel
- Increase lighting and park benches on West Scajaquada and Delaware Park Zones to promote safety, and further recreational use

#### *Secondary Design Goals*

- Re-Tree Niagara Street in partnership with Re-tree WNY
- Implement Scajaquada Creek battlefield and Military Park (SCB&MP)
- Create multiple educational signs along Niagara Street, SCB&MP, and Delaware Park commemorating battle events and Native American excavations.
- Under - lighting of the 198 overpass, and connecting bridges along Creek line
- Implement design competition for War of 1812 commemorative monument at newly constructed Scajaquada Creek Battlefield Military Park

### **West Scajaquada Zone A:**

The success of the American army at the Battle of Scajaquada Creek, August 3<sup>rd</sup>, and 4<sup>th</sup> 1814, contributed to the successful defense of American occupied Fort Erie, against British forces during the War of 1812. Under the command of Major Ludwick Morgan, American soldiers defended their post, and fended off British forces seeking to cross Scajaquada Creek at modern day Niagara Street in Buffalo. In addition, multiple archeological excavations of native American relics have surfaced within the Delaware Park Zone B, furthering the need to educate the public of the inhabitants of yesteryear.

### *Description and Design Ideas*

West Scajaquada Creek zone begins at the confluence of the Niagara River, and borders the Delaware Park Zone B at Mirror Lake. Within the zone boundary, exist many character defining features. For example, some are listed below.

### *Character Defining Features and Current Conditions*

- Scajaquada Creek Pathway
- War of 1812 Battlefield and Naval Yard
- Elevated Highway
- Urban Context: Amherst & Grant Street (shops, churches, and supermarkets)
- Industrial Buildings
- Buffalo State
- Richardson Olmsted Complex
- Unity Island
- Overgrown Vegetation
- Poor Creek Health
- Invasive Species (Japanese Knotweed)
- Brownfields

Today, West Scajaquada Zone A could be considered neglected, and impeded by multiple structures. For example, with industry taking flight on the Niagara, and Tonawanda Street corridor, the discovered battlefield of Scajaquada Creek has been altered to represent abandoned buildings, paved concrete parking lots, and infill of a former naval yard alongside the creek shoreline. Below designs include plans to remove current industry buildings, erect a

commemorative Battlefield & Military Park, and induce educational signage within park commemorating the battle of Scajaquada Creek. In addition, an effort to re-tree Niagara Street, with educational signage is intended to create a scene of British movements along the corridor during the war of 1812. New linear pathways are colored orange, with the existing path infrastructure representing linear green. Existing path infrastructure would undergo a significant rehab by creating new fencing / ledge, light the pathway through lined lighting through-out the course of both West Scajaquada and Delaware Park Zones.

### Legend

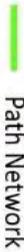
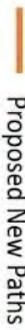
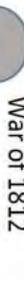
-  Informative Sign
-  Tree
-  Path Network
-  Proposed New Paths
-  War of 1812 Monument Area
-  Overpass Lighting
-  Proposed Park Green
-  Existing Residential Development



Photo Credit: <http://www.edsasplan.com/en/Portfolio/Riverwalk>



Tour Guide

1995

Imagery Date: 6/5/2015

42°55'49.75" N 78°53'46.92" W elev. 0 ft eye alt. 3239 ft

Google Earth

North

Photo Credit: <http://bicyclistcoalition.org/ride-your-bike/2015/cycling-rides/#sthash.YKXlh5Zs.dpss>

The elevated Scajaquada expressway built in the 1960s, continues to cover the creek, deplete its overall health, and serve as a barrier against potential battlefield restoration. However, with proper containment of runoff from the multiple elevated expressway corridors, increasing creek health, the elevated structures represent a prime opportunity to create public art.

- Legend**
-  Informative Sign
  -  Tree
  -  Path Network
  -  Proposed New Paths
  -  War of 1812 Monument Area
  -  Overpass Lighting
  -  Proposed Park Green
  -  Existing Residential Development



Scajaquada Creek Battlefield & Military Park will commemorate the events and operations that took place on the Niagara frontier during the war of 1812. As stated before the current land use that occupies the potential park area, is abandoned industry buildings that could be acquired through eminent domain. In addition, as a focal point to the park, this design includes an area for a commemorative monument. A design competition for the design of the structure could be a valuable avenue to increase public awareness, and include the public into the park conception efforts. The park would be clearly identified by two or more large signs. One sign location could be the greenspace area at the confluence of Niagara and Tonawanda Street facing north, and just north of Forest Avenue on Niagara Street facing south.



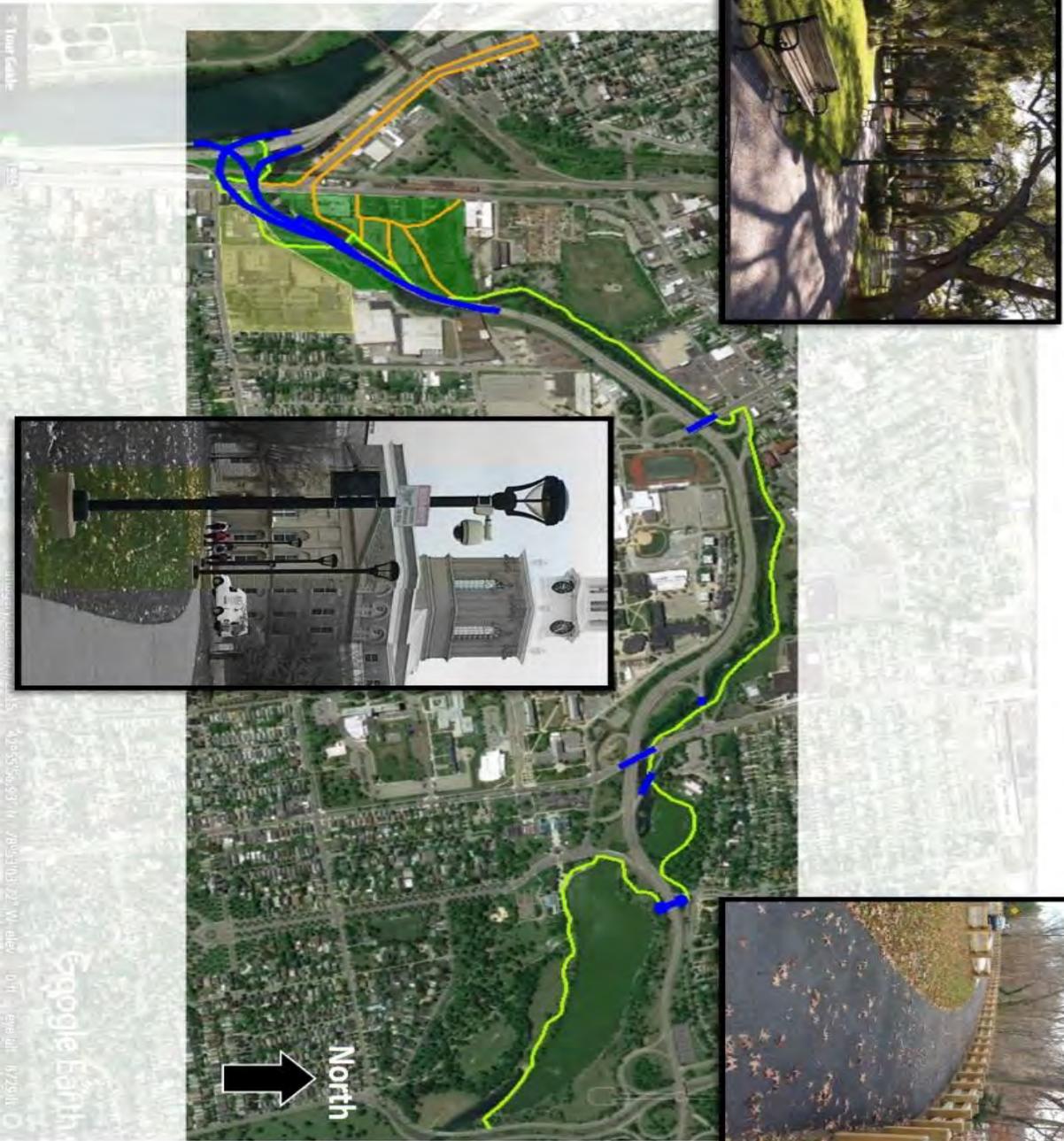
### **Delaware Park Zone B:**

Many of the design features discussed in West Scajaquada Zone A, can be applied to Delaware Park Zone B. The existing pathway along Scajaquada Creek stretches about three miles from the Niagara River confluence, and concludes at Delaware avenue, where it is impeded by the fence of Forest Lawn Cemetery, and boulevard. Below are various character defining features that depict the current condition of Delaware Park Zone B.

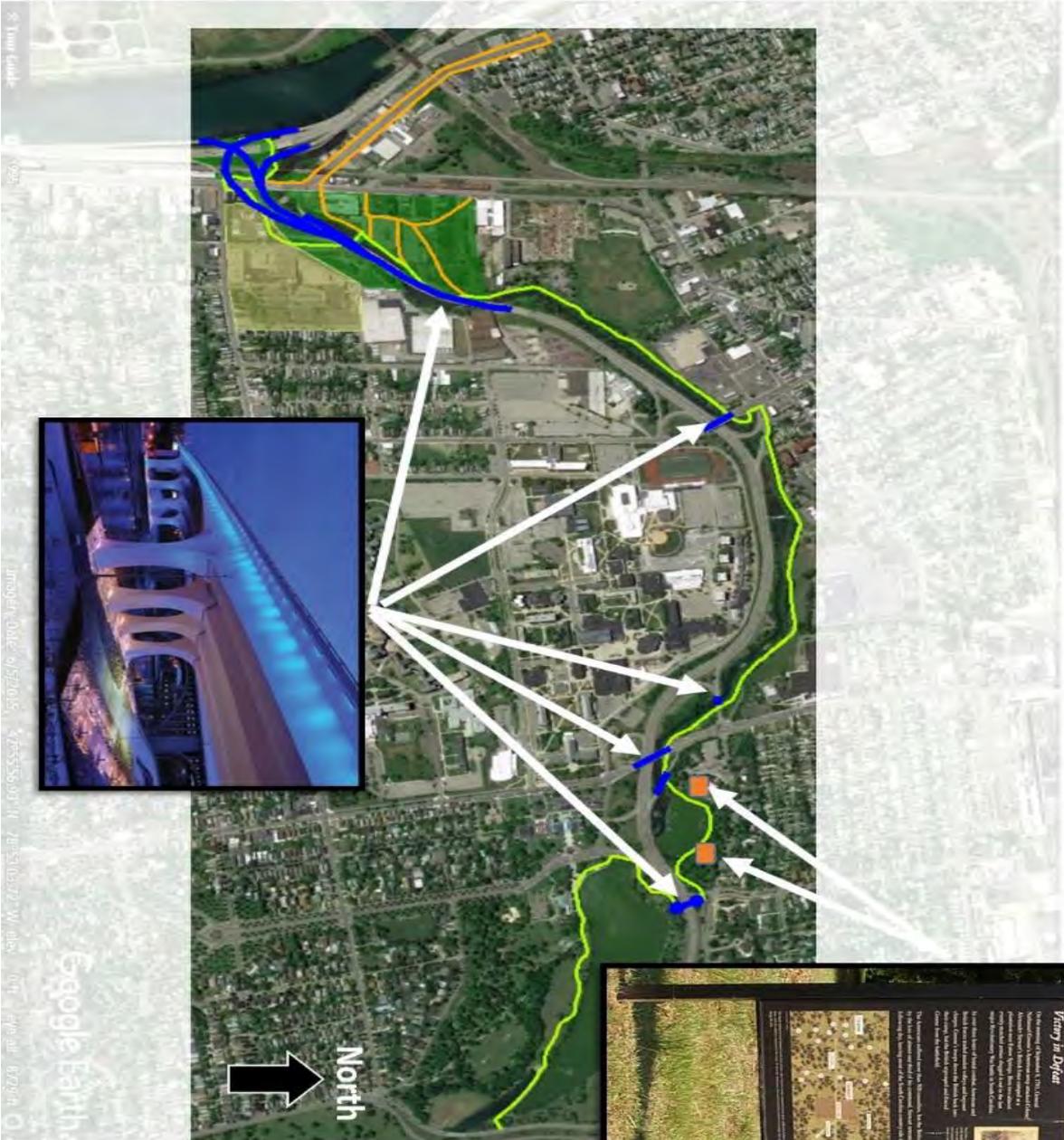
#### *Character Defining Features and Current Conditions*

- Albright Knox Art Gallery, & Buffalo History Museum
- Park Landscape \ Trees
- Pedestrian Bridge
- Pedestrian Recreation
- Dams at Hoyt and Mirror Lake (Creek Channelization)
- Native American archaeological sites
- Recreational opportunities on Mirror Lake: the boats
- Expressway 198
- Japanese Gardens
- Shoreline access

- Path Network
- Proposed New Paths
- Overpass Lighting
- Proposed Park Green
- Existing Residential Development



- Legend**
-  Informative Sign / Native Americans
  -  Path Network
  -  Proposed New Paths
  -  Overpass Lighting
  -  Proposed Park Green
  -  Existing Residential Development



© 2013 Google

Imagery Date: 01/21/15

4255556300, 4175510332, 201, data

Google Earth

Today, Delaware Park Zone B is in far better condition than its western counterpart. However, there is lacking elements along the greenway, and such elements could drastically improve the greenway's potential. For example, the proposed greenway notes several lighting opportunities, both on the ground, and built structures. In addition to lighting the underpasses at the West Scajaquada Zone A, multiple bridge underpass lighting opportunities exist in Delaware Park Zone B as well. Locations include, Grant Street Bridge, Elmwood Avenue Bridge, Elmwood – 198 on-ramp, and the Pedestrian overpass in Delaware Park. In continuation of the linear lighting path of West Scajaquada Zone A, park benches, ledges, and educational signage could continue well into this zone with the discovered native American artifact excavations. A continued focus on education is promoted as the greenway leads directly towards the Albright Knox Art Gallery, and Buffalo History Museum.

### **Precedent Case Studies**

Given the current condition of the creek, and aesthetic appeal, salvation may seem bleak. However, throughout the United States there has been multiple examples of urban creek restoration, and recreational park efforts that can be applicable to the Scajaquada Creek Greenway design plan. Following are design plans that other national and international cities have implemented to revive and update their river park environments.

#### *Minneapolis, Minnesota*

To increase aesthetic appeal and feel of the existing bike / pedestrian pathway that exists below the Scajaquada 198 on ramp, lighting the overhanging edge of the elevated express ways would drastically improve the site. The U.S. Department of Transportation held a public design completion in Minneapolis, MN. This example won and is implemented on the Interstate 35 West Bridge. Scajaquada expressway corridors are fitted with the electrical capacity to implement such project.



Photo Credit:

<http://www.fhwa.dot.gov/publications/publicroads/11marapr/05.cfm>

*Fort Lauderdale, Florida*

River walk in Fort Lauderdale, Florida is a prime example of recreational greenway along a urban river. These park like elements would be implemented within Scajaquada Creek Battlefield & Military Park, and along the greenway path leading to the end of the three mile path at Forest Lawn cemetery. Similar benches could encompass educational signage on either side, creating a must stop attraction.



Photo Credit: <http://www.edsaplan.com/en/Portfolio/Riverwalk>

*Pennsauken, New Jersey*

Cooper River Park is an urban park that is a part of a larger biking co-op called Circuit Trails. The fencing / ledge element separating the bike path and the river is a highly attractable feature that could connect Scajaquada Greenway to the creek.



Source: <http://bicyclecoalition.org/ride-your-bike/2016-circuit-rides/#sthash.YkMhh5Zs.dpbs>

## Gettysburg, Pennsylvania, & Eutawville, South Carolina

The Gettysburg National Military Park, and Battle of Eutaw Springs signage would signify the types of signs that could be implemented along the Scajaquada Greenway, and Scajaquada Creek Battlefield / Military Park. The Gettysburg signs would be considered the entry and exit signs into Scajaquada Creek Battlefield and Military Park. In addition, the Battle of Eutaw Springs signage would multiply throughout the Scajaquada Creek Battle field park, and Scajaquada Greenway providing educational information pertaining to the War of 1812, and native American excavation efforts within Delaware Park Zone B.



Photo Credit: <http://www.pollythetravelfrog.com/north-america/gettysburg-battlefield.php> Gettysburg Battlefield Sign



Photo Credit: <http://www.bettersouth.org/2014/07/battlefield/>

### *Martinez, California*

The city of Martinez, California is a prime example of tree lining major roads and boulevards in urban areas. This concept could be adopted for Niagara Street, and along Tonawanda Street. Re-tree WNY is a nonprofit organization that could help with the re-tree efforts. Re-treeing the Niagara Street and Tonawanda Street corridor will attribute to the authenticity of Scajaquada Creek Battle field park, as the area was heavily wooded during the battle that took place August 3<sup>rd</sup> and 4<sup>th</sup> 1814.



Source: <http://www.mainstreetmartinez.org/>

### *Buffalo, New York*

On the University at Buffalo, South Campus, Hayes Hall Lawn is a path network lined with multiple lighting fixtures leading up to the school of Architecture and Planning. These lighting fixtures could be implemented throughout the entire three-mile greenway from the confluence of the Scajaquada to the paths end at Delaware Avenue. These lights would also be accommodated with the underpass art lighting throughout the pathway.



Facing east is a lighted path network leading to Hayes Hall at the University at Buffalo. Photo Credit: Shawn Rooney

**Concluding Comments**

Closing, Historic Scajaquada Creek Greenway addresses the many concerns, and issues that hinder the natural value, and economic development possibilities within and alongside Scajaquada Creek. By implementing this design proposal, history will be preserved, and natural healing can begin to occur through proper cleanup, and maintenance. Overall, it is important to observe and remember all impacts of history, but always remember to not fall back to harmful ways that created Scajaquada Creek in its current state.



Eric Tocco







# Scajaquada Creek Uncovered: Design Proposal

By: Eric Tocco

## Introduction

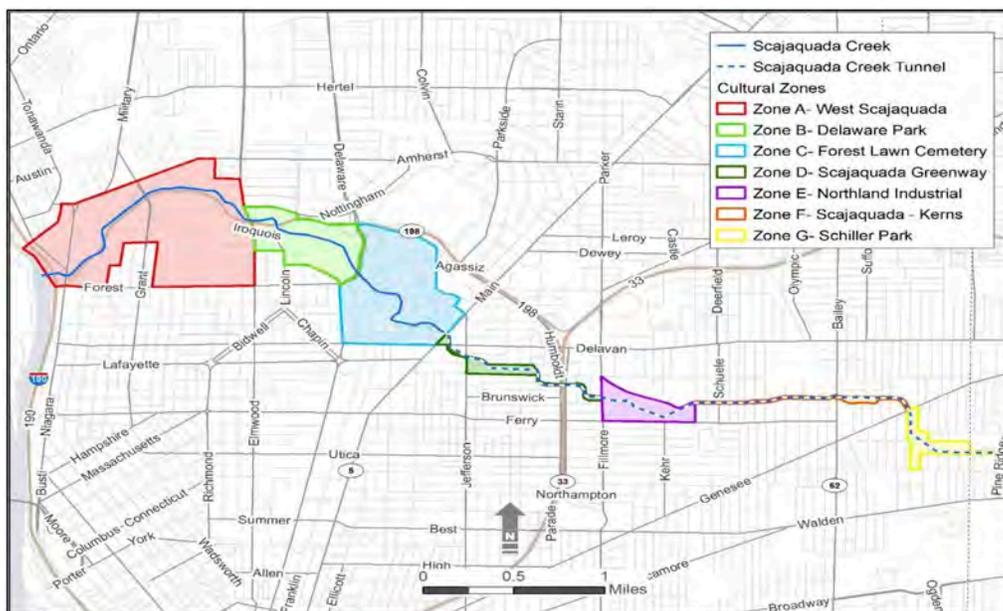
The Scajaquada Creek runs from Lancaster west downstream towards the mouth of the creek, which is located in Black Rock and then flows into the Niagara River. The creek has been crucial for Native American settlements earlier than the European settlers. The creek provided transportation, fish and wildlife, along with hydropower that was used later on for industries along the creek. As industrialization and urbanization started to take place throughout Buffalo, the creek soon became highly polluted. The solution to getting rid of the pollution was to cover the creek with a large concrete tunnel. The tunnel begins in Forest Lawn Cemetery and continues east for roughly 3.7 miles before the creek is again visible. Since the completion of the tunnel in the 1920's, the corridor has become more separated and divided due to urbanization, industrialization and the addition of roadways. The project area for this proposal starts from the mouth of the creek and goes until the beginning of the tunnel just east of Pine Ridge Road in Buffalo. Since the project area is quite large, and possesses different character-defining features that create unique cultural zones contributes to the Scajaquada Creek's Cultural Landscapes, the project area is broken into seven cultural zones. Cultural landscapes are defined in many different ways. For this proposal cultural landscapes are defined by, " geographic areas in which the relationship between human activity and the environment have created ecological, socioeconomic, and cultural patterns."<sup>1</sup>

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<sup>1</sup> FARINA, ALMO. "The Cultural Landscape as a Model for the Integration of Ecology and Economics." *BioScience* 50, no. 4 (2000): 313-20. doi:10.1641/0006-3568(2000)050[0313:tclaam]2.3.co;2.

My proposal takes each of the seven cultural zones and applies different methods that will create a linkage from one zone to another and also provide better visual and physical connection to the Scajaquada Creek. The idea behind this is to create awareness of the creek and its importance especially within the areas that the creek is buried. My proposal will include different methods depending on the cultural zone, location and the connection with the creek. The methods being proposed include stream bank restoration with adjacent pathway, the utilization of open space for passive recreation and War of 1812 statue, day lighting without physically day lighting, and a creation of a brand and way finding method for the entire project area. These design proposals are based off precedent analysis of different projects that contain similar features to the creek allowing for the interpretation of the design in order to make it work for the Scajaquada Creek corridor.

### **Cultural Zone and Character Defining Features Identification**



### Zone A: West Scajaquada

The boundaries of zone A are from the mouth of the creek at Black Rock east to Elmwood Avenue. The major character defining features within this zone that help shape its cultural zone include: War of 1812 battlefield site, overgrown invasive vegetation, Scajaquada Pathway, and visual access to creek along. The proposed designs for this zone include stream bank restoration and pathway rehabilitation and the creation of a passive recreational park with a War of 1812 Statue.

### Zone B: Delaware Park

The identified boundaries for zone B are Elmwood Avenue to Delaware Avenue going through Delaware Park. The major character defining features within this zone includes: Albright Knox Art Gallery, History Museum, Rumsey Hill, Hoyt Lake, Mirror Lake, Japanese Gardens, channelization of creek, access to the creek and designed picturesque landscape.

### Zone C: Forest Lawn

The boundaries of zone C are the west end of Forest Lawn Cemetery at Delaware Avenue to Main Street. The character defining features within in zones include: Cemetery, Serenity Falls, bridges, channelization of creek, water access and the exit to the tunnel.

### Zone D: Scajaquada Greenway

The boundaries for zone D start at Main Street and continue east until Fillmore Avenue. The major character defining features within in this zone includes: the creek is buried, residential, linear paths/parks over the creek, parks and playgrounds.

#### Zone E: Northland Industrial

The boundaries for zone E start at Fillmore Avenue and continue to Grider Avenue. The majority of this area is industrial with limited access. The major character defining features within this zone includes: industry, Belt Line, inaccessible, brown fields, and dead end roads.

#### Zone F: Scajaquada / Kerns

The boundaries for zone F are Grider Avenue to Kerns at Genesee Street. In this zone the creek follows a road way almost exactly but the houses are oriented parallel to the street which shows there is no connection between the houses and the creek, where as in other places the houses are perpendicular to the creek showing there may have been some connection to the creek. The key character defining features within this zone includes: vacant green space, street corridor equals creek corridor, street alignment, industrial and vacant rail lines.

## Zone G: Schiller Park

The boundaries that identify this zone are Schiller Park to Pine Ridge Road. The major character defining features of this zone includes: Schiller Park, Villa Maria, Entrance to tunnel, wetland pond, and a pathway near the creek.

## Precedent Analysis

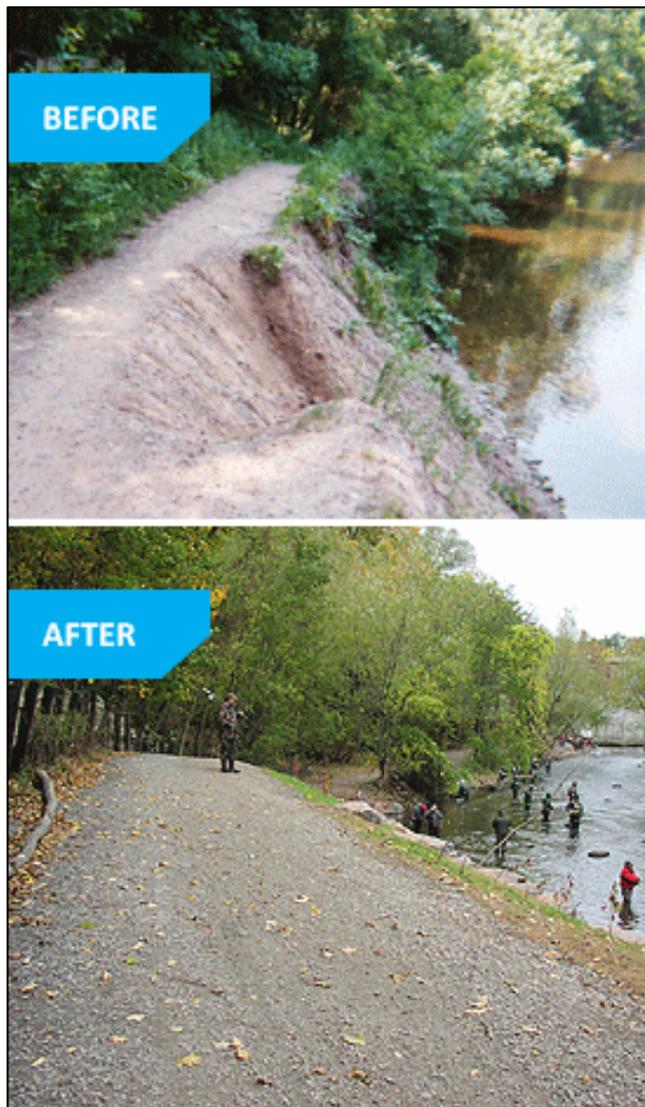
After identifying and analyzing the seven different cultural zones and character defining features within those zones, case studies were selected based on the different ways in which design could be used to create an overall connection along the entire corridor. Two case studies looked at stream bank restoration and the rehabilitation of the pathway, and one case study focused on creating a passive recreational park with a monument. Lastly, another case study focused on methods of day lighting without physically digging up streams can be implemented.

The first stream bank restoration case study was completed at Eighteenmile Creek in Niagara County. Eighteenmile Creek is a federal super fund site because of an old industry in Lockport that dumped lead and other pollutants into the creek, which has degraded the water quality greatly. As of now, there is work happening to clean up the creek but it is still advised that you do not eat any fish caught in the creek from Lockport to Olcott.<sup>2</sup> The work completed in this area focused on a quarter mile section located along the creek

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<sup>2</sup> One Region Forward. "Revival of Eighteenmile Creek." One Region Forward: Towards a More Sustainable Buffalo Niagara. Accessed November 27, 2016. <http://www.oneregionforward.org/>.

where the stream bank was eroding and falling into the water.<sup>3</sup> The work focused on removing debris, improving the hiking trail, stabilizing eroding stream banks and creating improved natural fish habitats.<sup>4</sup> They also removed invasive species and planted native species using different methods. The project was completed in 2004, costing one million dollars, but still today the banks remain in tact and safe for users to access.



Source: <http://www.oneregionforward.org/>.

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<sup>3</sup> Ibid.

<sup>4</sup>Ibid.

The second case study was a creek restoration project of Sausal Creek in Oakland, California. The project looked to create a safe and healthy creek environment for fish, wildlife, adjacent properties and park users.<sup>5</sup> Originally the creek was channelized through a culvert due to prior industrial activities that polluted the water. The water quality of Sausal Creek is polluted just like Scajaquada Creek but it is from industrial pollution, whereas Scajaquada Creek has a combination of industrial and combined sewer overflow pollution. The focus of this project was to unbury the culvert and introduce the creek back to daylight. This method is called day lighting, which takes buried streams and creeks and digs them up to recreate a more natural look and stream bank. Aside from day lighting the creek, the project removed over 250 feet of underground culvert and concrete spillways, re-graded the banks to create a gradual slope to the water, plant thousand of native plants and trees, create stability and restore natural shorelines and also add an ADA accessible walking path with environmental education interpretive features.<sup>6</sup> The total project cost was three million five hundred thousand (\$3,500,000) dollars.

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<sup>5</sup> The City of Oakland. "Sausal Creek Restoration Project." City of Oakland - Official City Website. Last modified 2016. <http://www2.oaklandnet.com/>.

<sup>6</sup> The City of Oakland. "Sausal Creek Restoration Project." City of Oakland - Official City Website. Last modified 2016. <http://www2.oaklandnet.com/>.



**Sausal Creek Before**

Source: . <http://www2.oaklandnet.com/>.



**Sausal Creek After**

Source: . <http://www2.oaklandnet.com/>.

The Sackets Harbor battlefield State historic site is located in Sackets Harbor, New York.<sup>7</sup> The battlefield site was part of the War of 1812, where the British attacked in an attempt to destroy the American's Shipyard. The shipyard was utilized throughout the war to supply and construct ships.<sup>8</sup> After the war, the land exchanged hands multiple times but today the old battlefield is now a park that has passive recreational activities including a history trail, picnic areas but also a plot of land set aside with a monument for the soldiers that fought in the war.



**Sackets Harbor Pavilion**

Source: [www.sacketsharborbattlefield.org/](http://www.sacketsharborbattlefield.org/).

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<sup>7</sup> Sackets Harbor Battlefield Alliance. "Sackets Harbor and the War of 1812." Last modified 2015. [www.sacketsharborbattlefield.org/](http://www.sacketsharborbattlefield.org/).

<sup>8</sup> Ibid.



Sackets Harbor Memorial Site

Source: [www.sacketsharborbattlefield.org/](http://www.sacketsharborbattlefield.org/).

In San Francisco, California, day lighting without physically day lighting technique was used to show where historical creeks used to run throughout the city.<sup>9</sup> They used historic maps to locate the creeks within the city and once they were located they would paint the path of the creek on street.<sup>10</sup> This allowed users to have an understanding that there once was a creek running through the area that is now urbanized. This technique can be effective and carry a relatively low cost. The supplies needed would be much cheaper than any day lighting techniques and in turn still effective. This idea can get further evolved so that it

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<sup>9</sup> Metcalfe, John. "San Francisco Is Painting the Streets with Historical Creeks." CityLab. Last modified November 12, 2014. <http://www.citylab.com/>.

<sup>10</sup> Metcalfe, John. "San Francisco Is Painting the Streets with Historical Creeks." CityLab. Last modified November 12, 2014. <http://www.citylab.com/>.

can be used on grassy areas where paint would not be as effective. One method is the use of a dry creek bed, which would be constructed from rocks to look like a creek but without any water.



**San Francisco Historic Painted Streets**

Source: <http://www.citylab.com/>.



**Dry Creek Bed**

Source: Google Image

## Design Proposal

The four precedent case studies provide the techniques that can be initiated throughout the Scajaquada Creek Corridor zones depending on the character defining features and its proximity to the creek. The different methods help to create a connection from zone to zone even though they are different and possess different character defining features and cultural landscapes. These guidelines will provide existing conditions along with the proposed use and a visual of a potential design. The potential design gives a visual but could be interpreted in many different ways depending on the desired outcome.

The old abandoned putt-putt golf course and adjacent vacant land could be used for a passive park and War of 1812 monument. Currently the site now is fenced off, overgrown and full of trash and other debris. Aside from some cleanup and depending on the soil conditions the project could be easily implemented. Although The War of 1812 monument would not be placed in the exact location of the battle because of urbanization, industrialization and the addition of major roadways, the actual site of the battle would involve a much more through study and relocation of roadways. The monument could reference another plaque that could be placed where the battle actually happened. Along with the monument, park benches and a gazebo could be placed within this space to invite users to stay.

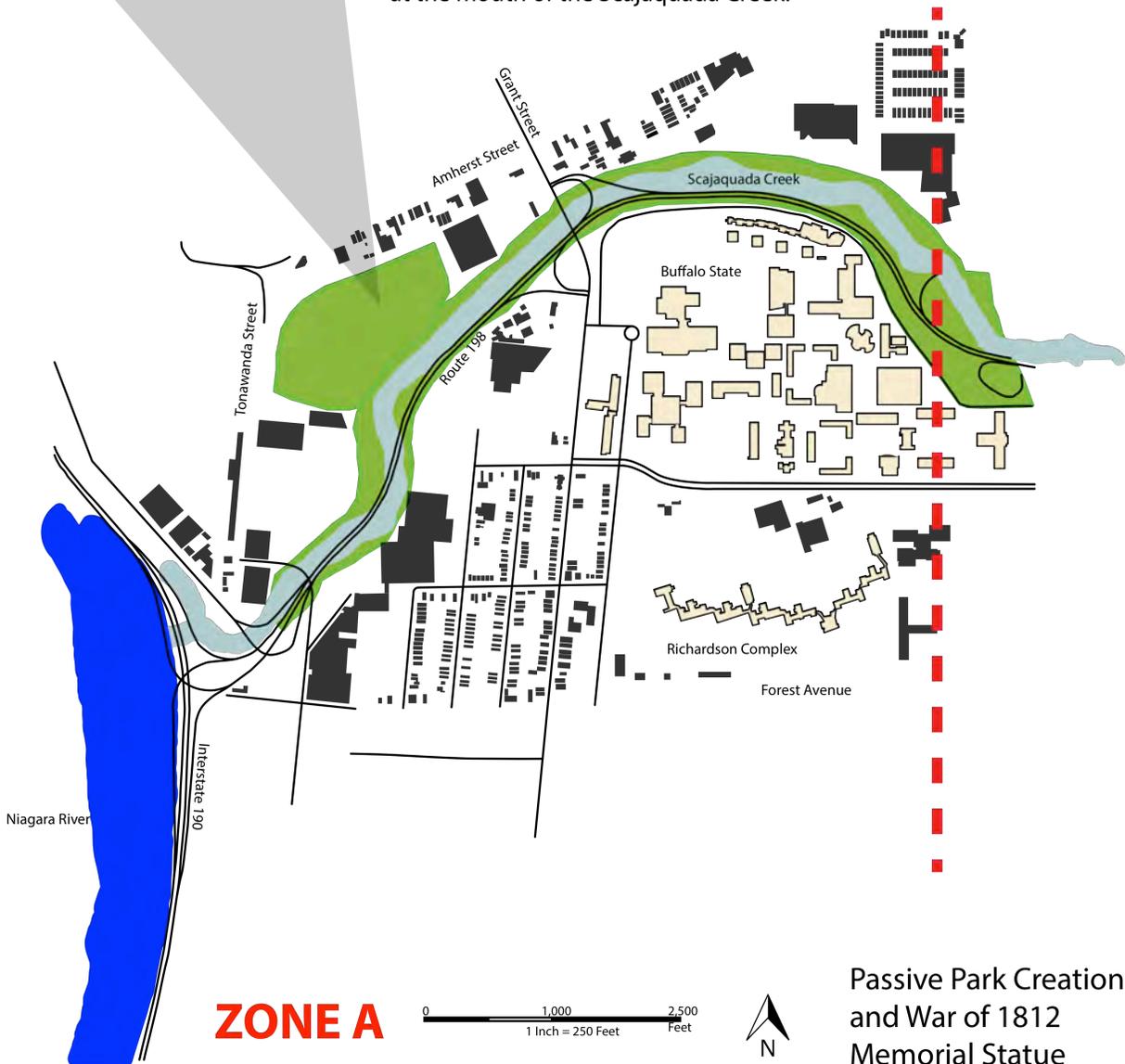
**Existing**



**Proposed**



The creation of a passive park and War of 1812 monument allow users to relax and connect with the creek but also learn about a major war that occurred at the mouth of the Scajaquada Creek.



Passive Park Creation  
and War of 1812  
Memorial Statue

To accompany this passive park would be a stream bank restoration that would allow visual access from the park to the creek. The first step for the stream bank restoration is to kill and get rid of all the existing invasive species that have taken over the shoreline. Some methods that can be used to get rid of invasive species are spot treating with chemicals for smaller areas or manually removing which can be labor intensive but effective over time. Next, erosion control and natural habitat for wildlife can be assessed and the proper techniques can be used to prevent erosion and create natural habitat for wildlife. In the Eighteenmile Creek restoration project, they used techniques that created natural habitats for fish by planting different types of trees near the waters edge that will help bank stabilization but also overhang and provide shade and ambush areas for fish.<sup>11</sup> They also put larger boulders in the main channel that creates a slower current that will allow fish to rest and ambush prey as they pass by.<sup>12</sup> Once that is completed, then native plants and trees can be planted and used to create more habitat and bank stabilization. The stream bank restoration would have to take place along the entire stream bank that is visible. The existing pathway along the creek is disconnected from the creek by physical and natural barriers such as guardrails and invasive species. Once the stream bank is restored, the pathway can be reconnected visually to the creek because the invasive species would be gone and then by grading the bank to be less steep then the railings could be removed.

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<sup>11</sup> One Region Forward. "Revival of Eighteenmile Creek." One Region Forward: Towards a More Sustainable Buffalo Niagara. Accessed November 27, 2016. <http://www.oneregionforward.org/>.

<sup>12</sup> Ibid.

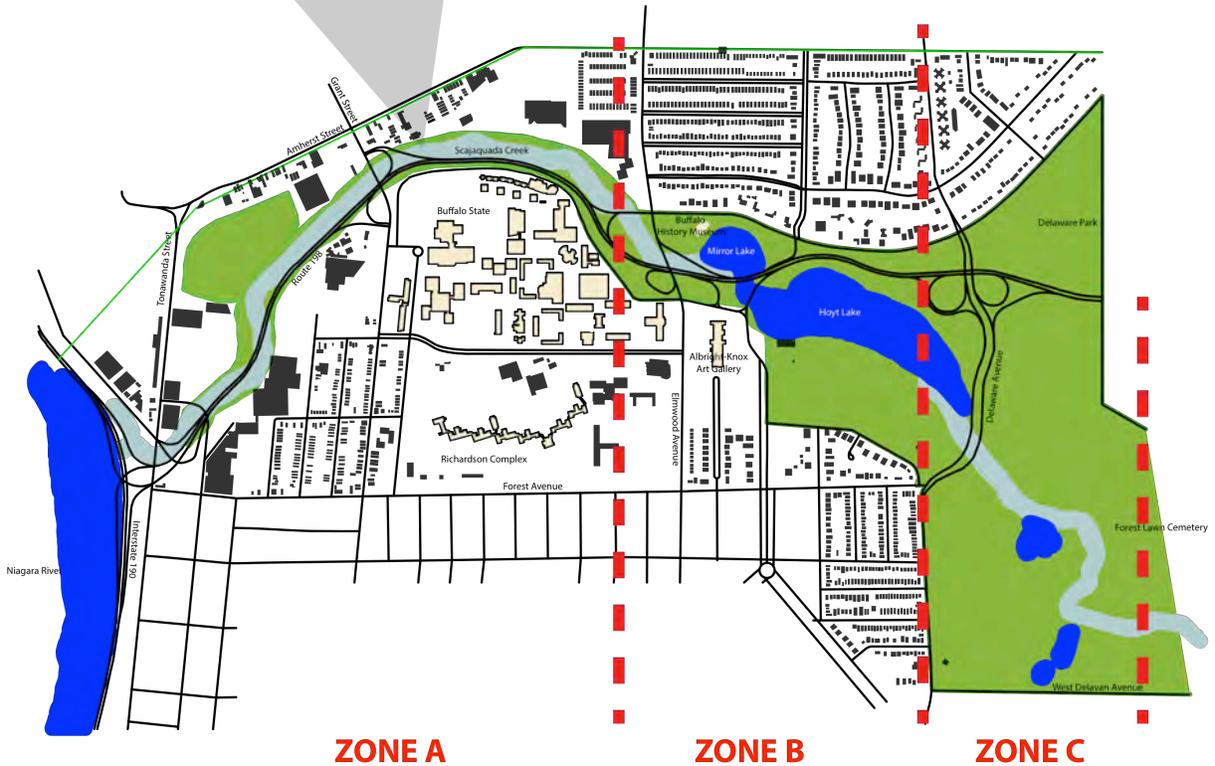
### Existing



### Proposed



Stream bank restoration removes invasive species and restores it to more original stream bank with native plants. This allows for revitalizing ecosystems and wildlife habitat along the creek along with better connection to the creek for the users.



### Stream Bank Restoration

Currently the corridor is missing a connection between all the zones, not only because of the different character defining features but because the context of the creek is lost as you move from Black Rock east to the beginning of the tunnel. One method to create a better linkage is the use of day lighting without actually digging up and exposing the creek. By following the creek above ground, painting a creek like path along the streets and sidewalks could give users a visual reminder that there is a creek buried below them. The painting method would only be possible on solid surfaces but once you hit an open field or linear green way another method could be used. The use of a dry creek bed could create the feel of the creek without having to use water. The dry creek bed could be made up of rocks and other objects that would visually show a creek and create the connection from the actual creek to the painted on creek to the dry bed. This method would be used throughout the zones D, E, F, and G, in which the creek is buried and the majority of users have no idea about the buried creek. This technique would create a linkage for the entire corridor and educate those who are not aware of the buried creek.

**Existing**



**Proposed**



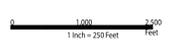
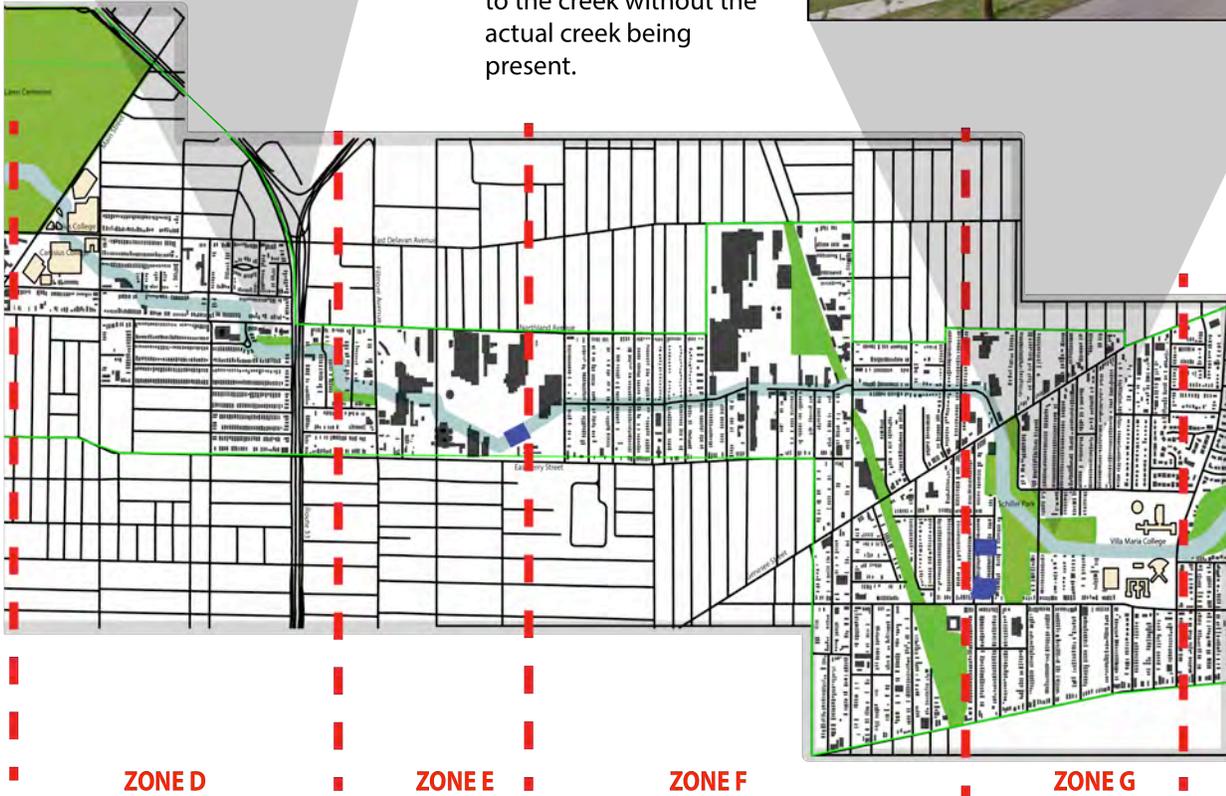
**Proposed**



**Existing**

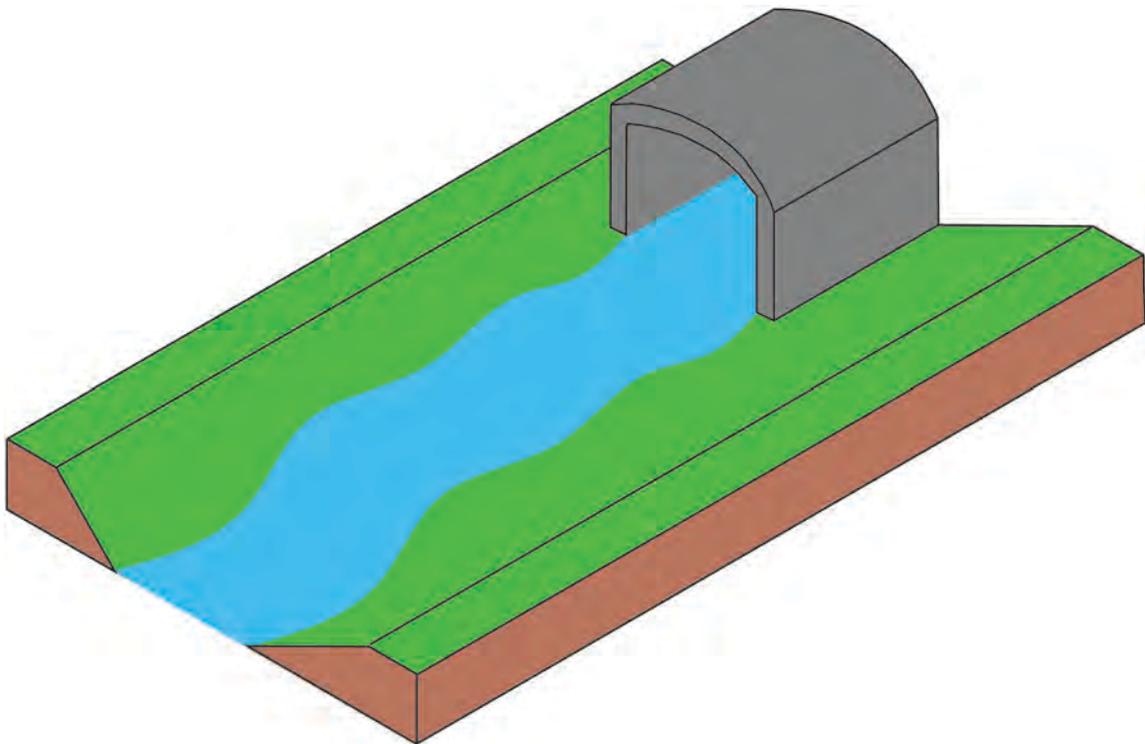


The dry creek bed technique can be used in areas where the creek is buried but painting would not be effective. The dry bed gives the feeling and connection to the creek without the actual creek being present.



**Dry Creek Bed**

The creation of a brand and way finding technique, the Scajaquada creek corridor would then be recognizable throughout the city not just where it flows through. A brand is used to create a unique identity for a place or area that is simple, easily understood and over time recognizable throughout a larger area. By creating a brand for Scajaquada creek, a way finding technique can be implemented along the pathway and the different techniques used to show the creek below ground that would navigate and educate users that followed the path entirely or just use portions. The way finding system would make it easier for users to follow the creek for the portion buried underground because without different types of technology and analysis, they stream is hard to find and follow as it goes through the city.



## Conclusion

The proposed redevelopment and creation of new amenities along the Scajaquada Creek corridor should be considered as the area starts to gain interest and more project proposals. Since the downgrading of Interstate 198 is already being studied, these design proposals can accommodate this study and create a new identity for the creek overall. In a time when there is interest and studies happening along the creek, people are interested and willing to change the current identity and make it more well known and inviting for all users. The proposed ideas above may restore a broken linkage across the corridor, increase the water quality and shoreline of the creek, and give the area a unique identity.

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Farina, Almo. "The Cultural Landscape as a Model for the Integration of Ecology and Economics." *BioScience* 50, no. 4 (2000): 313-20. doi:10.1641/0006-3568(2000)050[0313:tclaam]2.3.co;2.

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Ramanditya Wimbardana







# The Design Guideline of Scajaquada Creek Park System

Proposed by **Ramanditya Wimbardana**

## I. Background

Scajaquada Creek is a stream stretching 13 miles from the Town of Lancaster in the west part of Erie County to the City of Buffalo in the eastern part. The creek is an important part of the Buffalo metropolitan area because it provides ecological service for biodiversity and ecosystem stability along the watershed. The creek has become an integral part of the urban development in the city since the earliest city establishment in the early 19<sup>th</sup> century as many significant events occurred alongside the creek. It possesses historical values for the city (e.g. the site of the 1812 Battle of Buffalo in Black Rock) and it is also the eyewitness of the early Native American settlement and industrial activities in Buffalo.

Consequently, the physical landscape of the creek has been changing over time due to urbanization process. Land use change along the creek, especially the development of settlement, has increased human activities exposure to creek and leads to environmental degradation. For example, annual floods hit the residents along the watershed in the eastern part of the city as new settlement began taking place rapidly in this area in the early 20<sup>th</sup> century. To response this need, the Department of Public Works and the Bureau of Engineering planned to transform the creek into a sewer drain by burying the creek. In addition to this, the construction of Delaware Park and Scajaquada Expressway (New York State Route 198) also changed the shoreline alignment in the western part. As a part of a combined sewer overflow (CSO) system in the city, the creek streams pollutants from industrial and households waste along with water flow.

Today, the creek not only faces immense environmental problems as a result of continuous development advancement, but also it has been overlooked for its role to shape historical and cultural value of the city. The creek is considered as a cultural landscape defined as a geographic section of land that encompasses both natural and manmade environmental factors and its current condition as a result of the dynamic interaction process between both developments occurred overtime. In the case of the Scajaquada Creek study area, the area is a

vernacular cultural landscape, where the area has changed over time due to the changing needs and requirements of the people who lived within nearby vicinity of the creek. The drain project, the settlements, the industry, and the road construction have isolated the creek from the surrounding community.

## II. Proposed Main Goal and Objectives

Hence, there is a need to have a comprehensive design guideline that becomes a reference for revitalizing Scajaquada creek both environmentally and culturally. It would help to revive the creek identity that commemorates its past and promote the creek as the future city pride. This report is intended to provide a guidance for the Scajaquada Creek revitalization with basic idea of designing a park system that features interconnected greenway consisting of parks and trail way system along the study area. This concept is chosen based on the interpretation of existing condition of character defining features observed along the creek. The guideline is expected to give basis for the future revitalization planning to preserve the creek as a symbol of environmental sustainability and cultural revival for the city of Buffalo itself. To achieve this goal, there are key objectives that needs to be done when proposing and designing the strategies:

- 1) Building an interpretive branding that can be used for showing the identity of the creek, bringing awareness for the public, and defining the boundary of the Scajaquada Creek Park System.
- 2) Preserving and restoring ecological functions along the creek.
- 3) Creating open green space and its connectivity not only for ecological restoration purposes, but also recreation for the community.
- 4) Utilizing existing and introducing new cultural features for the place-making process that can potentially promote the identity associated to creek.
- 5) Promoting environmental and cultural awareness associated to creek to the public.

## III. Study Area

The creek streams beneath the ground through the Scajaquada Drain from its inlet at Villa Maria College near Schiller Park. The flow goes out from its outlet at Forest Lawn Cemetery and meet its estuary at Black Rock. The study area consists of seven different cultural zones stretching about 6 miles from Schiller Park to Black Rock (Figure 1), including: West Scajaquada, Delaware Park, Forest Lawn Cemetery, Scajaquada Greenway, Northland Industrial, Scajaquada-Kerns Corridor, and Schiller Park. Each cultural zones is defined by its character defining features that



Los Angeles County Flood Control District to construct the 51-mile length concrete-lined channel (Figure 2). Some parts of the river runs parallel with urban highway system that forces the river flows under the highway construction. The creek is heavily polluted as it is combined with the city's Combined Sewage Overflow.



*Figure 2 Los Angeles River in the City of Los Angeles in California*

Source: <http://www.archdaily.com/tag/los-angeles-river> (Accessed on 28 November 2016)

There have been attempts to restore the river that has become isolated from the Los Angeles communities overtime (City of Los Angeles, 2007). The restoration project approach is to propose a continuous river greenway, and an interconnected network of parks and trails (Figure 3). This is integral part of its long term goal to restore ecological functions and storm water runoff treatment. The plan consists of five different cultural zones which are designed as parks and parkways, including:

- **Canoga Park:** A community park that is created for restoration of the river's ecological function, including naturalization of the concrete channel, and a ponded area.
- **River Glen:** It consists of a park and a greenway that is planned to restore riparian habitat and to create a large water quality treatment wetland.
- **Taylor Yard:** It is a park for riparian habitat, restoration naturalization of the river channel, and creation of a large water quality treatment wetland.
- **Chinatown-Cornfields:** The zone is realignment of the river channel to create a naturalized diversion channel and riparian island that would allow ponding water for recreation, along with a large community park on an opposite bank.
- **Downtown Industrial Area:** The zone is planned to create provide public park where people have access to come closer to the water's edge with terraces on the east side of

the river. It is expected to engage the Boyle Heights community and the emerging Arts District with the river.

The park system is planned with the creation of continuous greenway provided through continuous bicycle trail and pedestrian path with wide sidewalks and shady tree canopies. To support the development of this system, the greenway is planned to be accessible for the community living to the surrounding neighborhoods through the provision of designated pedestrian paths and the city's existing bike path system on arterial and local street. The master plan utilizes existing character defining features (e.g. bridges, highways) and added new elements in the restoration effort, such as gateways, paseos, plazas, and other landmarks, in order to preserve the river identity (Figure 3). Public art is the major component to support the idea of the river identity revival. Within neighborhoods, vacant space as well as existing public spaces such as school yards, can be refurbished for enhancing the green network. A part of this cultural restoration, green infrastructure is planned to be installed for managing urban storm water runoff. It is anticipated to delay the speed of runoff compared with relatively smooth impervious surfaces.



*Figure 3 A Proposed Riverfront Park in the Canoga Park*  
**Source: City of Los Angeles (2007)**



*Figure 4 A Proposed Open Space under Highway at Los Angeles River*  
**Source: City of Los Angeles (2007)**



*Figure 5 Proposed Greenway at Los Angeles River*  
**Source: City of Los Angeles (2007)**

## V. Interpretative Branding

In order to increase public awareness upon the existence of the creek in the city, there is a need to create a logo that will attract them easily. This logo is created based on the interpretation of the creek characters. The 'S' letter represents the creek flowing from the Scajaquada Drain tunnel and it has been nurturing for the development of the city of Buffalo overtime which it is represented by the Buffalo symbol (Figure 5). Blue color is chosen to represent water flow and green color depicts the spirit of sustainability that is the central of this revitalization. The logo will be displayed for direction signs and plaque for pedestrian and bike path. This will lead the users of Scajaquada Creek Park System to recognize the park system boundary and its connectivity system stretching from Schiller Park to Black Rock. The application of this brand is also planned to be applied to man-holes cover design as well as to places identification in each cultural zone so it will increase public awareness of the park system as well as the creek.



Figure 5 Scajaquada Creek Logo and its Application

## VI. Proposed Design

### 1) Zone A - West Scajaquada

In this zone, a linear park will be constructed by using the available space of beneath the Scajaquada Expressway (NYS 198) between Black Rock to Elmwood Avenue (Figure 6). Currently, there is only one side of the creek bank that can be accessed public for walking and cycling due to overgrown vegetation. The future use of this space will create both side of the creek banks accessible for public use, especially from Grant Street to Black Rock (Figure 6). A number of wood-material bridges should be constructed to allow people, especially pedestrian, to cross over the creek. Pillars along the elevated highway can be used for public art paintings with themes that tell continuous/chronological story behind of Scajaquada Creek development (e.g. the first Native American settlers on the creek and the 1812 Black Rock War). Existing vegetation growing along the creek can be used for a boundary between users and the body of water. This is intended to limit public to touch directly the polluted water body. To create tranquil vista during walking and cycling, most of the overgrown vegetation will be partially mowed.

The current pedestrian/bike path is a potential to be widened to separate cyclists and pedestrians lane. Street lighting will be installed along the linear park and under the bridge that

attract public for visit during evening (Figure 15). In terms connectivity to surrounding neighborhood, this linear park will utilized existing dead-end roads, supermarkets and public schools between Grant Street and Elmwood Avenue as well as the potential of constructing wood bridges to the Buffalo State University. Each existing bridge will be installed with a plaque on its structure that show its name to emerge its identity as an important feature of the creek (Figure 7).

The linear park will be connected to a new proposed public park in Black Rock (Figure 8). This park is built to maximize the available open space between two highways construction and to attract more people to commemorate the 1812 Black Rock. This location is chosen for the park because it is also within the proximity where the location of the battle occurred. The main future of this park will be a statue that can tell the story what happened during the war between the American and the British Army. Currently, there is no specific public space that can remember the important events to not only Buffalo history, but also United States history.

## 2) Zone B – Delaware Park

Currently, Delaware Park has potential to take full advantage of rural vista with the view of Hoyt Lake where public can access it through existing bike/pedestrian path. It is suitable site to become one of public parks within the proposed park system. However, the stream course flows underneath the lake so its path goes missing from Hoyt Lake to the Japanese Garden. The proposed landscape design plans to construct dry river bed in the south part of the creek to represent the missing path (Figure 9). So, it will increase the awareness of the public that there is a creek flowing through the lake. The dry riverbed is a handy, practical construct that can be used as a powerful design element in a landscape. It can serve as a simple decorative feature, but can also handle drainage problems and stop erosion. The current pedestrian/bike path is a potential to be widened to separate cyclists and pedestrians lane. Some directory signs for pedestrians and cyclists will be installed to give continuous connectivity between in a transition area between Delaware Park and Forest Lawn (from Delaware Avenue to West Delavan Avenue).

## 3) Zone C – Forest Lawn Cemetery

Forest Lawn Cemetery has a beautiful scenery, including a hidden small waterfall, which can be accessed for public recreation. This can be one part of public parks within the proposed park system. However, there is no existing path inside the cemetery showing the creek as important feature of this site. This guidelines proposes the creek bank for pedestrian path so it can allow public to walk along the creek up to the water. The material used for constructing the path is stone so it can enrich natural view and experience during walking in this section (Figure

10). A public access to the hidden waterfall can be provided through the construction of wood stairs and cleaning up the overgrown vegetation (Figure 16). In addition to this, there is important to provide a warning sign at the outlet of Scajaquada Drain for public safety.

#### 4) Zone D – Scajaquada Greenway

The existing greenway has open space that is a result of the past construction of the Scajaquada Drain project. Currently, it is surrounded by settlement. There is no significant feature describing the existence of the creek inside this section as it flows beneath the ground. To emerge the existence of the creek above the ground, one can be considered by adding important features, such as dry riverbed following the original path of the creek (Figure 11). In this linear park, a statue of Native Americans can be installed to increase the awareness of the public, especially the community residing within this neighborhood, that Scajaquada Creek had been the home for Native Americans group before the city was established. In this section, the existing manholes can be utilized to identify the original course of the creek flowing underground with the use of public street art. This approach can also show connectivity of the proposed park system. Installation of street lighting with blue color along the greenway can represent the persona of the creek during dark time (Figure 17).

#### 5) Zone E – Northland Industry

In this section, the proposed design recommends an important continuous parkway connecting western part and the eastern part of the creek. Its current condition shows that pedestrian sidewalk is deteriorated and there is no sign mark that show connectivity of the existing bike or pedestrian path system. The proposed design recommends an approach to overcome connectivity problem in this corridor that it is intended to be parkway that connects the Scajaquada Greenway and Schiller Park (Figure 12). As the original creek flows beneath current industrial sites, it is difficult to give public access through those places. Instead, the proposal substitutes it with a continuous corridor for cyclists and pedestrian. The route corridor consists of: Lark Street – Sidney Street – East Ferry Street – Grider Street – Scajaquada Creek. A public art that shows stream identity will be placed along the corridor to encourage people for walking through the site. Installation of street lighting with blue color along the corridor can represent the persona of the creek during dark time.

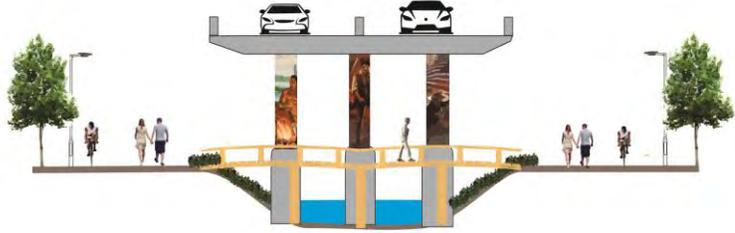
#### 6) Zone F – Scajaquada-Kerns Corridor

This section has road section that follows the creek course flowing underground. This can be an opportunity to integrate the road system with green infrastructure system. This section can

a model of green infrastructure innovation for managing urban storm water run-off that might be replicated to other parts of the creek. It has function to delay the speed of runoff compared with relatively smooth impervious surfaces. The proposed design will maintain current pedestrian path and add bike lane along the corridor that connects this section to Schiller Park.

#### 7) Zone G – Schiller Park

This section is predominantly a large public park surrounded by residential. The park is designated as one of public parks within the proposed park system. However, there is no existing feature inside the park that shows the creek existence. Hence, riverbed is proposed to mimic the original flow of the creek within the park. This is expected to encourage the park visitors to have walking experience as if they walked through the original creek bank. The proposed design will keep current pedestrian path and add bike lane along the corridor that connects this section to other sections in the western side of the park system.



Before

After



Before

After

Figure 6 The Proposed Design of Linear Park at West Scajaquada

Before



After

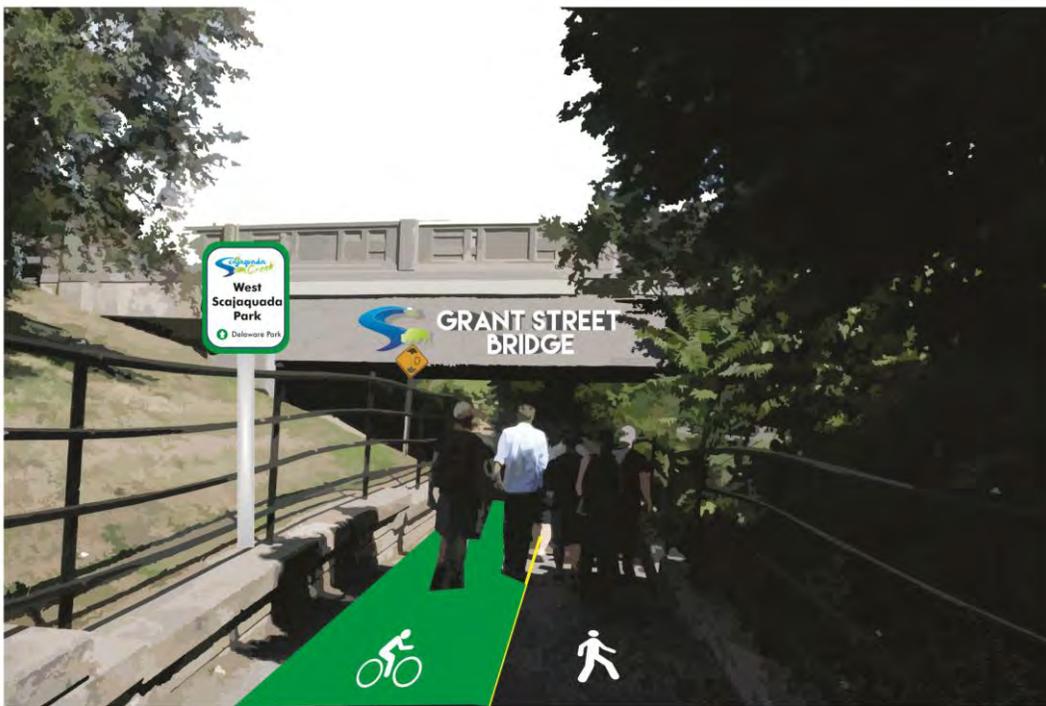


Figure 7 The Proposed Design at Delaware Park



After



Figure 8 The Proposed Design of the 1812 Black Rock War Memorial Park at West Scajaquada

Before



After

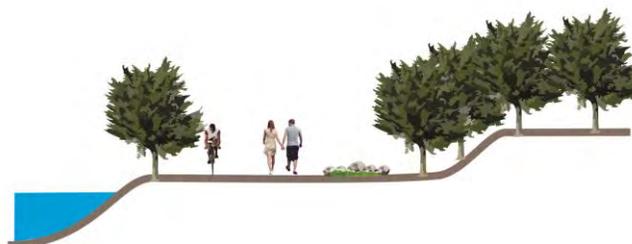


Figure 9 The Proposed Design at Delaware Park

Before



After

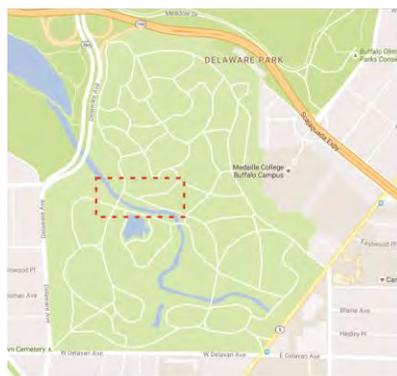


Figure 10 The Proposed Design at Forest Lawn Cemetery

Before



After

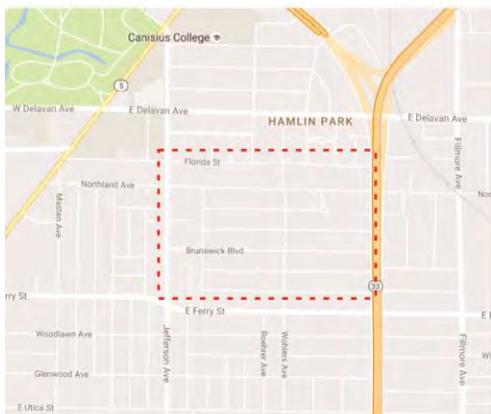


Figure 11 The Proposed Design at Scajaquada Greenway

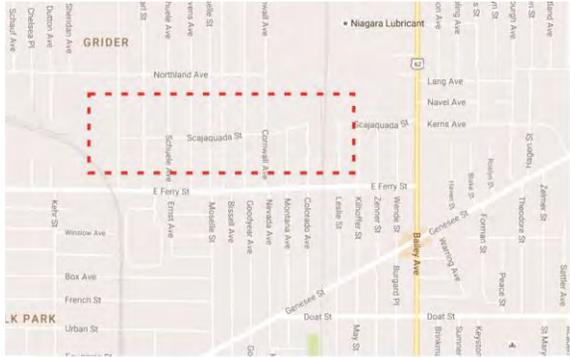


Before

After



Figure 12 The Proposed Design at Northland Industry

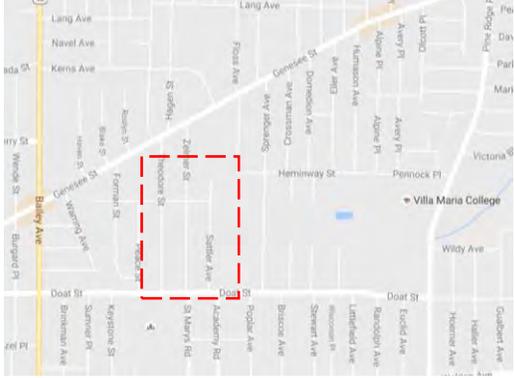


Before

After



Figure 13 The Proposed Design at Scajaquada-Kerns



Before

After



Figure 14 The Proposed Design at Schiller Park



*Figure 15 An Example of Street Lighting under a Highway*

Source: [http://www.johnweeks.com/i35w/i35w\\_night.html](http://www.johnweeks.com/i35w/i35w_night.html) (Accessed on 28 November 2016)



*Figure 16 An Example of Wood Stairway*

Source: <https://livingwatercabins.wordpress.com/2013/08/18/our-outing-to-the-falls-of-hills-creek/> (Accessed on 28 November 2016)



*Figure 17 An Example of Proposed Street Lighting during Night*

Source: <http://weburbanist.com/2016/04/19/blue-light-special-colored-streetlamps-precede-decline-in-crime/> (Accessed on 28 November 2016)

## **Reference**

City of Los Angeles, 2007. Los Angeles River Revitalization Master Plan, Department of Engineering, Los Angeles.



Corey Winters





**Scajaquada  
Creek  
Uncovered**

**WINTERS**

**COREY**

**Phase IV**

## **Introduction**

Scajaquada Creek occupies a 13-mile strip that follows a linear fashion from the Niagara River through Forest Lawn Cemetery where it continues underground from being buried in the 1920s, to where it becomes exposed at Pine Ridge Road, located by Villa Maria College. With that said, the Scajaquada Creek corridor occupies a considerable amount of space. When the waterway is exposed it is easy to follow the contours of the water either by walking the pathway that follows or using satellite imagery. However, where the creek is buried, it makes determining the contour of the waterway more difficult. To determine the pathway of the creek as it flows through the tunnel, we walked the area and used satellite imagery. While looking at this section, we looked for features that supported the contours of Scajaquada Creek. Several factors have taken place on Scajaquada Creek that changed its shoreline and ecosystem. As mentioned previously the creek is covered, the reasoning to why the creek was covered, was in response to the urban development within the City of Buffalo, and the another factor is because of the high levels of pollution that's associated with Scajaquada Creek. The construction of the 198 along the waterway is also a major contributor to the changing shoreline of the creek. These two factors mentioned have similarities between them. These events in the history of Scajaquada Creek, create a disconnect in the neighborhoods, along the Scajaquada Creek corridor, and the residents of the project area specifically where the waterway is buried. Along with having a disconnect among the neighborhoods, there is also a disconnect to the water for people who use the pathway along the water, and for people who are in Forest Lawn Cemetery. This proposal seeks to address this disconnect between the neighborhoods, and to the waterway in specific areas. Signage and branding will be also used, to educate the residents living and visiting the area about the history of Scajaquada Creek.

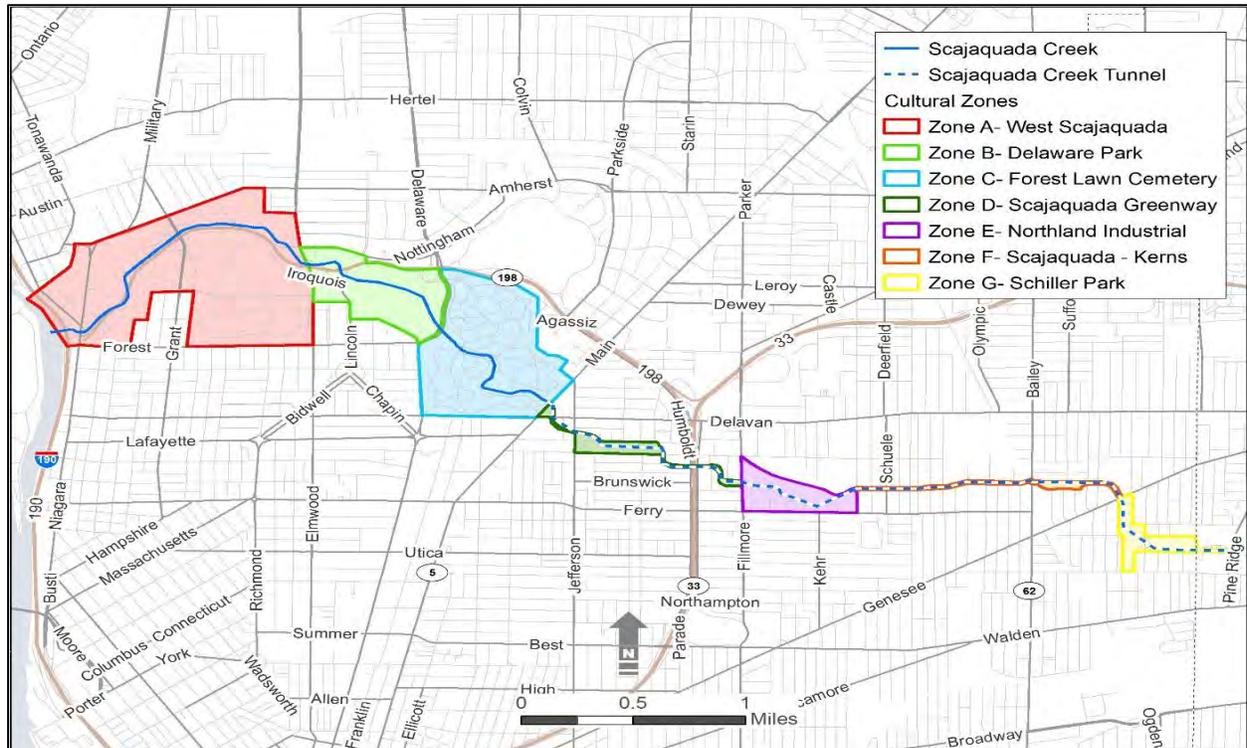
My proposal is to utilize signage that would be implemented along the pathway of Scajaquada Creek, to better educate the public about the waterway. Along with signage, a series of pathways that follows the contour of the waterway throughout the study area. However, the focus of the pathway would change depending on the features of the waterway. Where the water is exposed, the pathway would promote fitness, and access to the water. While promoting shoreline restoration and creek restoration. For the areas where the water is tunneled, the focus of the pathway would be to educate the residents of these neighborhoods that Scajaquada Creek does flow beneath them. Looking at the larger scale, these pathways would provide a linkage to the surrounding communities where they have been disconnected for quite some time. In order to create an effective pathway, some changes would be required, which includes producing interactive signage, and signs at particular spots along the pathway that would educate the users of the history at that location. An example of this is, having a sign at the place where the Battle of Scajaquada Creek took place during the War of 1812 in Buffalo.

Connecting this proposal to the coursework of this studio, we have been looking at Scajaquada Creek corridor in terms of a cultural landscape and we have determined that there are numerous character-defining features located along this 13-miles strip of the creek. Culture Landscape can be defined as a geographic area, including both cultural and natural resources and the wildlife or domestic animals, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values<sup>1</sup>. These features are not limited to merely Scajaquada Creek's right of way, but also the surround areas that Scajaquada Creek influences. In order to help mitigate the evolution of this vast area, the surround areas do not exceed a city block on

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<sup>1</sup> "Preservation Brief 36: Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes." NPS.gov Homepage (U.S. National Park Service). Accessed November 26, 2016. <https://www.nps.gov/tps/how-to-preserve/briefs/36-cultural-landscapes.htm>.

either side of the creeks right of way. This analysis was performed based on an observation made during the multiple site visits, as well as a form of virtual tours using satellite imagery and from holding class discussions to better determine this. From the analysis of the Scajaquada Creek corridor, it has been decided by the studio class alongside with the professor to divide this area into seven zones. Each zone would contain character-defining features.



### **Character Defining Features of Scajaquada Creek**

In order to make this proposal beneficial to Scajaquada Creek as a whole, it is important to focus on the character-defining features of each zone, and implement them into the surrounding areas via the use of signage and connectivity to other neighborhoods in close proximity to Scajaquada Creek. Improving the ecosystem of Scajaquada Creek is an important feature to include in the proposals as well. The reason why signage and branding will be pushed for in this design proposal is to allow the pathway along Scajaquada Creek differentiate from

other pathways found within the City of Buffalo, and in the smaller residential neighborhoods where the waterway is buried. This will also highlight key elements of Scajaquada Creek, as well as promote further education of this area's long history dating back to prehistorical times, where Native American settled along Scajaquada Creek. When observing the seven zones that have been determined for the Scajaquada Creek, each one is unique in their own way, however, the zones have similar characteristics among them.

#### *Zone A: West Scajaquada*

While this zone is primarily industrial, there are some important features that should be highlighted during the proposal stage. Rail spurs, and bridges are located within this zone, which supports the industrial history of Scajaquada Creek. This area also supports the user disconnection of the pathway to the water, due to the overgrown vegetation on the banks, and a number of invasive species. Along with this disconnect, the stream quality is poor in this area. Including educational factor is important within this zone, due to having Buffalo State, McKinley High School, Richardson Complex, and the location of the Battle of Scajaquada Creek during the War of 1812 are all located within this zone.

#### *Zone B: Delaware Park // Zone C: Forrest Lawn Cemetery*

These two zones can be combined when looking at their features because they both have similar characteristics. Greenspace is the majority character-defining feature. Looking at Zone B in particular, the majority of the Native American archeological sites we researched are located in this region. Two large bodies of water are also located within this area, Hoyt Lake, and Mirror Lake, but Scajaquada Creek doesn't actually drain into these lakes, the creek is channelized under the water. This channelization process is the first time we see this on Scajaquada Creek.

Both of these zones also have a designed picturesque landscape that was created from the work of Fredrick Law Olmsted. Within these two zones, this is the first time where people have access to the Scajaquada Creek. Like the other zone, there are Native American archeological sites located within this area. Unlike any of the other zones, this is the only place where you can get access to the water, and have it completely quiet, and not hear any of the surrounding traffic. Lastly, within this region, there is a serenity falls, which is nearly completed hidden from the public.

*Zone D: Scajaquada Greenway // Zone E: Northland Industrial // Zone F: Scajaquada - Kerns*

These zones have different characteristics than the previously listed because these zones have dense residential development where in the previous zones, have greenspace, educational factors, and industrial areas. While there are some industrial areas scattered within these areas, in the Northland Industrial Zone in particular majority of the development is residential. Meanwhile there are some green spaces scattered within these zones. Conclusions can be made that these green spaces, could be vacant lots where housing once was, but no are longer there. Within Zone D, there is the largest green space when compared to the other zones for this section. This greenspace could provide an opportunity for development that would allow connection to the community. This greenspace, looks like it follows the contours of the buried waterway, which could then be used to educate the public on Scajaquada Creek that is buried below this area. The housing within these zones have some unique features when looking at them through satellite imagery. The housing looks to align with the contours of Scajaquada Creek. You can especially see this happening in Zone F: Scajaquada-Kerns. An important characteristic to mention within this zone is the vacant rail line that starts down in the City of Buffalo and continues northward throughout the study area, and to North Buffalo. This vacant rail line could be a great

opportunity to expand a bike paths and the linkage between our study area and the surrounding communities.

### *Zone G: Schiller Park*

Schiller Park is the main character-defining feature within this zone. This rather larger greenspace is underutilized and could be the best-suited place where daylighting could take place. However, if daylighting is done within this zone, Schiller Park will become a flood plain. But there could be other proposals done for this area, to enhance this rather larger greenspace. The last feature within this zone is the first time Scajaquada Creek enters the tunnel. From visiting the site, it looks like the water quality at this location is rather clean, and the shoreline looks to be in good conditions. And the water doesn't become exposed again until Forrest Lawn Cemetery.

### **Precedent Studies**

#### *Ann & Roy Butler Hike and Bike Trail // Austin, Texas*

Ann & Roy Butler Hike and Bike Trail located in Austin Texas. This trail system is located in the urban center of states capital. Overall the trail way system is a 10-mile loop that connects several communities and neighborhoods together. The pathway follows the shoreline of the Colorado River. While this precedent study project attracts over two million visitors a year, however, it, is located in a city with a much higher population than in our case study area. This trail is more than a great pathway; it is a place where Austin thrives. For many citizens and visitors, it represents the best Austin has to offer: outdoor recreation, a scenic, natural

environment, and a diverse, vibrant mix of people<sup>2</sup>. The history of this project dates back to the 1960s, wherein the start there was nothing on the shores of the Colorado River to the point where



Example of the interactive signage that is strategically placed along the 10-mile hike and bike trail loop. This is a good example of signage can perform as a way-finding tool, and still be function in education the public about the area they are currently in. The sign uses simple graphics that people of different languages can understand the knowledge that the sign is getting across.

it was barren. Flooding was a major problem for this area, because during the flooding, often times trees and other vegetation would be swept away. Over the history, trees have been planted along the shores as an effort to add stability to the shoreline. While the project was started in the 1960s, it wasn't until the 1970s were the project really gained ground. This project is also evolving to meet the demands of the people. In 2014, a 7,250 feet boardwalk was constructed, the boardwalk, fixed a disconnect that was on the trail. The disconnect made people using the trail to travel on a major thru fare, so the boardwalk was a simple but expensive fix. At an estimated twenty-eight million dollars. Currently, the developers of the trail are developing master signage that would be placed throughout the 10-mile trail system. The signage would be used for wayfinding, and offer a form of branding. Lastly, shoreline and environmental restoration are taking place in varies areas of the Ann & Roy Butler Hike and Bike Trail. Some

<sup>2</sup> "About the Butler Trail." The Trail Foundation. Last modified 2013. <http://www.thetrailfoundation.org/explore/about-the-butler-trail/>.

examples of how they are promoting this area, you can donate to the cause and they dedicate areas to them, and they fence off the area and put signage giving users information about what can be found within the fenced off area. And asking people not to wander off the trail.

#### *North Ponds Park // Webster, New York*

While this precedent study is on the small scale when compared to Ann & Roy Butler Hike and Bike Trail and to the Scajaquada Creek focus area. North Pond Park is roughly 44 acres which consist of two large ponds, nine hole three thousand one hundred and fifty yard Frisbee golf course. The most popular feature at this park is the one-mile pathway that borders the property of the park. Unlike other pathways, this one is unique because of every eighth mile, there is a fitness station. These fitness stations give the people running or walking on the pathway a spot to stretch or do light resistance training. These stations are located just off the pathway so people using them do not interfere with other people on the pathway. There is a connection between the people using the park, to the water. This park is a popular fishing spot, with that said, there is easy access down to the water from anywhere within the park, the only place where access is limited is the area within the Frisbee golf course. North Pond Park is a good example to look into when developing a proposal for our focus area, in regards to providing access to the water, and restoring the environment within the park, and how to make the pathway more user interactive, rather than just being a paved surface for people to use.

#### *Daylighting*

Daylighting refers to projects that uncover and restore creeks, streams, and rivers that have been previously buried in underground pipes and culverts, which have been removed from

the view shed of the public<sup>3</sup>. There are some benefits to daylighting, which includes, providing wildlife habitat, floodplain protection, and makes the area more pleasing to the public.

However, daylighting is a costly process, so it might not be an option on a smaller scale. With that said, the idea of using dry bed daylighting could be a better option. With this method you do not expose the buried water, you use landscaping with rocks, trees and other plantings that would following the shoreline for the buried



While this picture, is an example of dry creek daylighting, it is done at a much smaller scale. However, the method and appearance are similar.

waterway, giving the look and feel that the creek is actually day lighted.

### **Implementation of Precedent Studies to Scajaquada Creek**

Using precedent studies is important when proposing a design for an area. While not every project is the same, you can pull out particular features that would work for the focus area. My design proposal calls for a pathway along the shoreline of Scajaquada Creek where the water is exposed, while where the creek is buried, the pathway will still follow the “path” of the creek, but rather having the pathway give the public access to the water, rather the pathway will educate the residents within the surrounding area about the buried waterway below.

For Shiller Park, since this is where the greatest amount of greenspace is located, and there is potential for daylighting. However, to save on money costs and to maintain as much green space as possible, rather than exposing the waterway for roughly 500 yards, which could

<sup>3</sup> "Creek Daylighting." San Francisco Public Utilities Commission. Accessed November 27, 2016. [http://208.121.200.84/ftp/files/Citywide/Glen\\_Park/PUC\\_Daylighting\\_FAQ\\_and\\_Case\\_Studies.pdf](http://208.121.200.84/ftp/files/Citywide/Glen_Park/PUC_Daylighting_FAQ_and_Case_Studies.pdf).

have a cost upwards of \$1,000 per linear foot<sup>4</sup>. Just to daylight Shiller Park, the cost would be roughly \$1,500,000 when compared to the price to construct a dry creek bed project. It would seem to be feasible to proceed with the dry creek method rather than using conventional daylighting. New pathways will be constructed that would follow the contours of the dry creek bed. While this greenspace is set in an urban setting, other greenspaces this large are few and far between, so similar to the proposal for installing workout stations along the bike trail, a similar plan will take place within Schiller Park.



These workout stations, that would be located on the bike path that surround Delaware Park and along the proposed pathway throughout Schiller Park would look similar to this. These stations offer a light workout element to the user's experience. An example of this implementation can be found at North Long Pond, in Webster, New York

### *Zone A → Zone C*

For these zones, the design will be focused on a new pathway that would follow the shoreline of Scajaquada Creek from the Niagara River through Delaware Park and Forrest Lawn Cemetery. The proposed trail system will be an estimated six-mile loop. The trail would offer locations where it would connect to existing pathways and roads. Some of the linkages would be made would be at major roadways such as Elmwood Avenue, Delaware Avenue, and Main Street. While also providing a connection to the pathways within Forest Lawn Cemetery and the

<sup>4</sup> Pinkham, Richard. "Stream Restoration and Daylighting." Goto Collins. Last modified December 25, 2010. <http://3r2n.collinsandgoto.com/revalued/stream-restoration-daylighting/>.



Along with making the additions previously stated, the ecosystem would also get some attention. Like the process completed in the Ann & Roy Butler Hike and Bike Trail, the shorelines need to be addressed. The shoreline is overgrown with evasive species of vegetation, making the access down to the water next to impossible. There have been several projects in Western York that dealt with shoreline restoration and stream restoration. One example of stream restoration completed at Eighteenmile Creek, located in Niagara County. Over the past decade agencies have spent in excess of thirty million dollars in efforts to clean up the waterway and the



Picture depicts the results of the shoreline restoration project that took place on Eighteenmile Creek, downstream from Burt Dam. The project was completed in 2004, at a cost of one million dollars. The focus was to restore habitats along with stabilization of the shoreline. The project was completed by Niagara County Department of Economic Development along with partnerships from 19 other organizations.

Photo Credit: Alishia Foss

sediment. Along with cleaning up the water quality and the sediment, efforts have been made to restore the banks, specifically near Burt Dam. The main step is to find the point source of the pollution to the waterway, which can be traced to the City of Buffalo old and outdated Combined Sewer System. By improving the quality of the water, it will have an effect on the shoreline as well. Once the shoreline is taken care of then the public would have the chance to gain access to the water and make the area and the trail more desirable to the users.

*Zone D → Zone F*

The design proposal for these zones is slightly different than for the previous zones. The main factor to why the design proposal is different due to having Scajaquada Creek being buried. While the creek is not visual to the public, there are still features that support the path the water follows. While the method of daylighting could potentially work within these zones, the fear that by daylighting it would actually cause a disconnect within the fabric of the neighborhood. A trail way would be the best choice for this region because this is the area where signage and branding

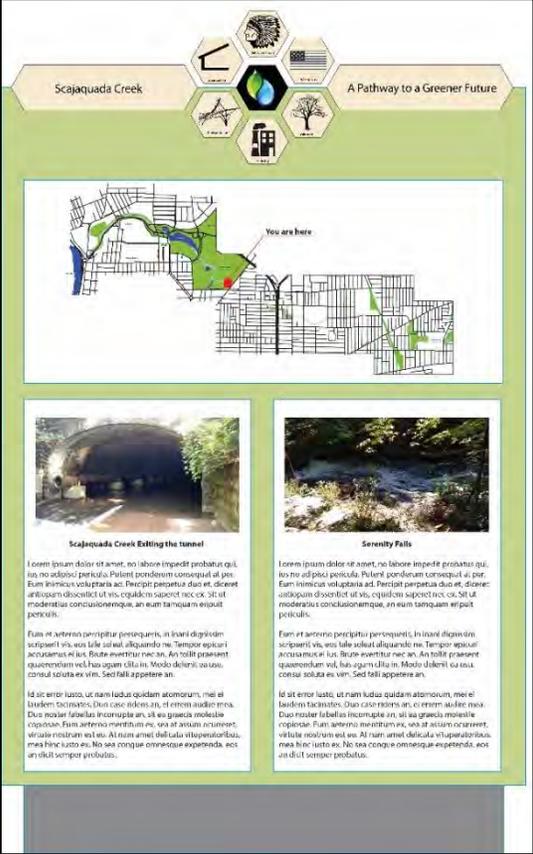


could make its mark on the community. Since this is a developed area, the pathway would be an interactive experience. Rather than just having a paved surface for the trail, there would be blue pavers installed along the trail that would follow the contours of the waterway that is buried below. The signage that would be used from the previous section would be continued throughout this section as well. The main focus of this design proposal for these zones is to education the community about the history of the burial of Scajaquada Creek. The signage could be mounted to the existing light poles. Where physical signs can be installed, ideally within the greenspaces that follow the contours of the buried Scajaquada Creek, would be the same signs used within the

previous mentioned zones. The reasoning behind using the same signs, is to show connectivity and unity throughout the entire project area.



Images shows, illustrate how the will be used within these zones. Note how the logo will be mounted to the street poles. While where physical signs can be installed would be the



**Existing**

Stanislaus College

Villa Maria College

Schiller Park

Dry Creek

**Proposed**

Proposed Fitness playground within Schiller Park

Proposing Dry Creek bed daying methods

Proposed Method where creek is buried

**BENEFITS OF A LOGO**

- Modifiable
- Develops neighborhood cohesiveness
- New contemporary logo represents the possibilities for upward mobility in the future
- Fosters neighborhood pride
- Implementable across media such as trash cans, benches, bus stops, bike racks
- Gives the area an identity
- Defines the filmore corridor and separates it from other areas in Sutter Co.

**Existing // Potential Upgrades to playground**

**Existing**

Proposed Fitness playground within Schiller Park

**Existing**

Proposing Dry Creek bed daying methods

**Existing**

Proposed Method where creek is buried

## Zone G // Schiller Park

Zone G is the only potential location for daylighting. While daylighting is very costly, there are some other methods that could be done that would give the same effect. For Schiller



Park, roughly 500 yards that follow the path of buried Scajaquada Creek. Rather than exposing the water, and changing the floodplain, the project would call for designing a dry creek bed. This dry creek bed design would give the feel that the creek is exposed. By doing this within this park, it

makes the park more picturesque landscape. Because the current conditions are just a large open greenspace. Along with constructing this dry creek bed, numerous species of native vegetation would be planted along the creek bed. To make the park friendly for all ages, a baseball field added, in close proximity to the existing basketball courts that look to be in great condition. While there is a playground, there is room for improvements to make it more attractive for the surround residents to use.

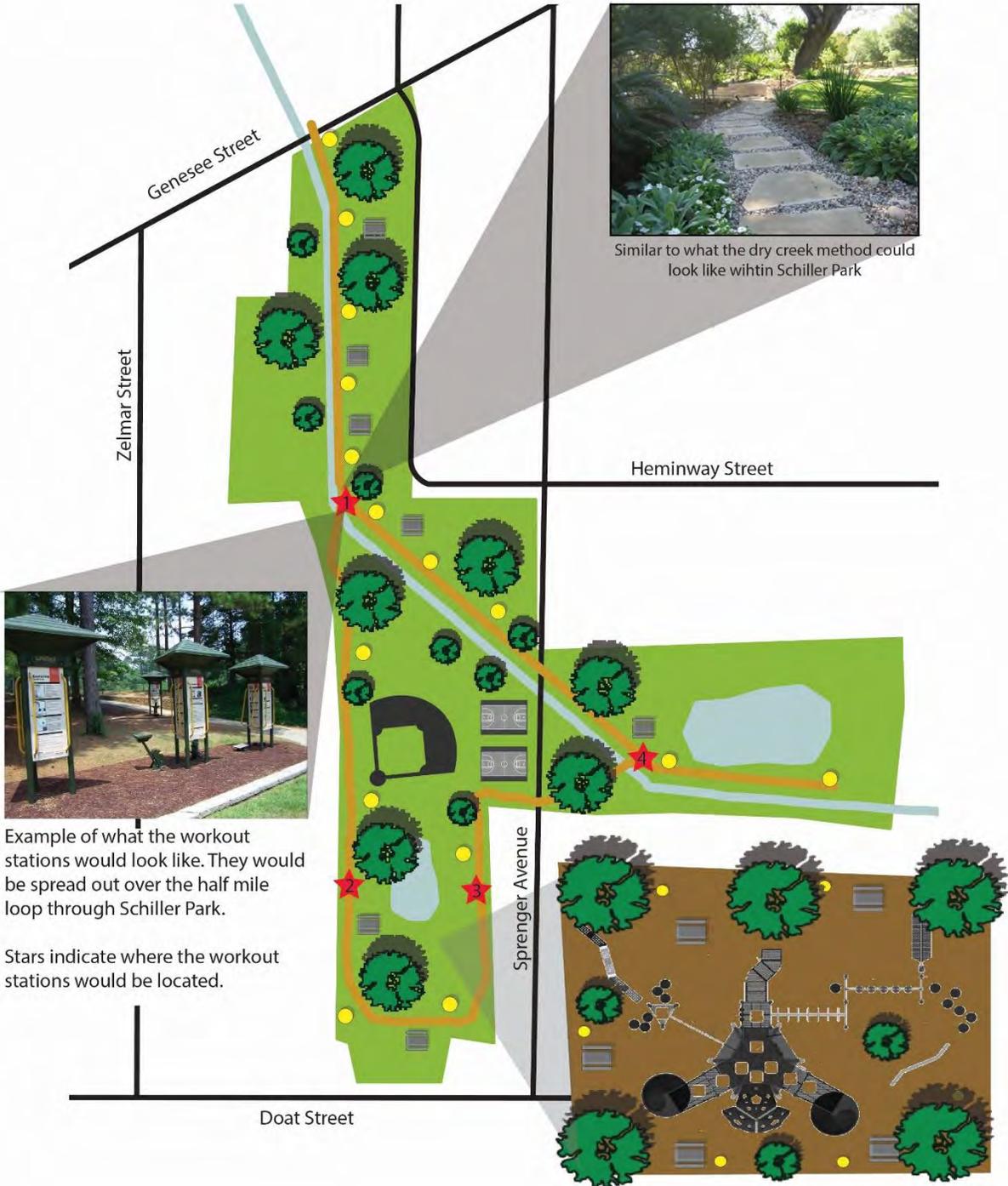
The other feature that would make this proposed pathway more interactive, would be to



install workout stations what would be evenly spaced along the loop. Like signage, the goal is not to have too many of them, so since the loop is six miles, there would be a total of ten workout stations. The breakdown would be roughly

every half-mile there would be a station where the users can stretch or do light resistance training. These workout stations are being used in the precedent study of North Long Pond in Webster, New York. These stations are highly successful within this park, and from noticing the amount of people using the trail along Scajaquada Creek now, and if the trail is connected to the loop that surrounds Delaware Park, the number of users would increase. By having these stations, it would make it a unique trail way that is like nothing in the City of Buffalo. The construction and installation of these workout stations can be contracted out to a local playground architecture firm named Parkitects. The firm has done these in the past and they estimate that each station would cost around \$3,000 each, depend on the style, and installation techniques. To cut down on the cost of the stations, public outreach could be an option, along with local businesses that would donate their time to help or have local schools that are located near the proposed trail way help out in the installation and construction. By engaging the youth, it would be an educational experience that they could gain as well.

Design proposal for Schiller



Similar to what the dry creek method could look like within Schiller Park



Example of what the workout stations would look like. They would be spread out over the half mile loop through Schiller Park.

Stars indicate where the workout stations would be located.

Doat Street

Sprenger Avenue

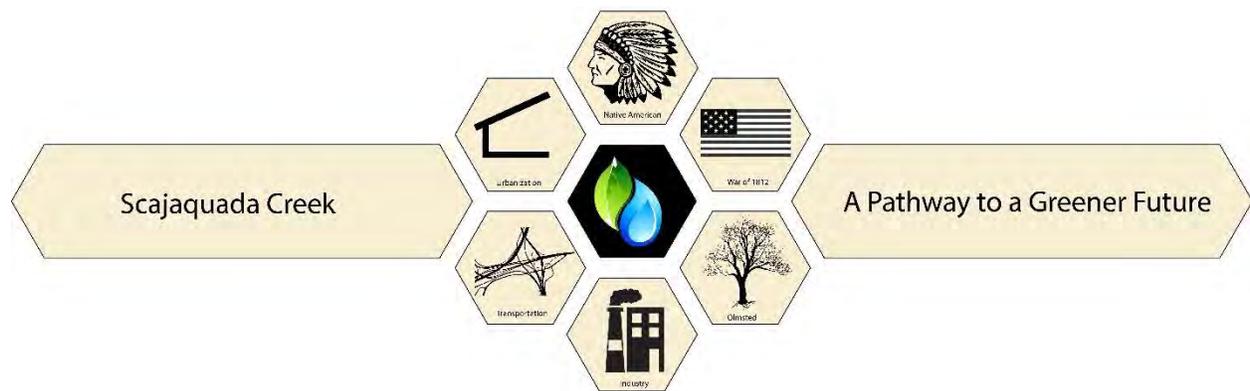
Zelmar Street

Genesee Street

Heminway Street

## Signage and Branding

To minimize vandalism to the new signage and to the workout stations, LED lighting would be installed through the proposed design area. There is a program called Crime Prevention through Environmental Design. This program is defined “as a multi-disciplinary approach to deterring criminal behavior through environmental design. These strategies rely on the ability to influence offered decisions that precede criminal acts by affecting the built, social and administrative environment”<sup>5</sup>. There is a Crime Prevention through Environmental Design Guidebook<sup>1</sup>. Since there will be better lighting, in theory, more people would be using it, having the effect that vandalism will be reduced, or even stopped. You want to make the users of all ages and gender feel safe and have the feeling that someone is always watching over you.



Propose behind the logo creative was to involve six key character defining elements that make up the history of Scajaquada Creek. The hexagon symbolizes balance and unity. The history comes together to form a cohesive symbol which can be used over the entire project area.

The inclusion of signage along the pathway is very important as it can provide users with a history of their surrounding residential, industrial, and historical areas along the Scajaquada Creek corridor. The signage will also provide ample instructions for the users of the pathway.

<sup>5</sup> "Welcome to the International CPTED Association." CPTED Association Home Page. Last modified 2016. <http://www.cpted.net/>.

Some of the instructions that would be included are lanes, which would be colored lines along the pathway, directions, and planks at given historical spots allowing the users to obtain knowledge of the history of the surrounding area. Signage would be added to the proposed pathway which would follow the shoreline of Scajaquada Creek, the signs would utilize existing poles and pole mounted signals were possible to help reduce the cost of construction and installation. The new signs would incorporate the new logo, which would give users a sense of connectivity throughout the new pathway.

The hard part of using signage is to find a balance with the proper amount of them. If signage becomes ubiquitous, it is easily overlooked. It will be key that the signage along the pathway is consistent, giving a unique uniform appearance along the entire length of the focus area. Signage along Scajaquada Creek should be graphic and include diagrams, but the signs would be limited to text, making them quick to read but still effective. Again, the usage of mounting banners to existing street lights is a way to brand a particular area.

Determining where the signs would be located is key. Some of the proposed locations would be where people gain access to the pathway, near historic locations, like at the site of the Battle of Scajaquada Creek during the War of 1812, historic bridges especially in Forest Lawn Cemetery, and where archeologists discovered Native American artifacts. By locating the signs at these points, it provides an educational factor to the user experience of the pathway. Lastly, the signage should include distance markers so people know how far they have traveled on the pathway. That was one of my observations while going on the site walking tours, we had no idea on how far we traveled while following Scajaquada Creek from the Niagara River to Pine Ridge Road near Villa Maria College. Mentioned several times in the text, that education is very important within this design proposal. By raising the awareness in regards to Scajaquada Creek

and the surrounding neighborhoods. Through means of strategically placing signage, users on the pathway will have the opportunity to interact with the signs. Depending on where the sign is on the trail, there is the chance to use historic photos to help tell the story of the past at that point along the pathway. Lastly, connectivity is arguably the most important factor that needs to be completed through signage and branding. The purpose of having a pathway spanning the entire Scajaquada Creek corridor, because it would not only raise awareness about the project area, it will also utilize the spaces mainly within the western section of the project area. This pathway poses the chance of linking with existing pathways which allow people to gain access to other parts of the city.

### **Conclusion**

In closing, the creation of this pathway should be regarded as an introduction to not just to what the future holds for Scajaquada Creek, it is a tribute to the long and changing history of this area. Where else is there an opportunity to have an area that has such a unique history that spans over three hundred years? If you look at the pathway as a timeline, at one end, (West) the start of the history, on the other (East) more recent events. While the Scajaquada Creek waterway occupies a vast amount of land, it should be a prime piece for development along it, and with a current proposal about removing Route 198, it should further push for the redevelopment of the Scajaquada Creek corridor and restoration of the shoreline, and the waterway. Finally, the proposed pathway following the contour of the waterway can begin to restore connections that have been disconnected from the long history of development throughout the neighborhoods surrounding the focus area.

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<sup>i</sup> For more information, in relation to the Crime Prevention Through Environmental Design follow the link: <http://www.popcenter.org/tools/cpted/PDFs/NCPC.pdf>



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# APPENDIX





## APPENDIX A: War of 1812

### WAR OF 1812 ORIGINS

#### **Causes and Background**

In the midst of a fragile global geopolitical environment, which prefaced the War of 1812, Great Britain and France each sought world dominance. The United States, a young nation at the time, wanted to establish concrete sovereignty and fruitful trade relationships. After the Revolutionary War, the United States elected to remain neutral with both France and Great Britain as trade relationships with both nations were imperative for the American economy to maintain its growth. The American Revolution resulted in the Jay Treaty which re-established trade relations between Great Britain and the United States in 1795.<sup>1</sup> The French were insulted by this normalization of relations since they assisted the Americans in obtaining Independence.

Economic tensions continued to escalate between France and the United States, resulting in the XYZ affair, and Quasi War of 1798 - 1801. The XYZ affair was an event in which American delegates were sent to France to repair strained economic relations. During this event, the French sought monetary reparations, and wanted an official apology for trading with Great Britain.<sup>2</sup> The apology never materialized, resulting in a Quasi war with France, primarily manifested through multiple naval altercations on the seas.<sup>3</sup>

These trade issues continued during the Napoleonic wars, where France sought to gain dominance over Europe, while crippling British influence and assets. Great Britain, trying to maintain their dominance on the seas, and influence on land around the world, imposed various restrictions and influences that angered the United States Government. Foreign relations between the tri-powers (Great Britain, France, and the United States) were crossed strained putting the United States in the middle of a bitter and hostile situation ending in conflict.

In addition to strained trade and economic relationships, the British imprisonment of American sailors also motivated military conflict.<sup>4</sup> British naval officers infuriated American political and military leadership by seizing American merchant ships and sailors on the coastal waters of Western Europe. The Americans viewed these actions as a direct attack on their sovereignty. Great Britain provided weapons and propaganda to native tribes in the American northwest in an attempt to undermine the influence of the United States and restrict further westward expansion.<sup>5</sup> These continued provocations and perceived restrictions of American sovereignty by Great Britain pushed the United States towards armed conflict. In 1809, President James Madison named Great Britain as the United States greatest antagonist.<sup>6</sup>

Former President Thomas Jefferson, along with Congressional leadership, claimed annexing Canada would be an easy endeavor. United States political leadership speculated Canada would welcome American liberties and the annexation would improve

the existing bond between the two nations.<sup>7</sup> The United States intentions to rid Great Britain from North America were imminent.<sup>8</sup> On August 4, 1812 former President Thomas Jefferson stated to William Duane, “[t]he acquisition of Canada this year, as far as the neighborhood of Quebec, will be a mere matter of marching; & will give us experience for the attack of Halifax the next, & the final expulsion of England from the American continent.”<sup>9</sup>

War was declared on Great Britain by the United States Congress in June of 1812. The war lasted until February 1815. At a time when messages were hand written and transportation was slow the impact of battles was not known throughout the country until weeks or months later. Due to this communication deficiency, local and regional battles had more of a direct impact between regional communities.<sup>10</sup>

### Niagara Frontier Region

Contrary to the leadership’s anticipated ease of the campaign, fighting and conflict in the Niagara region was tense and ruthless. This was mostly due to geographical and location based challenges between Lake Erie and Lake Ontario. These lakes were of great strategic and tactical importance. Control of the Niagara River made it possible to supply remote areas and military quarters. Control of the Lakes would almost certainly dictate who won the war in this region.<sup>11</sup>

Control of the Great Lakes was crucial to winning the war since supplies were primarily transported on the water. The road infrastructure and transportation vehicles that existed in the early 1800s were relatively primitive. In many areas of the Niagara Frontier Region roads did not yet exist and most of the Niagara Frontier was still heavily forested. Supported by historical map analysis, most if not all main roads within the region were improved Native American trails. The roads that did exist were uneven and people traveled by horse and wagon, which was extremely time consuming.<sup>12</sup> For example, travel to and from New York City to Buffalo in 1800 took one week.<sup>13</sup> Due to the lack of roads and time to travel during the War of 1812, boats were the most efficient way to move and supply troops. This made the control of the Great Lakes a high priority for both Great Britain and the United States.<sup>14</sup> The integral water features of the Niagara frontier included Lake Erie and the Niagara River, which serve as a natural border between the United States and Canada.

Besides most transportation occurring on water, the proximity to Canada is another important feature of the landscape. The Canadian landscape could be viewed from the American shore in both Buffalo and Black Rock. One can stand at Niagara Street just south of West Avenue and see Canada. Someone could canoe or even attempt to swim across this section. In the 1800s when most of Black Rock was a wooded area it was easier to see the Canadian shores and the movement of people.<sup>15</sup> Natural and man-made land features on the Niagara Frontier were well known among both American and British actors. For example, Strawberry Island on the Niagara River was utilized by British forces in preparation for a siege on Buffalo in December 1813. Squaw Island was occupied, and

utilized by both British and American soldiers as a natural land barrier between the two forces.<sup>16</sup>

Weeks after the United States Congress issued a declaration of war the commanding American general for the Niagara Frontier General Peter Porter sent a letter requesting assistance. Dated June 28, 1812, the letter implored Major J.R. Mullaney to send soldiers and supplies. Just days after the declaration of War, Peter Porter requested all resources be allocated to defend Fort Niagara because of imminent British attack.<sup>17</sup> That letter would be the basis for protecting American assets in the Western Frontier throughout the war. Major Mullaney was stationed at Canandaigua, New York with orders to oversee the defense of the southern shore of Lake Ontario.

### **The First Major Altercation**

The first major altercation on the Niagara frontier was the Battle of Lake Erie in September 1813. During this battle, the Navy Yard in Black Rock was located west of the contemporary Niagara Street Bridge<sup>18</sup> and is credited with preparing and fitting Commodore Oliver Hazard Perry's fleet.<sup>19</sup> Commodore Perry is an American naval officer who is credited with the successful victory of the Battle of Lake Erie, forcing the British Royal fleet to surrender for the first time in history.<sup>20</sup>

During 1812 and 1813, British troops led by Commander Robert Barclay controlled Lake Erie. Starting in the fall of 1812, the United States began constructing ships on Presque Isle in Lake Erie under U.S. Master Commandant Oliver Perry. The work on the ships was done by July 1813 and Perry used his ships to block supplies which were on the way to the British Fort Amherstburg. Fort Amherstburg had multiple functions. It was a home base, a trading post on the Great Lakes, it administered Indian affairs, and contained the Navy Yard. This Navy Yard produced many vessels involved in the war, including the brig General Hunter, the ship Queen Charlotte, the schooner Lady Prevost and the ship Detroit.<sup>21</sup>

The British under Barclay sailed out to confront Perry since he was blocking their supplies. On September 10, 1813, the two met up and fired for almost three hours. Perry was on the ship, the Lawrence, which was hit during the battle. Perry decided to row out to another ship, the Niagara, so he could continue to fight. Eventually the British surrendered after having their ships damaged and losing many senior officers as well as leaving Barclay wounded. Perry had secured a victory which meant control of Lake Erie for the Americans. This was an important battle to gain control of waters where they could ship and send supplies.<sup>22</sup>

The Americans would be the first to engage the British in a combat during a minor altercation at Fort Erie in November 1812, and seized Fort George in May 1813.<sup>23</sup> As winter neared, General George McClure of the American forces, garrisoning Fort George, decided to abandon the fort December 10, 1813. General McClure commenced the highly controversial burning of Canadian villages and the town of Newark (presently Niagara-on-the-Lake along the Canadian shoreline) as he abandoned Fort George.<sup>24</sup> General McClure would be reprimanded by his superiors for his actions against Canadian villages, and would never again hold military command.<sup>25</sup> In retaliation, British forces led a siege on Fort Niagara and ravaged and burned villages and towns from Fort Niagara to Buffalo.<sup>26</sup>

## Other Significant Battles

Americans were making improvements to Fort Erie continuously since the takeover in July. One Lieutenant named McDonough was involved and had already done some work on the fort itself from previous battles.<sup>27</sup> However when General Ripley arrived he took the liberty of building up the surroundings of the fort. Under Ripley's direction, soldiers built a small battery to the right of the original fort.<sup>28</sup> They built these new defenses by utilizing what are called unit fatigue parties. These soldiers worked in eight-hour shifts continuously 24 hours a day until the ditches and breastworks were completed and had the old fort linked with the batteries. The old fort quickly became a segment of a larger system of parapets and traverses, all edged by a wide ditch and abattis.<sup>29</sup>

The Battle of Chippawa quickly followed the resulting in an American victory.<sup>30</sup> About twenty days later, a bloody encounter at Lundy's Lane resulted in a tactical tie.<sup>31</sup> The Americans were forced back to Fort Erie after Lundy's Lane to recover.<sup>32</sup> Despite the fact that both sides claimed they win the battle, it was extremely violent and made General Drummond think twice before taking action in any of the battles that occurred afterwards. These actions gave the Americans time to make improvements to Fort Erie for later conflicts.<sup>33</sup>

Another factor in the Sieges at Fort Erie was the supply lines. The British supplies were forty miles to the mouth of the Niagara which included swamp and wooded areas.<sup>34</sup> In contrast, American supplies came from Black Rock across the Niagara River. Although the Niagara River was difficult to cross it was a much shorter distance. The Americans also had another advantage since they had control of Lake Erie and also had placements on Lake Ontario which threatened supply depots there.<sup>35</sup>

In a desperate attempt to retrieve much needed supplies, while simultaneously cutting supply lines to the Americans occupying Fort Erie, General Drummond organized a night mission to invade Black Rock. On August 2-3, 1814, the Battle at Scajaquada Creek (then Conjockey Creek) was waged.

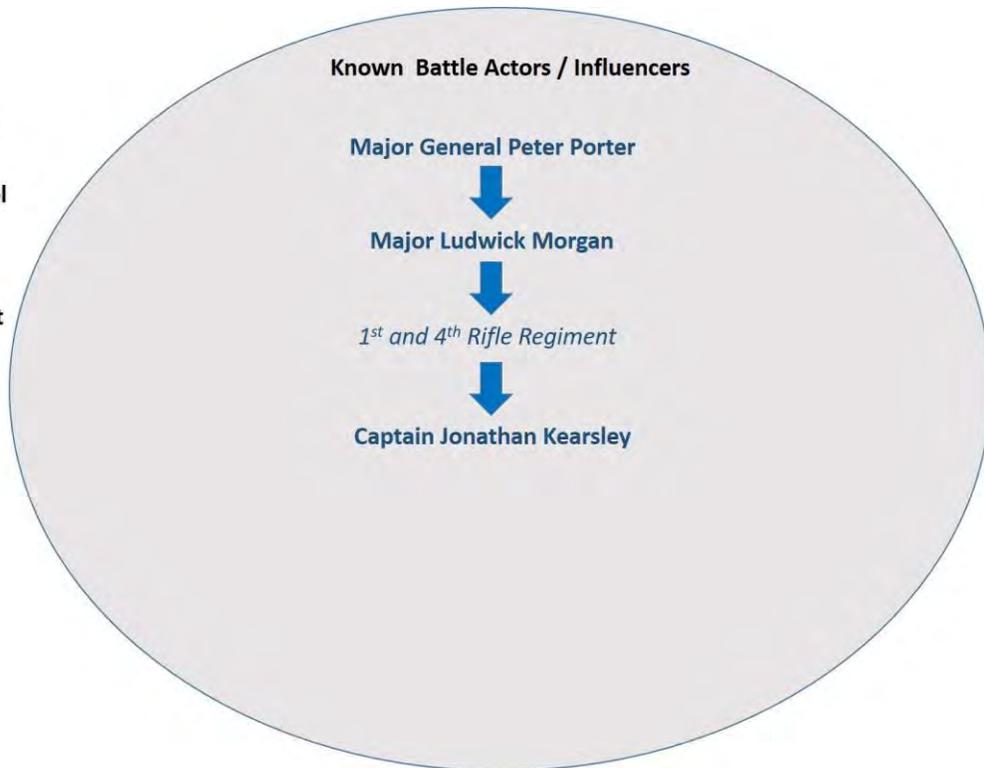
**Engaging Actors of the Battle of Scajaquada Creek**

	<b><u>Soldiers</u></b>	<b><u>Signal</u></b> <b><u>Fire</u></b>	<b><u>Weapon</u></b>	<b><u>Fire /</u></b> <b><u>Accuracy</u></b>	<b><u>Reload</u></b>
<b><u>Americans</u></b>	240	Whistle	Rifle	300 Yards	60 sec.
<b><u>British</u></b>	600	Drum	Musket	70 Yards	15 sec.

\*Information obtained from Fort Erie military exhibits.

**Military Ranks**

- Major General
- Brigadier General
- Colonel
- Lieutenant Colonel
- Major
- Captain
- First Lieutenant
- Second Lieutenant
- Sergeants
- Corporals
- Private



## American Actors

*"To destroy the provision at Buffalo, and thus cut off all many of substance from the American army, was the design of the contemplated by the British... The still planning and the formations in the execution by the riflemen.... saved the American army."*<sup>36</sup>

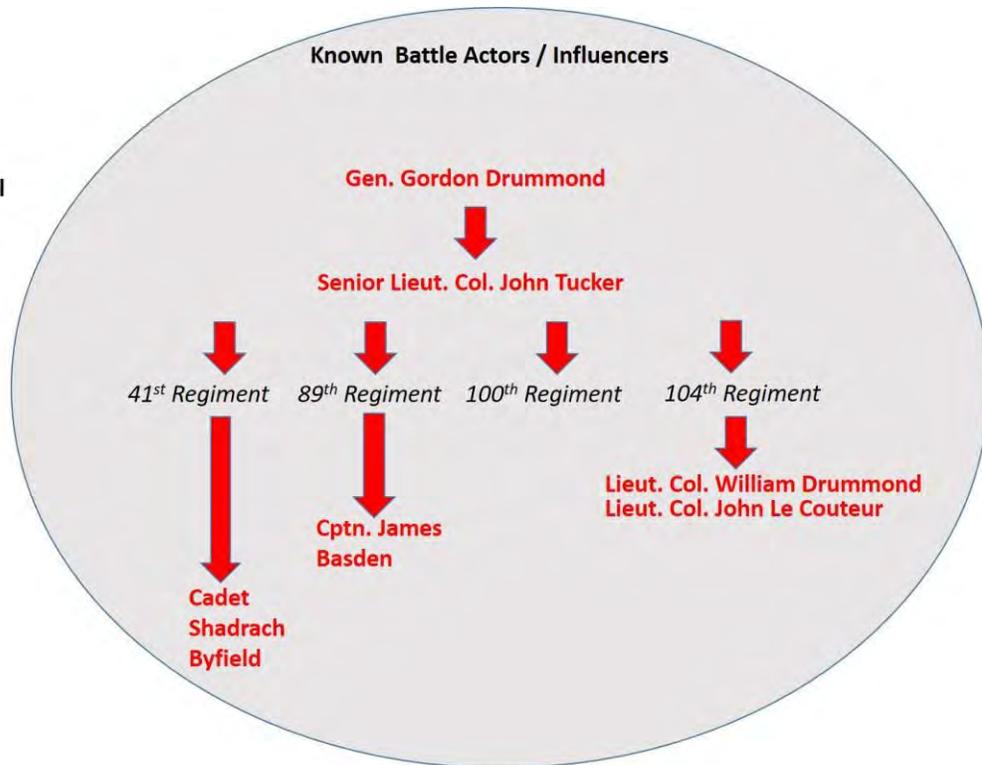
General Peter Porter: General Porter was commandant of all Western New York army regiments, and was awarded commander of all American forces the Niagara frontier by President James Madison after British forces returned north into Canada, ending frontier engagements.<sup>37</sup>

Cruikshank, Ernest, ed. *The First American Frontier. The Documentary History of the Campaign on the Niagara Frontier, 1814.* Vol. IV. New York: Arno Press & New York Times, 1971.

Major Ludwick Morgan: Major Morgan was a commanding officer who led the 1<sup>st</sup> rifle regiment, protecting Buffalo, and Black Rock. Major Morgan had noticed British advances on the Canadian shoreline prior to the Scajaquada Creek engagement, and concluded to an imminent British attack. Major Morgan directed the Scajaquada Creek Bridge be removed, and set up breastworks to provide shield from fire. Ultimately, the American goal was to hinder British advancement on Black Rock / Buffalo, protecting supply lines to Fort Erie.

Captain Johnathan Kearsley: Commanding captain of the 4<sup>TH</sup> rifle regiment, Captain Kearsley<sup>38</sup> marched his troops from Sackets Harbor, to Geneva NY, then to Buffalo. After arriving to Buffalo, Major Ludwick Morgan of the 1<sup>st</sup> was then appointed Major to Kaersley's rifle regiment, combining forces before the battle at Scajaquada Creek. After the Battle, Captain Kearsley was referenced as Major Kearsley, and directed troops to Buffalo / Buffalo Creek to protect supply lines between American occupied Fort Erie, and Buffalo.<sup>39</sup>

**Military Ranks**  
**Major General**  
**Brigadier**  
**Colonel**  
**Lieutenant Colonel**  
**Major**  
**Captain**  
**Lieutenant**  
**Second Lieut.**  
**Cadet**



### British Actors

*“Feeling that he did not have the manpower for a lengthy siege, he had decided to launch a raid against two American supply depots at and near Buffalo.<sup>40</sup> The strategy was based on the idea that if the supplies were lost to the Americans, they might feel compelled to evacuate Fort Erie.”<sup>41</sup>*

General Gordon Drummond: An appointed Lieutenant Governor of Canada, General Drummond commanded the Niagara frontier regiments, consisting 3,500 – 4,000 soldiers.<sup>42</sup> He is attributed with leading the British forces at Fort Niagara, the Battle of Lundy's Lane, siege of Fort Erie, and coordinating the second assault at the Battle of Scajaquada Creek August of 1814. His coordination of the Scajaquada creek encounter was preceded by a need to gain additional supplies, and cut off American support to Fort Erie, and regain control of the Niagara Frontier.

Senior Lieutenant Colonel John Tucker: Tucker was a part of the 41<sup>st</sup> regiment, and was appointed to commanding the execution of siege, by General Drummond.<sup>43</sup>

Lieutenant Colonel William Drummond: He served within the 41<sup>st</sup> regiment, and was a nephew of General Gordon Drummond.<sup>44</sup>

Captain James Basden: Captain Basden is noted as a captain within the 89<sup>th</sup> British regiment during the Battle of Scajaquada Creek.<sup>45</sup>

Lieutenant John Le Couteur: Lt. Le Couteur, a 17-year-old Lieutenant of the British Canadian 104<sup>th</sup> regiment gave a detailed description of his experience with the Battle of Scajaquada Creek. According to Le Couteur's account, The military unit landed about 2 miles north of Black rock on a farm August 2<sup>nd</sup>. The unit advanced towards the intended target (Black Rock) around 12 am. Before daylight firing began. Le Couteur acknowledged Colonel Tucker's Retreat as "shameful" of the British just after American commenced firing their rifles. After cautiously being sent towards the creek to seek enemy location, Le Couteur acknowledges the bridge over Scajaquada:

*"There was a broad deep creek in our front with a broken bridge on it – two beams remained entire"*<sup>46</sup>

Le Couteur's description of the bridge and Scajaquada Creek would support the area needed to maintain a naval yard, and suggest that the creek was much larger than its contemporary state. The conflict ensued, and then Lieutenant John Couteur at around 7am acknowledged a need to retire (retreat) with a loss of 20 men within their regiment.<sup>47</sup>

Private Shadrach Byfield: Private Byfield of the British 41<sup>st</sup> British regiment depicted his experience in his personal journal / memoir of the engagement between forces at Scajaquada Creek. Private Byfield described his journey beginning at from Fort George to the north with intentions of marching south to attack Fort Erie., Byfield's regiment, under senior Lieutenant Colonel John Tucker, was re-routed by General Gordon Drummond. General Drummond had intentions to invade Black Rock, and seize the supply block house at the mouth of Scajaquada Creek. Private Byfield noted that upon landing on there was gunfire in the direction of Black Rock.

Byfield's acknowledgement of distant American gunfire was supported by the detailed account of Major Jonathan Kearsleys memoir. As British forces crossed the Niagara river, from Frenchman's creek landing at Squaw Island, Major Ludwick Moran led his troops south to Buffalo. In Major Kearsley's account, Major Morgan moved his troops south during the afternoon hours, causing noise such as gunfire, to ploy British forces. Major Morgan and his troops returned in the evening to Scajaquada Creek, prepared to await the imminent British assault.

After landing on american soil, Byfield wrote that the regiment advanced south towards Black Rock and depicted:

*"When we were here last (Battle of Black Rock), there was a bridge between us and the town over a small creek, but the enemy had destroyed it."*<sup>48</sup>

After firing shots and realizing that the bridge was in disrepair the British retreated until daylight. Private Byfield notes that a secondary party of troops were then directed to construct a temporary bridge, while others provided cover from American gunfire. The

memoir noted that as gunfire commenced, private Byfield had taken a bullet to the arm, and was removed from the battle to receive treatment.

Concluding, the described actors would contribute greatly to the unpacking of the overlooked engagement at Scajaquada creek August 3 and 4, 1814.

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<sup>1</sup> Donald R Hickey, *Don't Give up the Ship!: Myths of the War of 1812* (Urbana, Illinois: University of Illinois Press, 2006), 4.

<sup>2</sup> Ibid., 3

<sup>3</sup> Ibid., 3

<sup>4</sup> Ibid., 5.

<sup>5</sup> Ibid.

<sup>6</sup> Ibid., 6.

<sup>7</sup> Norman K. Risjord, *1812: Conservatives, War Hawks and the Nation's Honor. The William and Mary Quarterly* (Williamsburgh, Omohundro Institute of Early American History and Culture, 1961), 18 (2): 196-210.

<sup>8</sup> Ibid.

<sup>9</sup> National Parks Service, U.S. Dept. of the Interior, "The acquisition of Canada this year will be a mere matter marching," *U.S. Department of the Interior*. Accessed: October 1, 2016, at <https://www.nps.gov/articles/a-mere-matter-of-marching.htm>.

<sup>10</sup> Robert Watson, *America's First Crisis: War of 1812*. (Albany, New York: Excelsior Editions, 2014), 9-11.

<sup>11</sup> Robert Watson, *America's First Crisis: War of 1812* (Albany, New York: Excelsior Editions, 2014), 9-11.

<sup>12</sup> Indiana University Libraries, "Lake Erie 1813: Battle of Lake Erie – Battle of Thames," *Indiana University: Bloomington*, 2012, <http://collections.libraries.indiana.edu/warof1812/exhibits/show/warof1812/the-war-1813/lake-erie-1813>.

<sup>13</sup> Michael Graham Richard, "How fast could you travel across the U.S. in the 1800s?" *Mother Nature Network*. <http://www.mnn.com/green-tech/transportation/stories/how-fast-could-you-travel-across-the-us-in-the-1800s>.

<sup>14</sup> Indiana University Libraries, "Lake Erie 1813: Battle of Lake Erie – Battle of Thames." *Indiana University: Bloomington*, 2012, <http://collections.libraries.indiana.edu/warof1812/exhibits/show/warof1812/the-war-1813/lake-erie-1813>.

<sup>15</sup> AOTM Curation Team. "American on the Move: Transportation History Videos." *National Museum of American History*, 2016, [http://amhistory.si.edu/onthemove/themes/story\\_48\\_1.html](http://amhistory.si.edu/onthemove/themes/story_48_1.html).

<sup>16</sup>

Sault, M., Matties, L., Whitney, J., & Singer, J. (1997). An Erosional History of Strawberry Island, Niagara River, Tonawanda, New York. *Middle States Geographer*, 30, 29-34.

<sup>17</sup> Paris M. Davis, *An Authentic History of the Late War between the United States and Great Britain with a full Account of Every Battle* (Ithaca, New York: Muck & Andrus, 1829), 27-28.

<sup>18</sup> Buffalo Gazette, "Helped Perry Win His Victory: Buffalo's Part In The Battle at Put - In Bay," (Buffalo New York), December 29, 1912.

<sup>19</sup> Ibid.

<sup>20</sup> Ibid.

<sup>21</sup> Indiana University Libraries, "Lake Erie 1813: Battle of Lake Erie – Battle of Thames." *Indiana University: Bloomington*, 2012, <http://collections.libraries.indiana.edu/warof1812/exhibits/show/warof1812/the-war-1813/lake-erie-1813>.

<sup>22</sup> Ibid.

<sup>23</sup> Robert Henderson, "Causes and Events of the War of 1812: A Timeline," *The Discriminating General: History in your Hands*, <http://www.warof1812.ca/1812events.htm> (Accessed September 29, 2016).

<sup>24</sup> Ibid.

<sup>25</sup> Bill McKern, "GEN George McClure." *Find a Grave*, 2008, <http://www.findagrave.com/cgi-bin/fg.cgi?page=gr&GRid=28730506>.

<sup>26</sup> Robert Henderson, "Causes and Events of the War of 1812: A Timeline," *The Discriminating General: History in your Hands*, <http://www.warof1812.ca/1812events.htm> (Accessed September 29, 2016).

<sup>27</sup> Louis Babcock, *The Siege of Fort Erie: An Episode of the War of 1812* (Buffalo, New York: The Peter Paul Book Company), 25.

<sup>28</sup> Ibid, 26.

<sup>29</sup> Joseph Whitehorne, *While Washington Burned: The Battle for Fort Erie 1814* (Baltimore, Maryland: The Nautical & Aviation Publishing Company of America, 1992), 42.

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<sup>30</sup> Robert Henderson, "Causes and Events of the War of 1812: A Timeline," *The Discriminating General: History in your Hands*, <http://www.warof1812.ca/1812events.htm> (Accessed September 29, 2016).

<sup>31</sup> Ibid.

<sup>32</sup> Ontario Ministry of Government and Consumer Services, "1814: Niagara Frontier and York," *Ontario Ministry of Government and Consumer Services*, 2012, <http://www.archives.gov.on.ca/en/explore/online/1812/niagara-1814.aspx> (Accessed October 1, 2016).

<sup>33</sup> Joseph Whitehorne, *While Washington Burned: The Battle for Fort Erie 1814* (Baltimore, Maryland: The Nautical & Aviation Publishing Company of America, 1992), 37-38.

<sup>34</sup> Donald Graves, *And All their Glory Past: Fort Erie, Plattsburgh and the Final Battles in the North*, (Montmagny, Quebec: Robin Brass Studios, 2013), 32.

<sup>35</sup> Graves, Donald E. (1992) "William Drummond and the Battle of Fort Erie," *Canadian Military History*: Vol. 1: Iss. 1, Article 4. Available at: <http://scholars.wlu.ca/cmh/vol1/iss1/4>.

<sup>36</sup> John Kearsley, *Memoirs of Lieutenant John Kearsley*, University of Michigan, 11.

<sup>37</sup> Joseph A. Grande n.d., "Black Rock's Peter B. Porter: Lawyer, Statesman, Soldier," *Buffalo Architecture and History*, Accessed October 20, 2016, <http://www.buffaloah.com/h/porter/porter.html>.

<sup>38</sup> John Kearsley, *Memoirs of Lieutenant John Kearsley*, University of Michigan, 11.

<sup>39</sup> Ibid.

<sup>40</sup> General Drummond had plans to re-take Fort Erie from the Americans. For a siege on Fort Erie to be successful, general

Drummond had to re-supply, and cut off American support to Fort Erie.

<sup>41</sup> Sherman Zavitz, "Siege of Fort Erie, War of 1812," *War of 1812*, 2011, Accessed 10 20, 2016,

<http://www.eighteentwelve.ca/?q=eng/Topic/34>.

<sup>42</sup> Louis Babcock, *The Seige of Black Rock: An Episode of the War of 1812* (Buffalo, New York: The Peter Paul Book Co., 1899).

<sup>43</sup> Earnest A. Cruikshank, *The Documentary History of the Campaign upon the Niagara Frontier in the Year 1814 (Reprint ed.)* ( New York: Arno Press, 1971, 1907) 118.

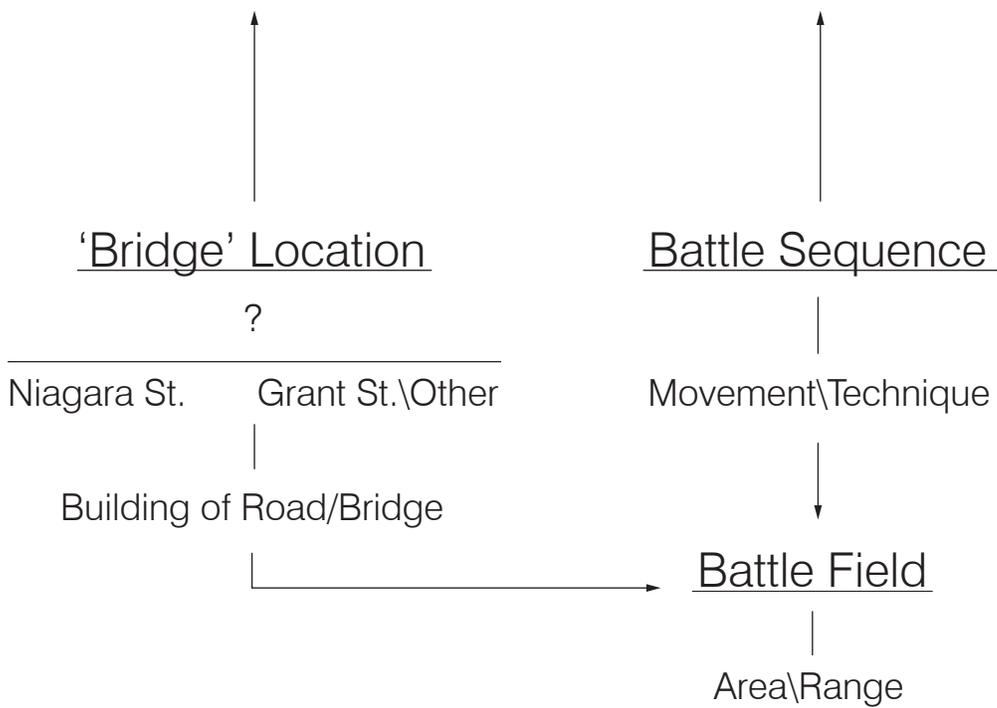
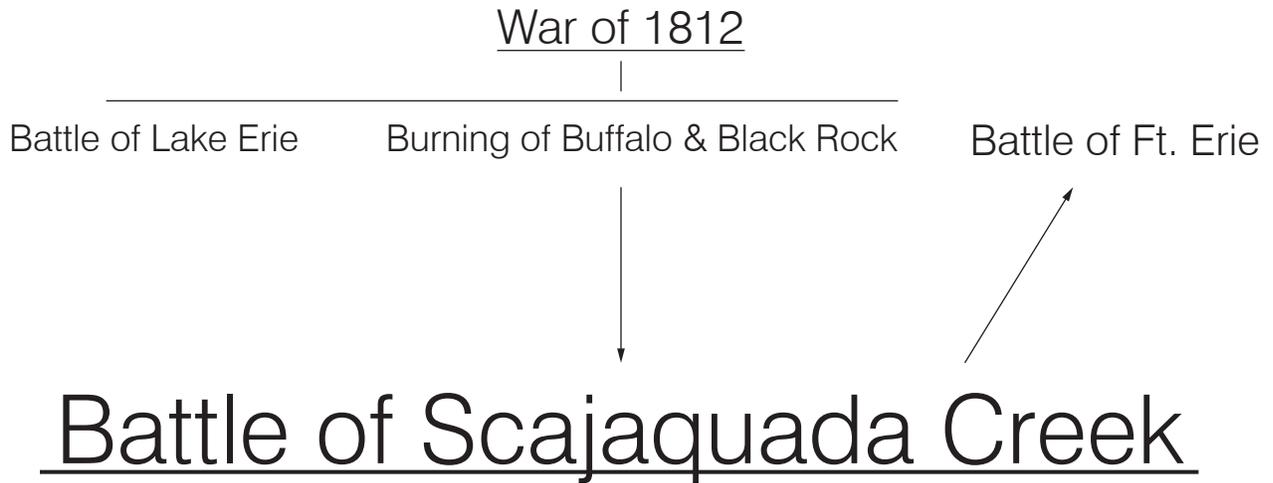
<sup>44</sup> Ibid.

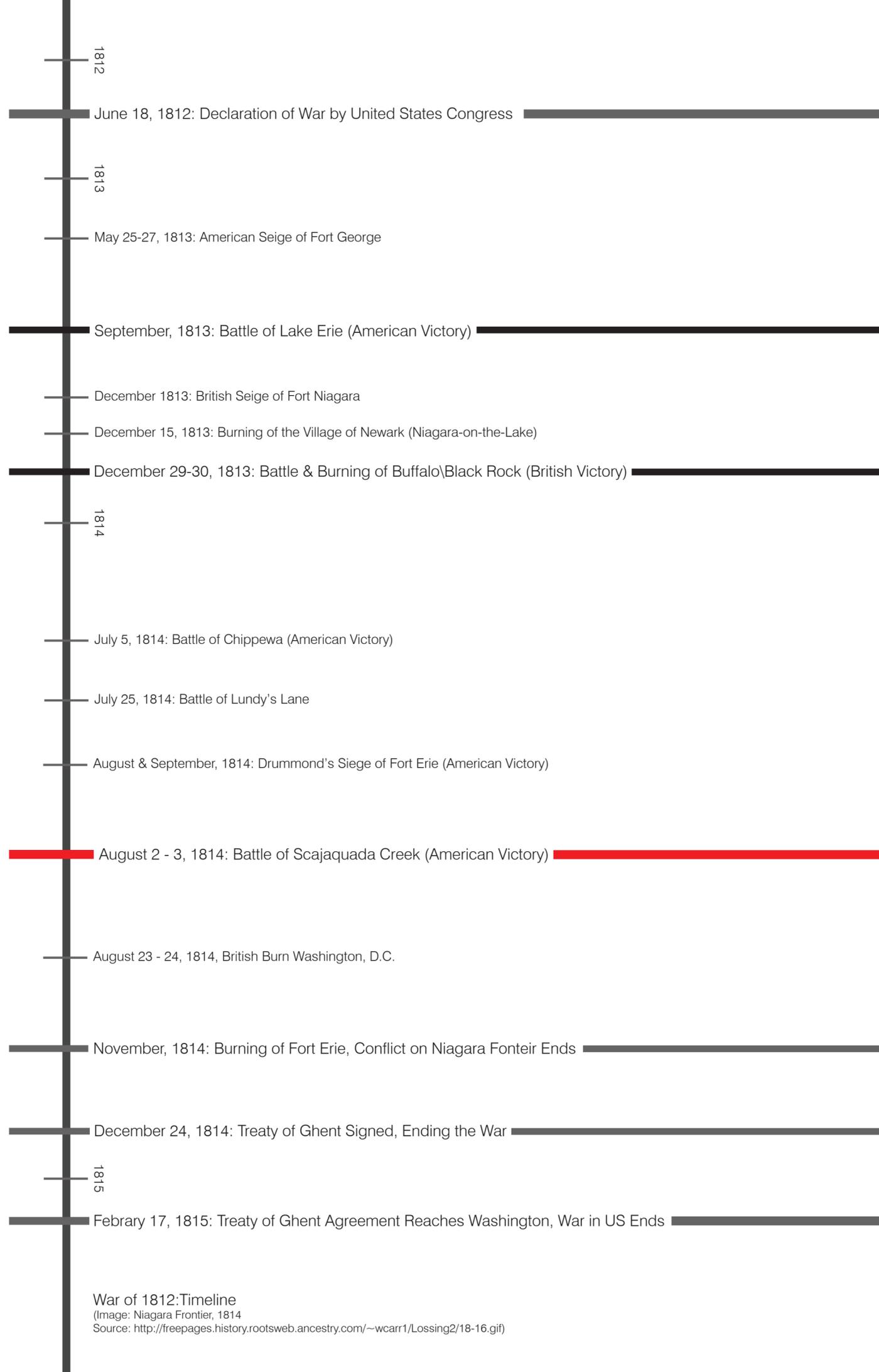
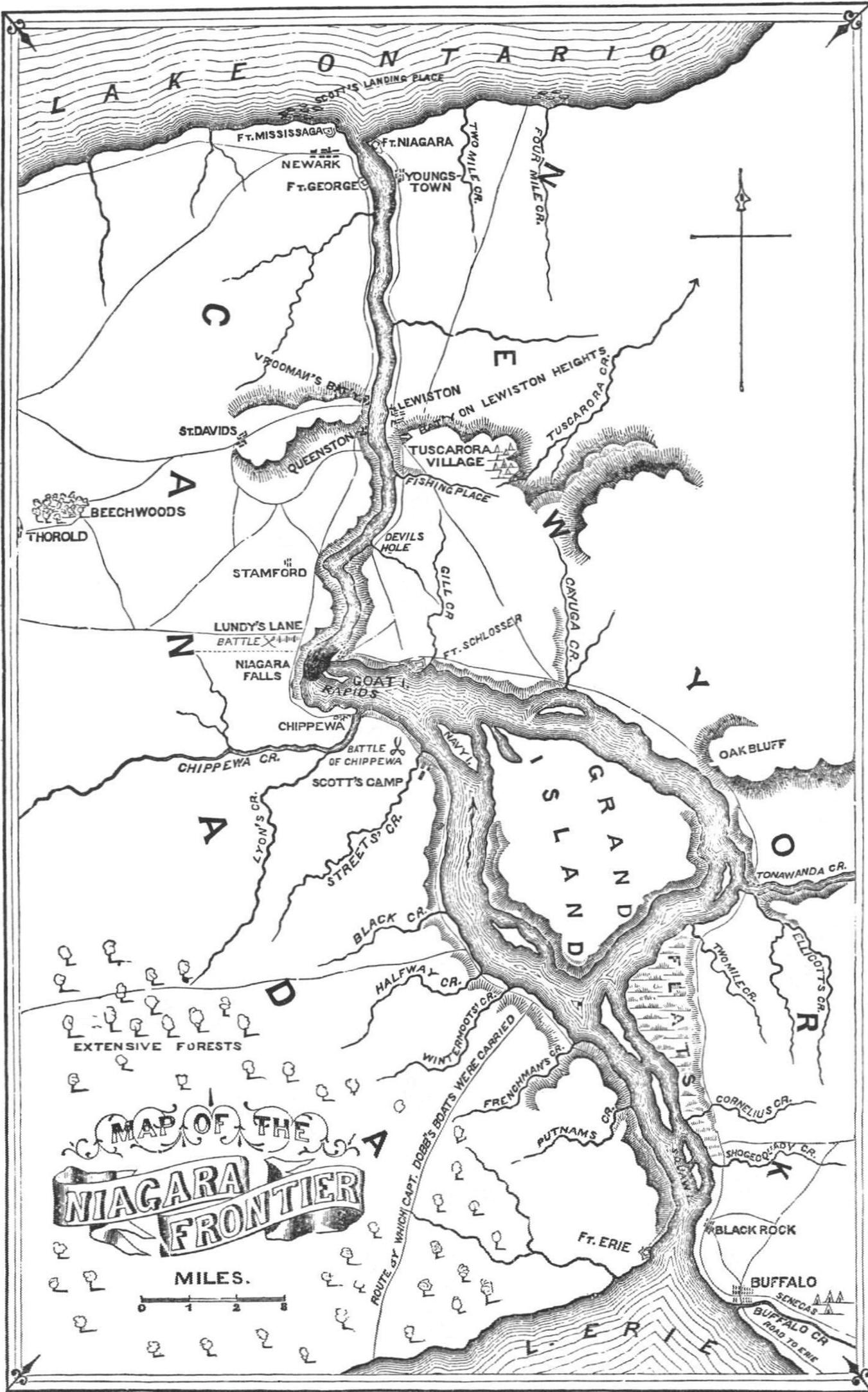
<sup>45</sup> Arthur Bowler, "The War of 1812 Heats Up on the Niagara Frontier," *Buffalo Architecture and History*. Accessed October 1, 2016, <http://www.buffaloah.com/h/war1812/bowler.html>.

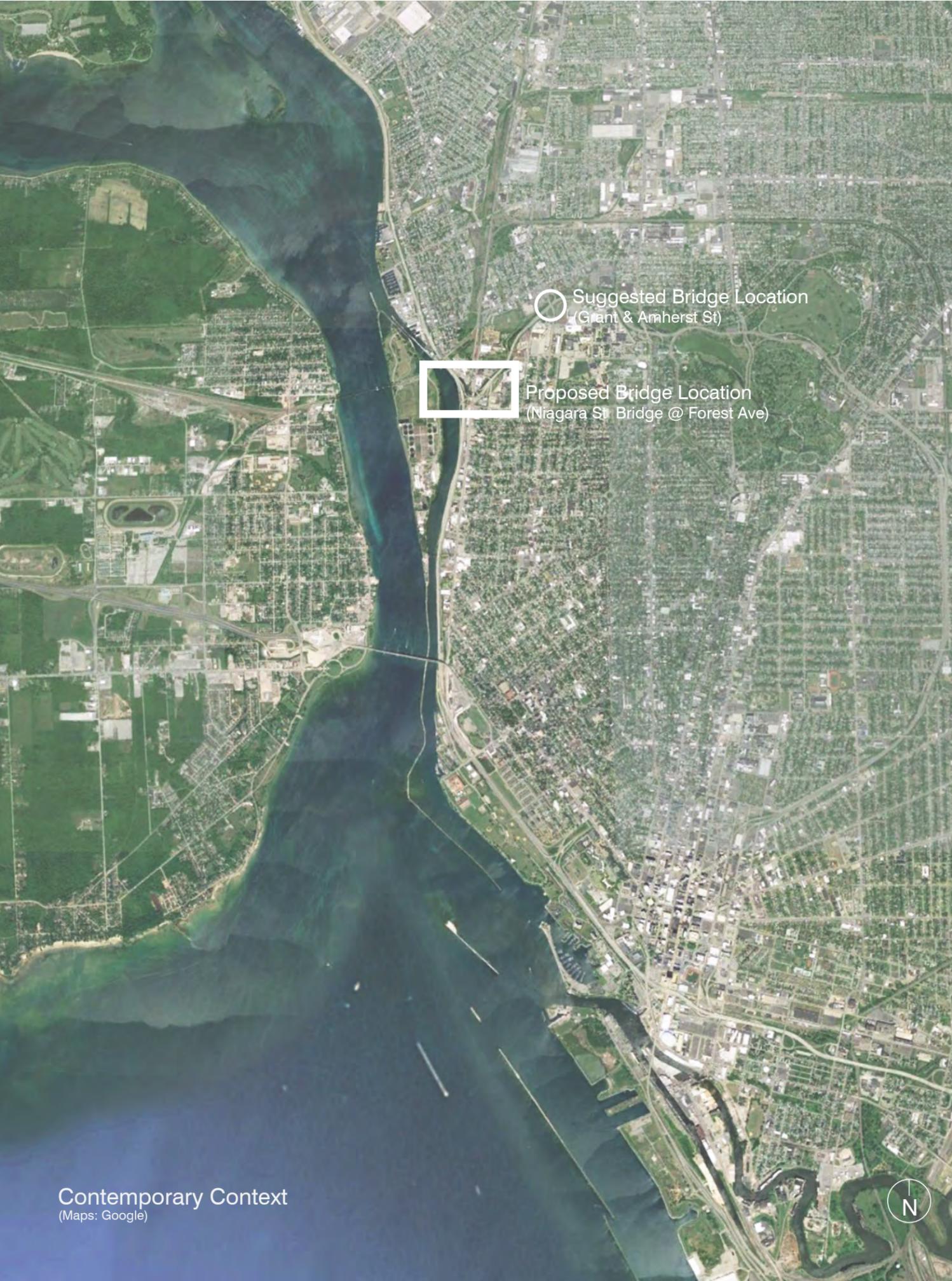
<sup>46</sup> John Le Couteur, *Merry Hearts Make Light Days: The War of 1812 Journal of Lieutenant John Le Couteur 104<sup>th</sup> 2<sup>nd</sup>*, Edited by Donald Graves (Ottawa, Ontario: Library and Archives Canada Cataloguing in Publication, 1993, 2012)

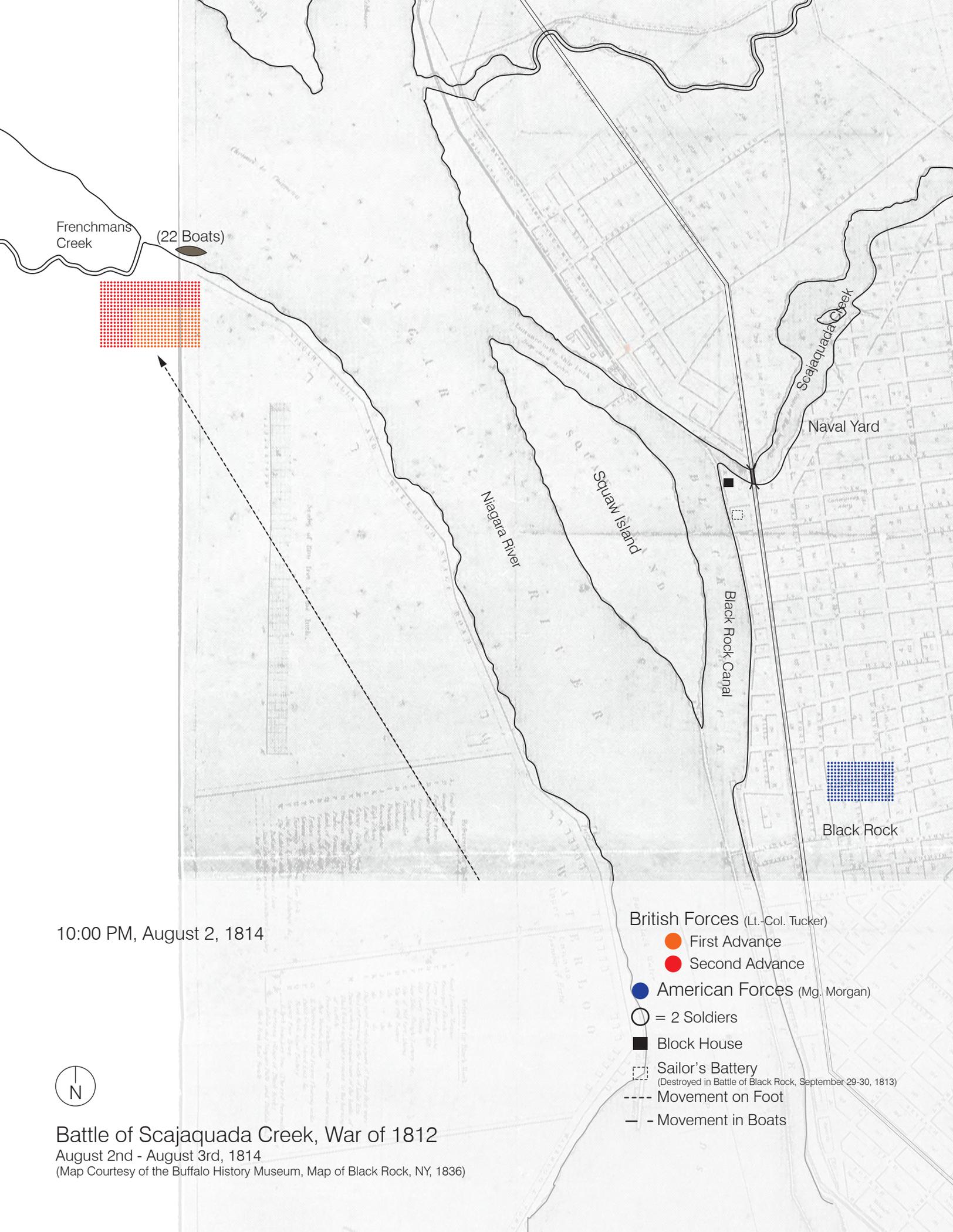
<sup>47</sup> Arthur Bowler, "The War of 1812 Heats Up on the Niagara Frontier," *Buffalo Architecture and History*. Accessed October 1, 2016, <http://www.buffaloah.com/h/war1812/bowler.html>.

<sup>48</sup> Arthur Bowler, "The War of 1812 Heats Up on the Niagara Frontier," *Buffalo Architecture and History*. Accessed October 1, 2016, <http://www.buffaloah.com/h/war1812/bowler.html>.









Frenchmans Creek

(22 Boats)



Scajaquada Creek

Naval Yard

Niagara River

Squaw Island

Black Rock Canal



Black Rock

10:00 PM, August 2, 1814

British Forces (Lt.-Col. Tucker)

● First Advance

● Second Advance

● American Forces (Mg. Morgan)

○ = 2 Soldiers

■ Block House

□ Sailor's Battery  
(Destroyed in Battle of Black Rock, September 29-30, 1813)

--- Movement on Foot

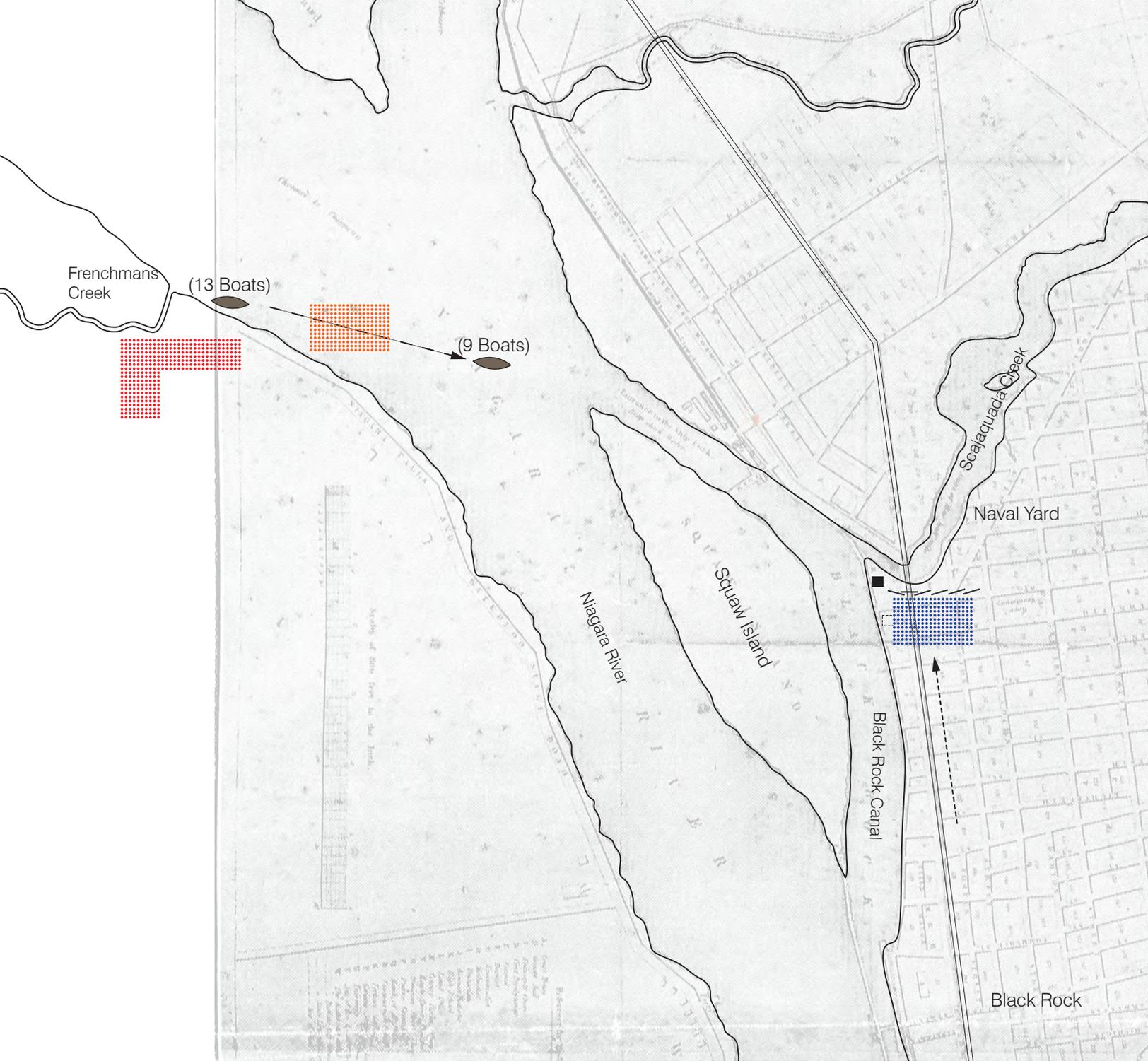
- - - Movement in Boats



### Battle of Scajaquada Creek, War of 1812

August 2nd - August 3rd, 1814

(Map Courtesy of the Buffalo History Museum, Map of Black Rock, NY, 1836)



11:00 PM - 1:00 AM, August 2 - 3, 1814

British Forces (Lt.-Col. Tucker)

● First Advance

● Second Advance

● American Forces (Mg. Morgan)

○ = 2 Soldiers

■ Block House

□ Sailor's Battery  
(Destroyed in Battle of Black Rock, September 29-30, 1813)

--- Movement on Foot

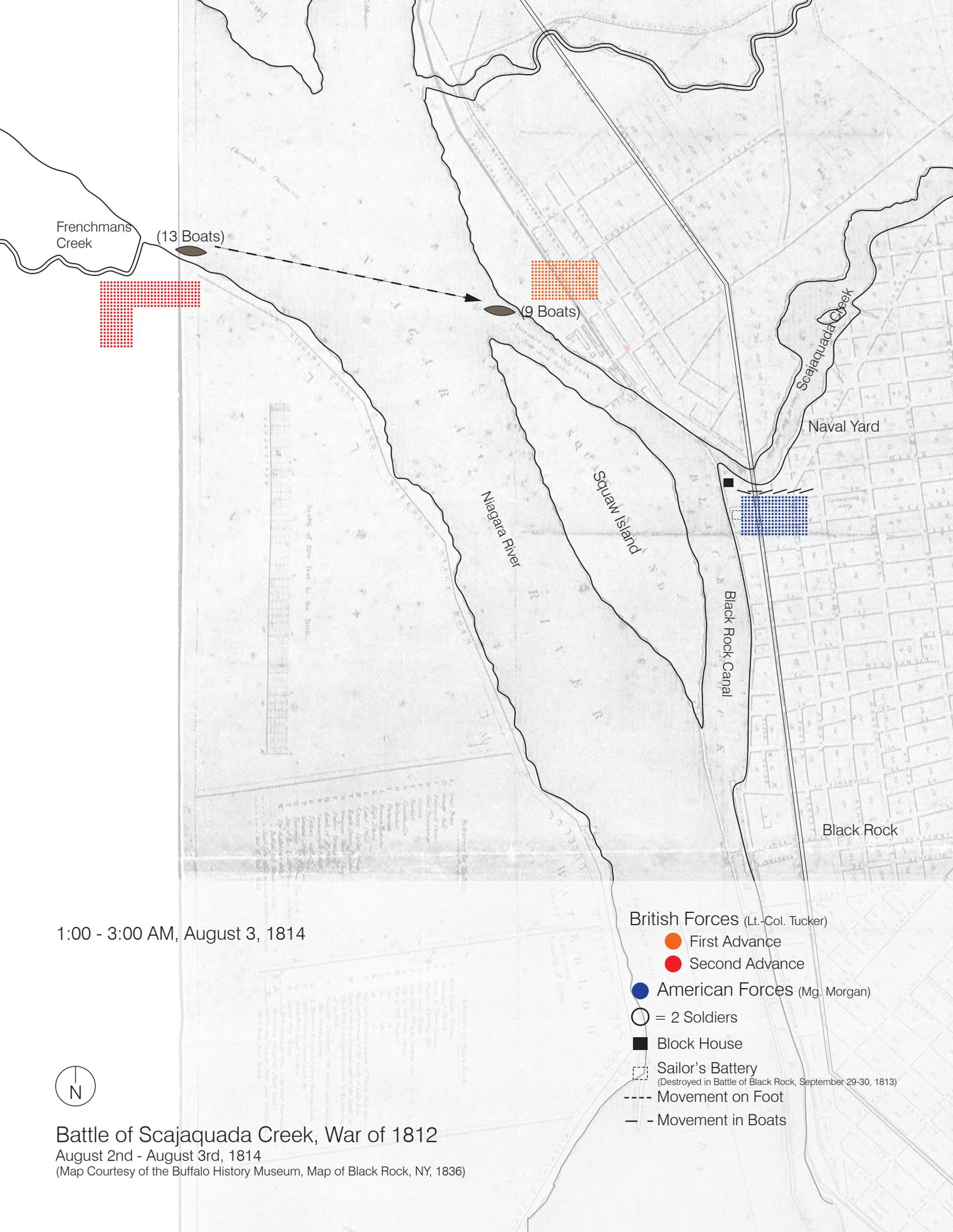
- - - Movement in Boats



## Battle of Scajaquada Creek, War of 1812

August 2nd - August 3rd, 1814

(Map Courtesy of the Buffalo History Museum, Map of Black Rock, NY, 1836)



Frenchmans Creek

(13 Boats)

(9 Boats)

Scajaquada Creek

Naval Yard

Niagara River  
Squaw Island

Black Rock Canal

Black Rock

1:00 - 3:00 AM, August 3, 1814

British Forces (Lt.-Col. Tucker)

● First Advance

● Second Advance

● American Forces (Mg. Morgan)

○ = 2 Soldiers

■ Block House

▭ Sailor's Battery  
(Destroyed in Battle of Black Rock, September 29-30, 1813)

--- Movement on Foot

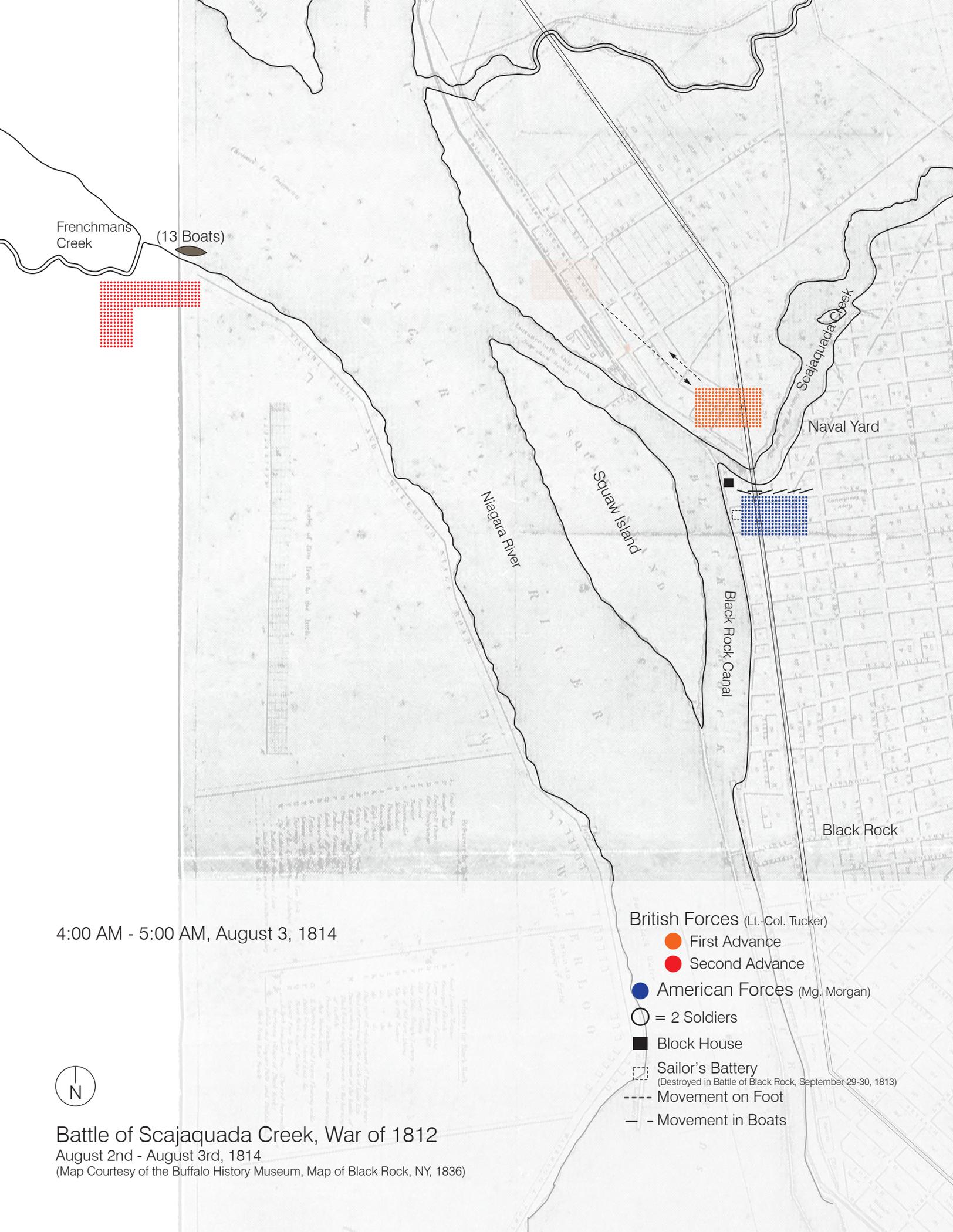
- - - Movement in Boats



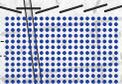
### Battle of Scajaquada Creek, War of 1812

August 2nd - August 3rd, 1814

(Map Courtesy of the Buffalo History Museum, Map of Black Rock, NY, 1836)



Frenchmans Creek (13 Boats)

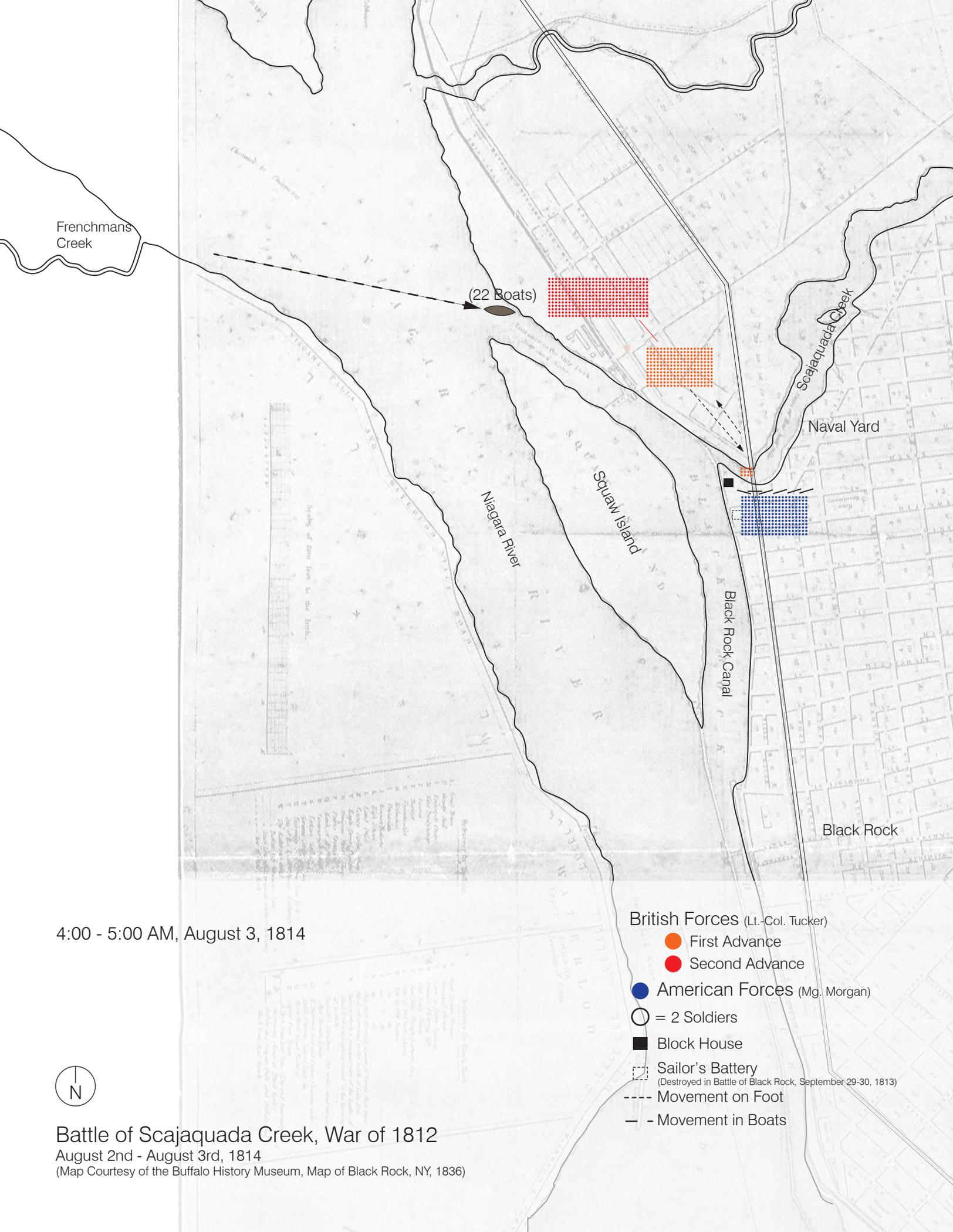


4:00 AM - 5:00 AM, August 3, 1814

- British Forces (Lt.-Col. Tucker)
  - First Advance
  - Second Advance
- American Forces (Mg. Morgan)
- = 2 Soldiers
- Block House
- Sailor's Battery (Destroyed in Battle of Black Rock, September 29-30, 1813)
- - - Movement on Foot
- - - Movement in Boats



Battle of Scajaquada Creek, War of 1812  
August 2nd - August 3rd, 1814  
(Map Courtesy of the Buffalo History Museum, Map of Black Rock, NY, 1836)



Frenchmans  
Creek

(22 Boats)

Scajaquada  
Creek

Naval Yard

Niagara River  
Squaw Island

Black Rock  
Canal

Black Rock

4:00 - 5:00 AM, August 3, 1814

British Forces (Lt.-Col. Tucker)

● First Advance

● Second Advance

● American Forces (Mg. Morgan)

○ = 2 Soldiers

■ Block House

□ Sailor's Battery  
(Destroyed in Battle of Black Rock, September 29-30, 1813)

--- Movement on Foot

- - - Movement in Boats



### Battle of Scajaquada Creek, War of 1812

August 2nd - August 3rd, 1814

(Map Courtesy of the Buffalo History Museum, Map of Black Rock, NY, 1836)



5:00 AM - 6:00 AM, August 3, 1814

- British Forces (Lt.-Col. Tucker)
  - First Advance
  - Second Advance
- American Forces (Mg. Morgan)
  -
- = 2 Soldiers
- Block House
- ▭ Sailor's Battery  
(Destroyed in Battle of Black Rock, September 29-30, 1813)
- - - Movement on Foot
- - - Movement in Boats



Battle of Scajaquada Creek, War of 1812  
August 2nd - August 3rd, 1814  
(Map Courtesy of the Buffalo History Museum, Map of Black Rock, NY, 1836)



6:00 AM - 7:00 AM, August 3, 1814

British Forces (Lt.-Col. Tucker)

● First Advance

● Second Advance

● American Forces (Mg. Morgan)

○ = 2 Soldiers

■ Block House

□ Sailor's Battery  
(Destroyed in Battle of Black Rock, September 29-30, 1813)

--- Movement on Foot

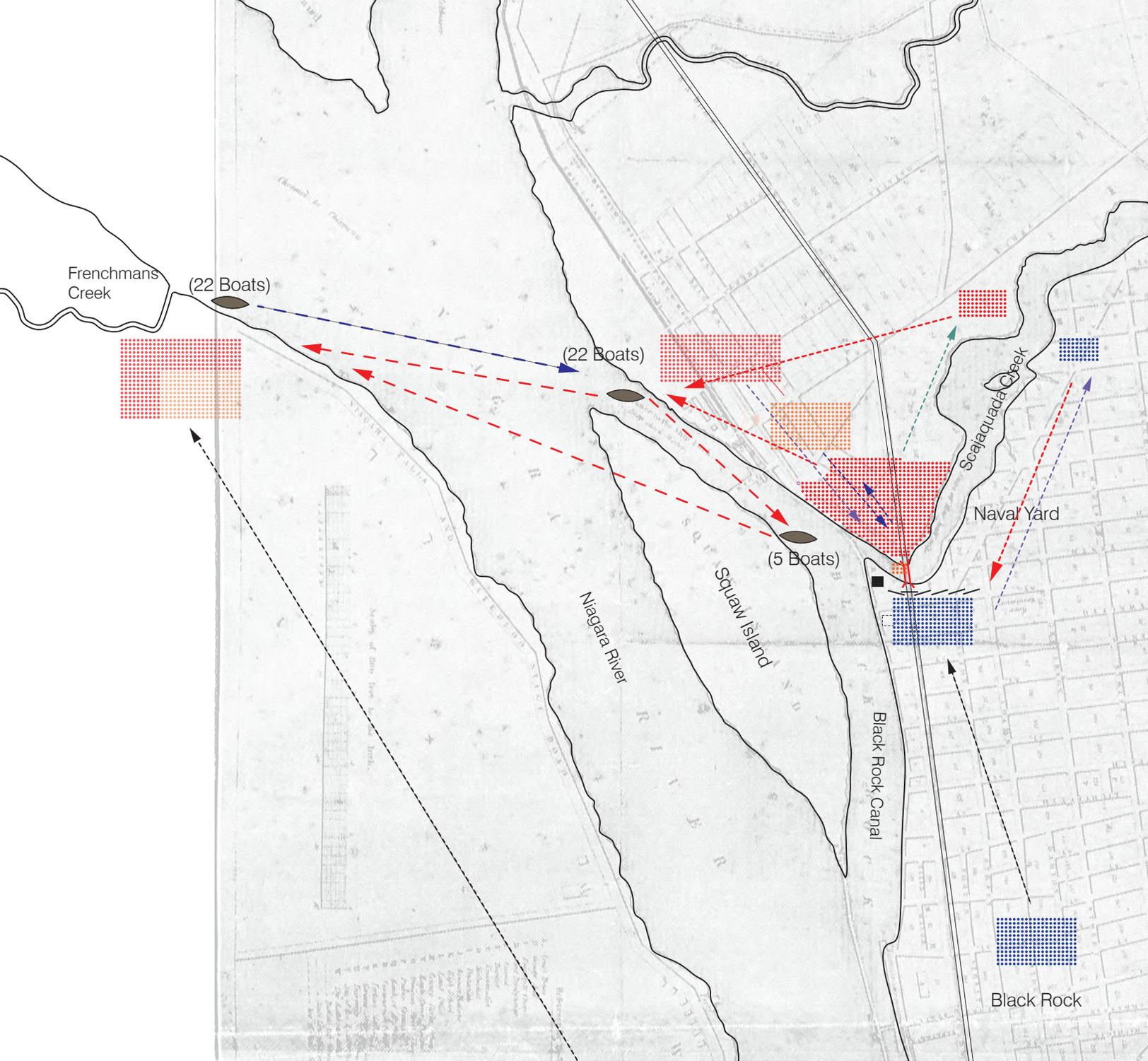
— — Movement in Boats



## Battle of Scajaquada Creek, War of 1812

August 2nd - August 3rd, 1814

(Map Courtesy of the Buffalo History Museum, Map of Black Rock, NY, 1836)



- Preemptive Moves
- 1st & 2nd British Advance & Retreat
- 3rd British Advance
- British Retreat

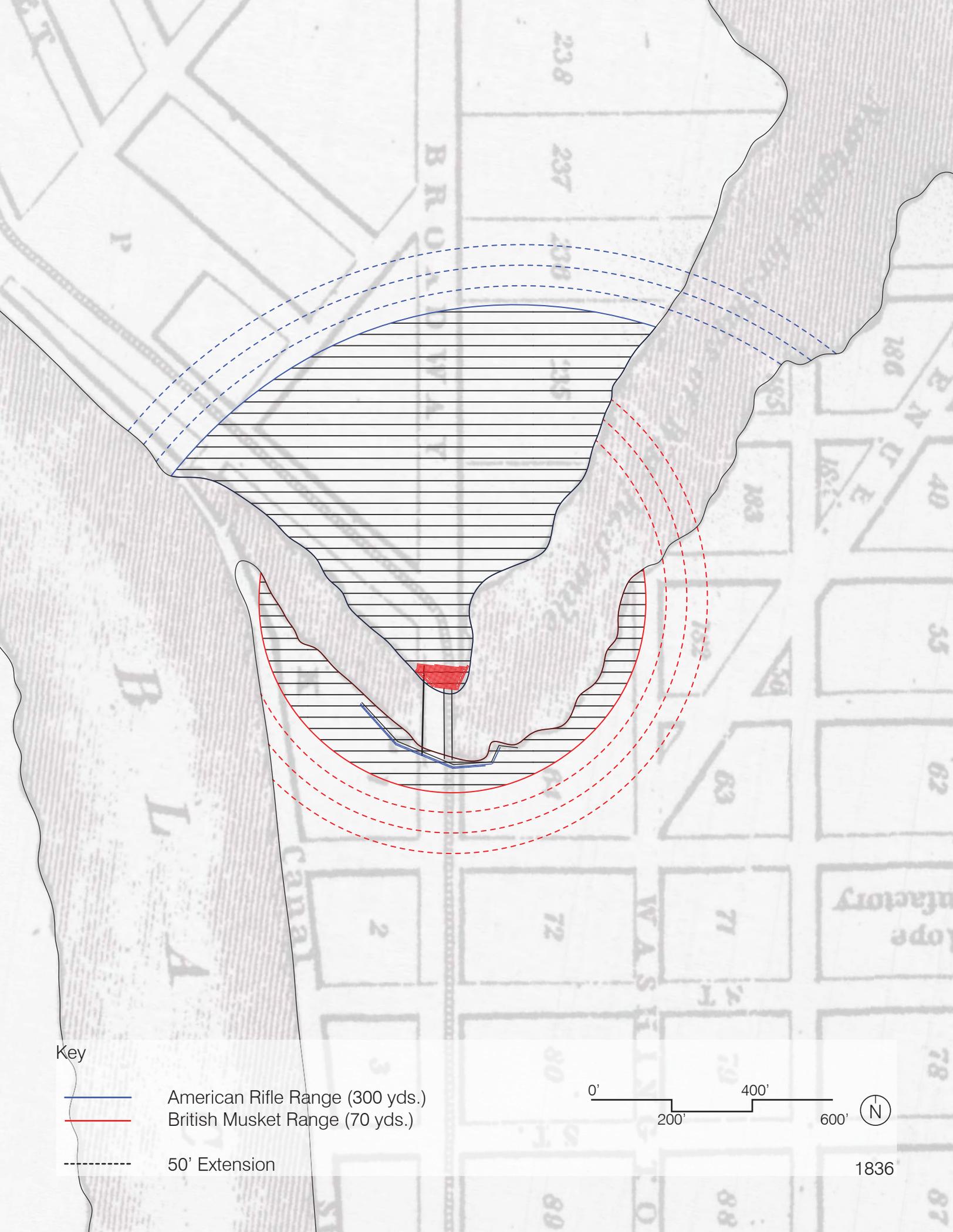
- British Forces** (Lt.-Col. Tucker)
  - First Advance
  - Second Advance
- American Forces** (Mg. Morgan)
  - = 2 Soldiers
  - Block House
  - Sailor's Battery  
(Destroyed in Battle of Black Rock, September 29-30, 1813)
  - Movement on Foot
  - Movement in Boats



## Battle of Scajaquada Creek, War of 1812

August 2nd - August 3rd, 1814

(Map Courtesy of the Buffalo History Museum, Map of Black Rock, NY, 1836)



Key

-  American Rifle Range (300 yds.)
-  British Musket Range (70 yds.)
-  50' Extension

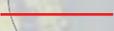


1836



Buffalo State Housing Project

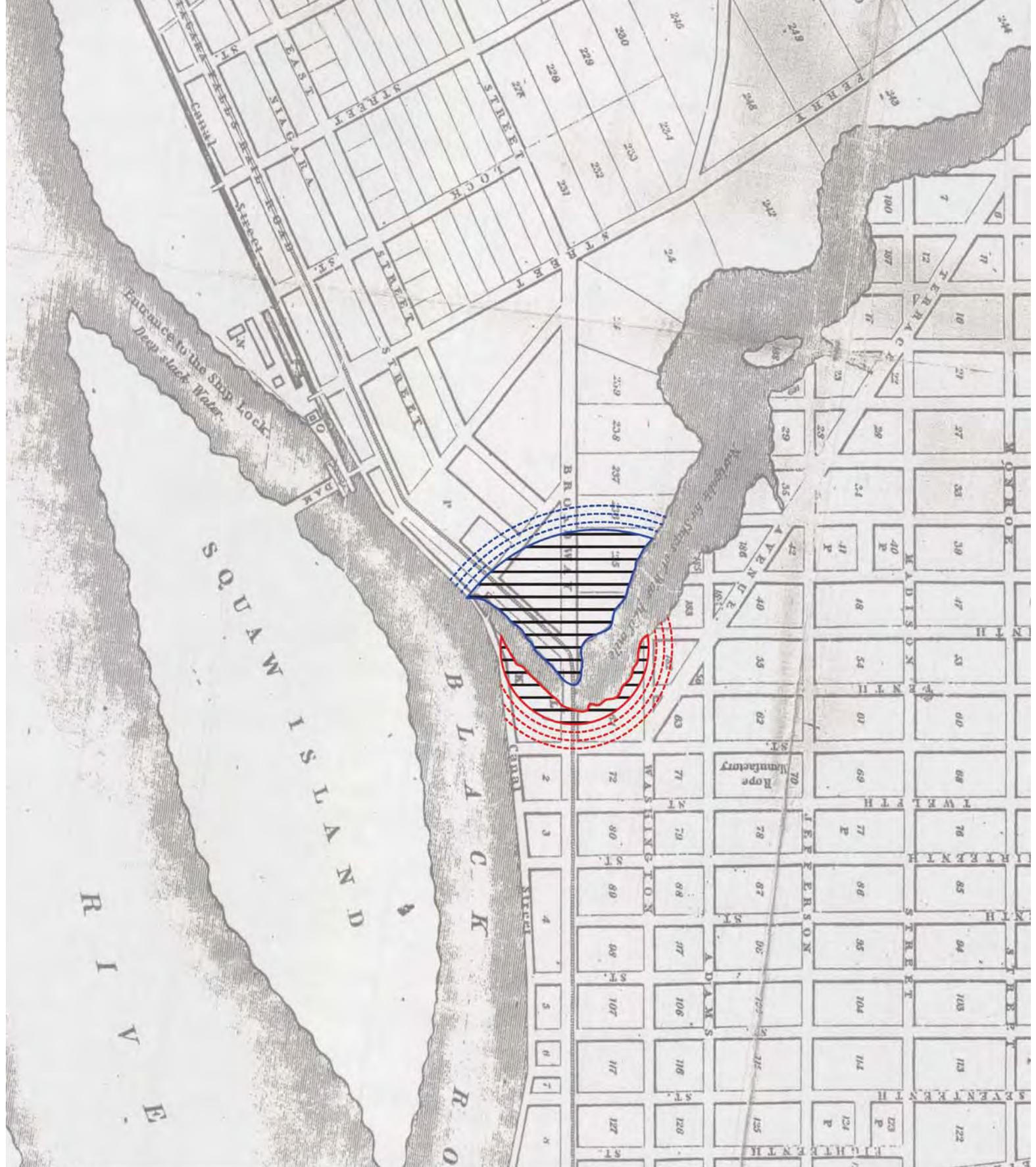
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-  American Rifle Range (300 yds.)
-  British Musket Range (70 yds.)
-  50' Extension



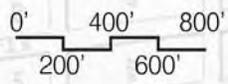
2016

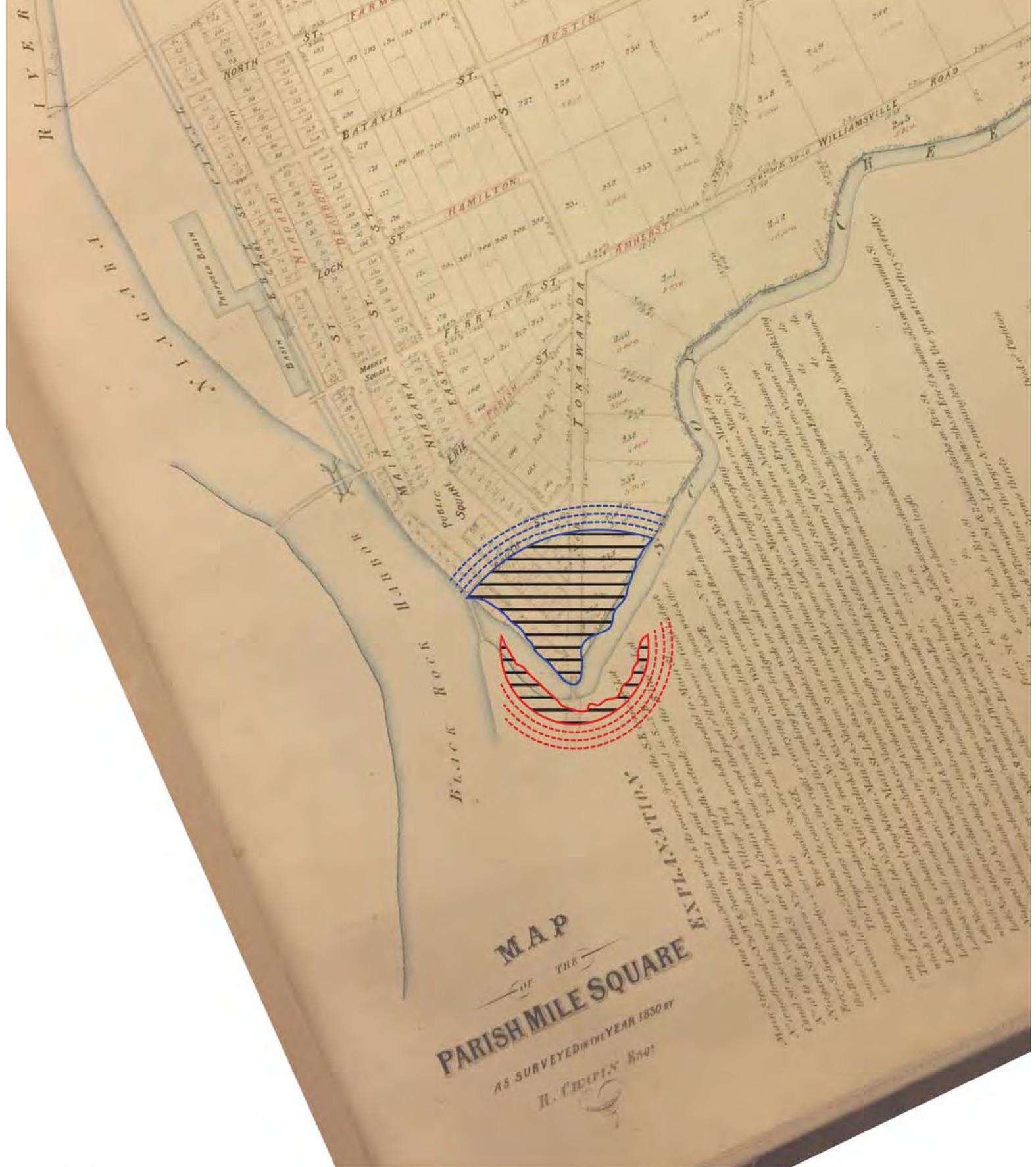
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Key

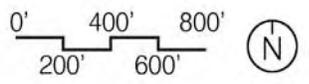
-  American Rifle Range (300 yds.)
-  British Musket Range (70 yds.)
-  50' Extension

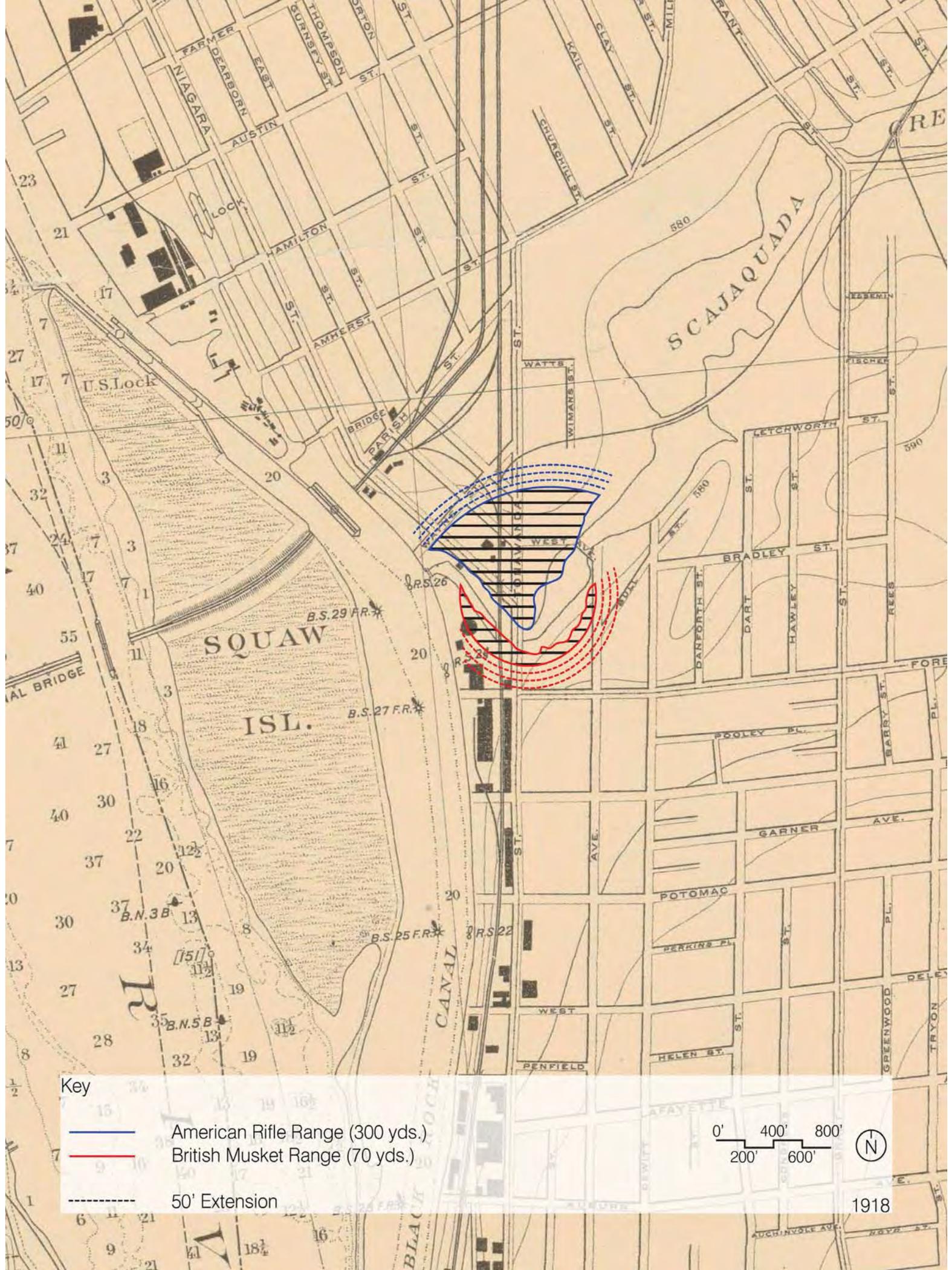




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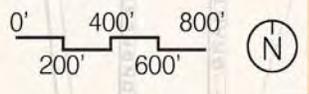
- American Rifle Range (300 yds.)
- British Musket Range (70 yds.)
- - - - - 50' Extension





Key

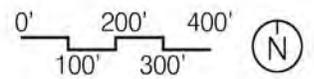
- American Rifle Range (300 yds.)
- British Musket Range (70 yds.)
- - - 50' Extension



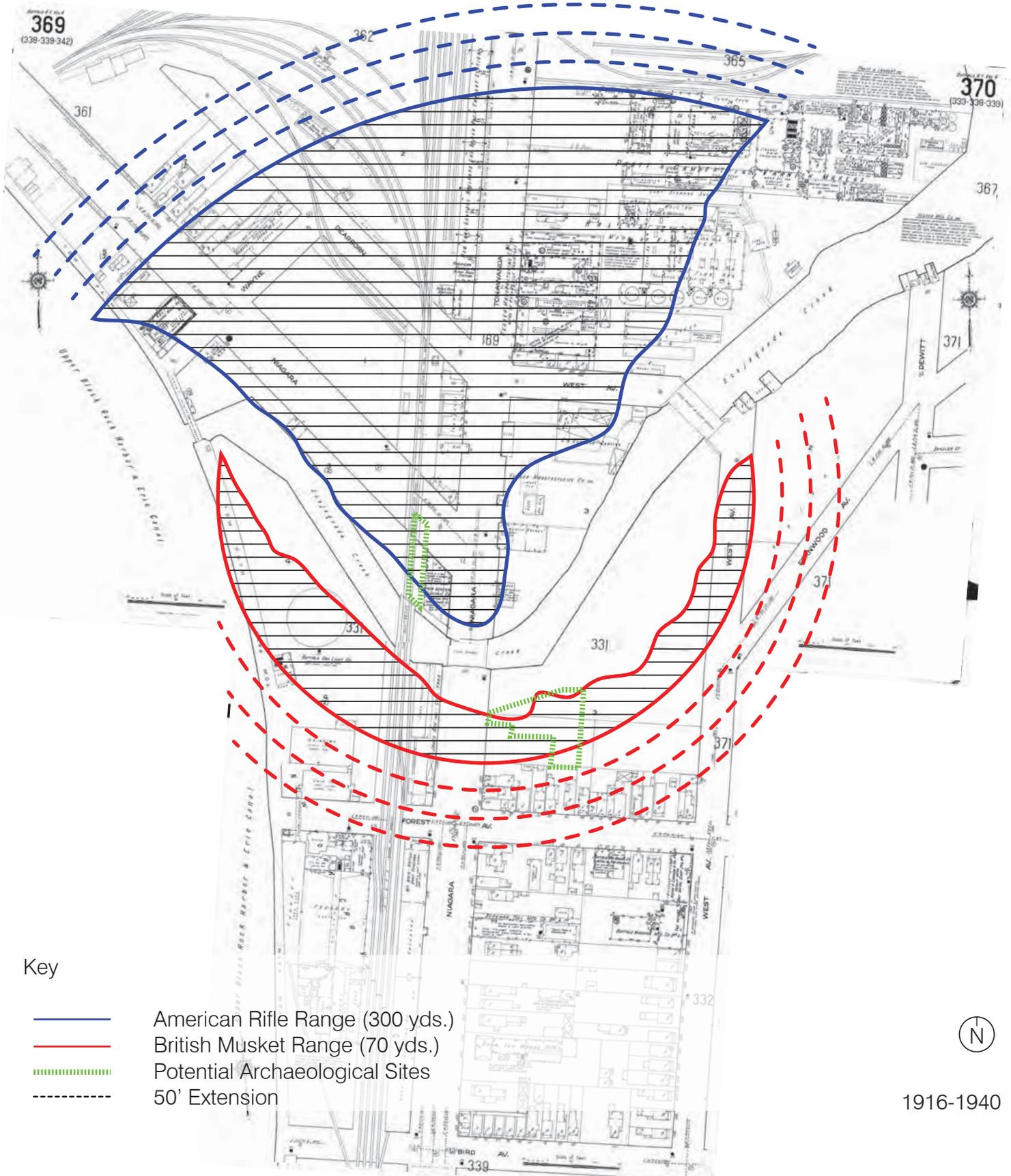


Key

- American Rifle Range (300 yds.)
- British Musket Range (70 yds.)
- - - - - Potential Archaeological Sites
- - - - - 50' Extension



1889-1893

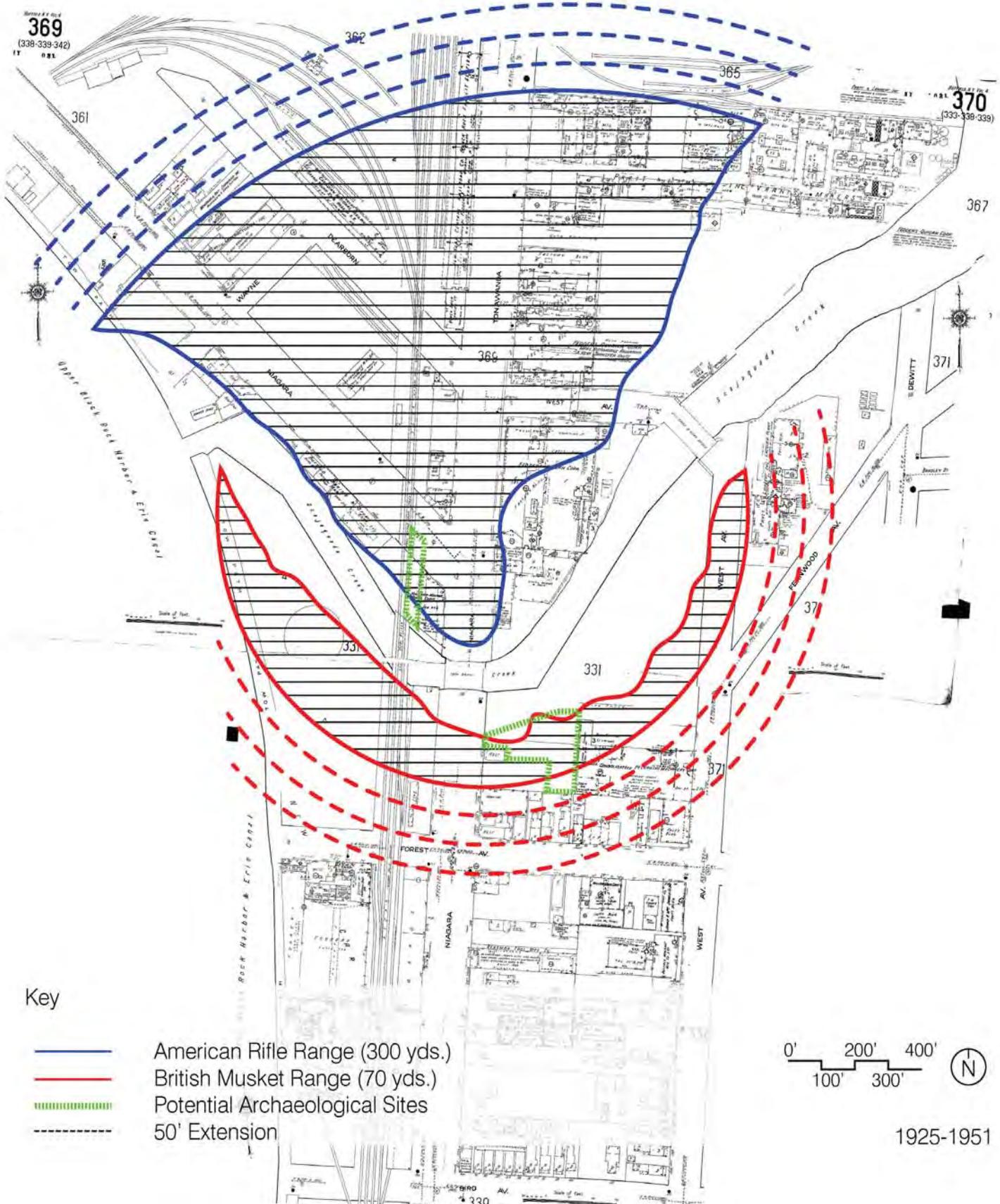


Key

- American Rifle Range (300 yds.)
- British Musket Range (70 yds.)
- ▤ Potential Archaeological Sites
- - - 50' Extension

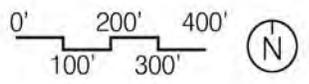


1916-1940

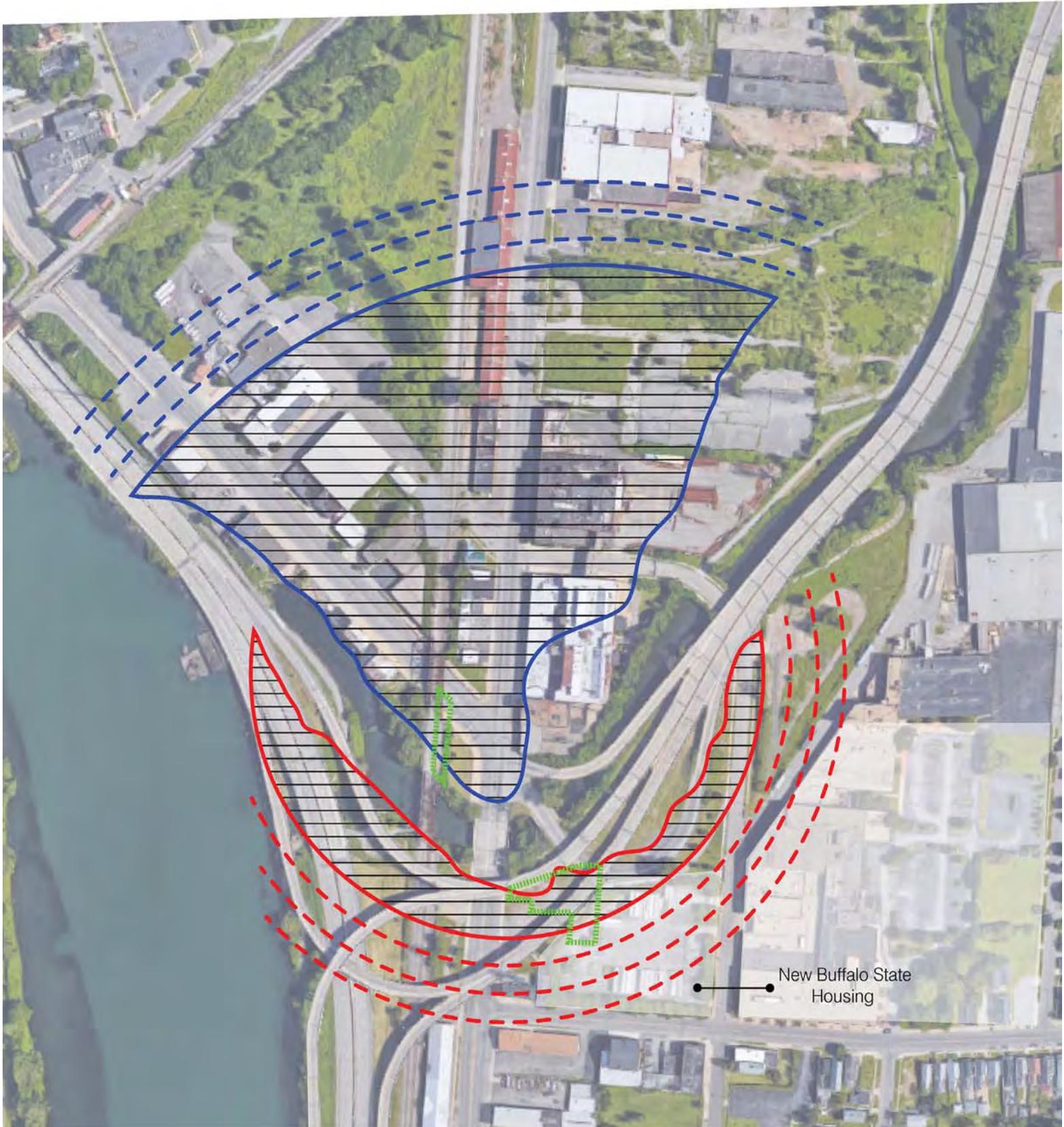


Key

- American Rifle Range (300 yds.)
- British Musket Range (70 yds.)
- ▨ Potential Archaeological Sites
- - - 50' Extension

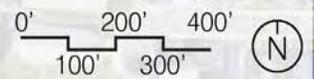


1925-1951



Key

- American Rifle Range (300 yds.)
- British Musket Range (70 yds.)
- - - - - Potential Archaeological Sites
- - - - - 50' Extension



# Battle Losses before Fort Erie Siege in 1814

## Chippawa

	Killed	Wounded	Missing	Total
Americans	60	249	19	328
British	148	221	46	415

## Battle of Scajaquada Creek

	Killed	Wounded	Missing	Total
Americans	2	8	0	10
British	12	17	5	34

## Lundy's Lane

	Killed	Wounded	Missing	Total
Americans	171	570	117	858
British	84	554	235	873

# Fort Erie Background

- It was originally meant as a trading post, not for fighting.
- Americans were continuously making improvements from July to August 15 when it was finally attacked by Drummond.

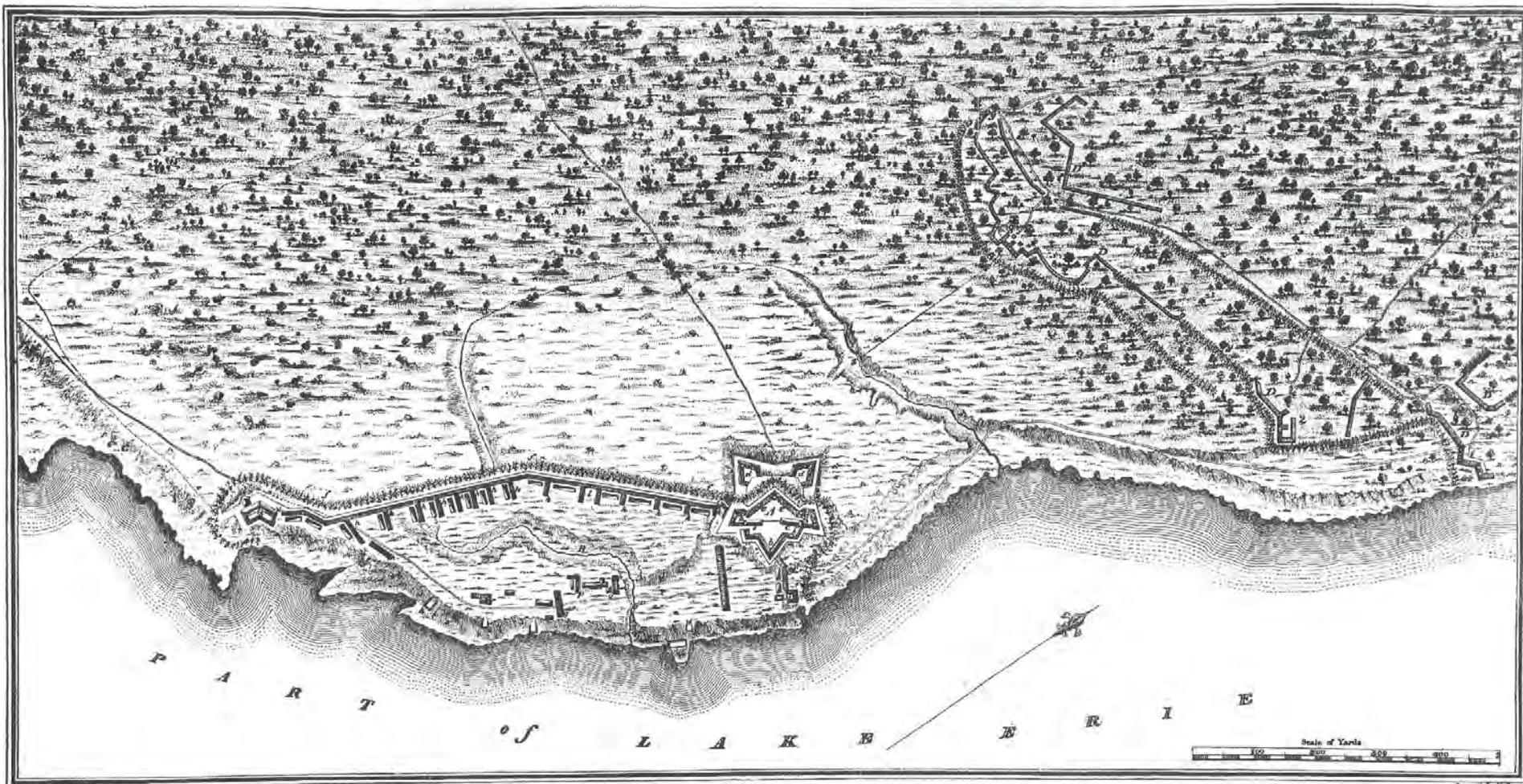


*The Storming of the Northeast Bastion by Lieutenant Colonel William Drummond's Column, 15 August 1814. Engraving for the United States Magazine, 1841 by E.C. Watmough. (Chicago Historical Society)*

# What improvements were being made?

- An embrasure on the hillock for Towson's, Riddle's, Fontaine's and Douglass's batteries.
- Two bastions on the west side of the fort.
- Earthworks running from fort to Niagara River.
- Traverses
- Abattis going around works from one end to other from Niagara River.





### SIEGE & DEFENCE OF FORT ERIE

- A* Fort Erie.
- B* Camp.
- C* Where Porter's volunteers encamped who arrived September tenth.
- D* British works.
- a a* Bastions built by British.

- b* Ravelin.
- c c* Blockhouses built by British.
- d d* Bastions constructed by Brown's forces.
- e e* Redoubt constructed by Brown's forces to replace line of pickets.

- f f f* Entrenchments.
- g* Douglass's battery.
- h h h* Camp traverses.
- k* Fontaine's battery.
- l* Hiddle's battery.

- m* Towson's battery.
- n* Main traverse.
- o* Magazine traverse.
- p* Hospital traverse.
- q* Grand parade traverse.

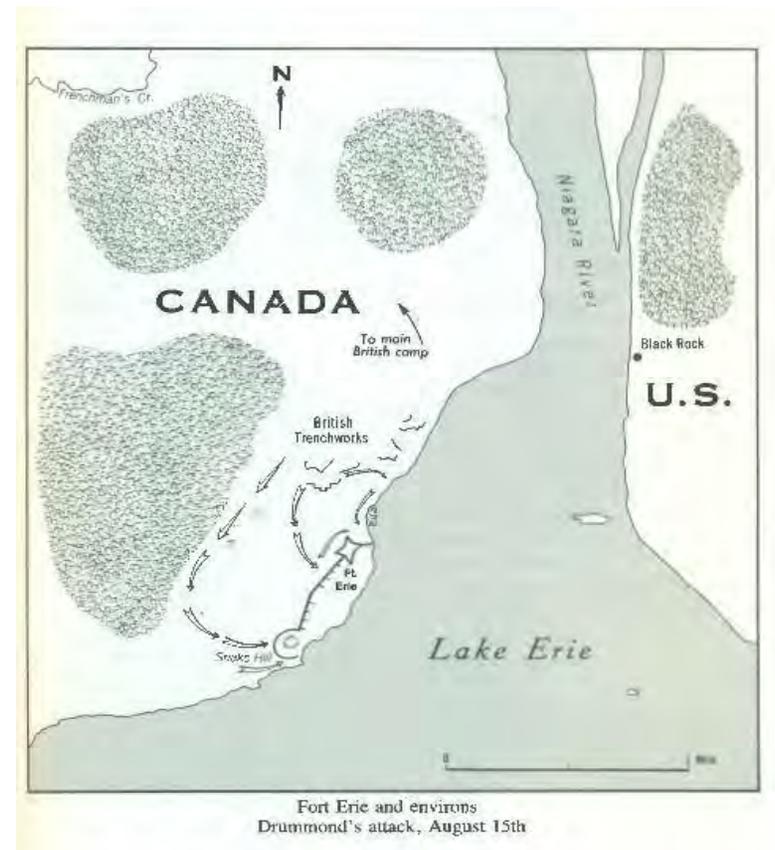
- r* Brown's headquarters.
- s* Drain.
- t* Road from Chippewa up the lake.
- u* Buck's Road.
- v* Route taken by Porter's forces in sortie.

- w* Route of right column.
- x* Ravine.
- y y* Blockhouses.
- z z* Roads to British camp.
- 1, 2, 3* British first, second, and third batteries.

(This plan is a copy of one made by the United States engineer corps.)

# Meanwhile....Cut off their Supplies “First Clash”

- Drummond decided to attack Black Rock to cut off their supplies while causing mayhem.
- The Battle of the Scajaquada Creek left the Americans alert to invasion on U.S. soil and to protect their supplies.



# Importance of Supplies

What was being sent to Fort Erie?

- They baked the bread there daily. Americans were getting regular food rations.
- Axes and shovels to help with construction and the ongoing continued improvements to the Fort.
- Planks to improve and expand shelter for the soldiers.

- “The US forces were able to sustain the large presence at Fort Erie because they nearly controlled the water route from Buffalo.”

– John

Whiteborne

# Significance of the Creek to the Battle

- Water as a barrier.
- Water as a tomb.
- Water as a weapon.
- Size of the creek.



# Map Analysis



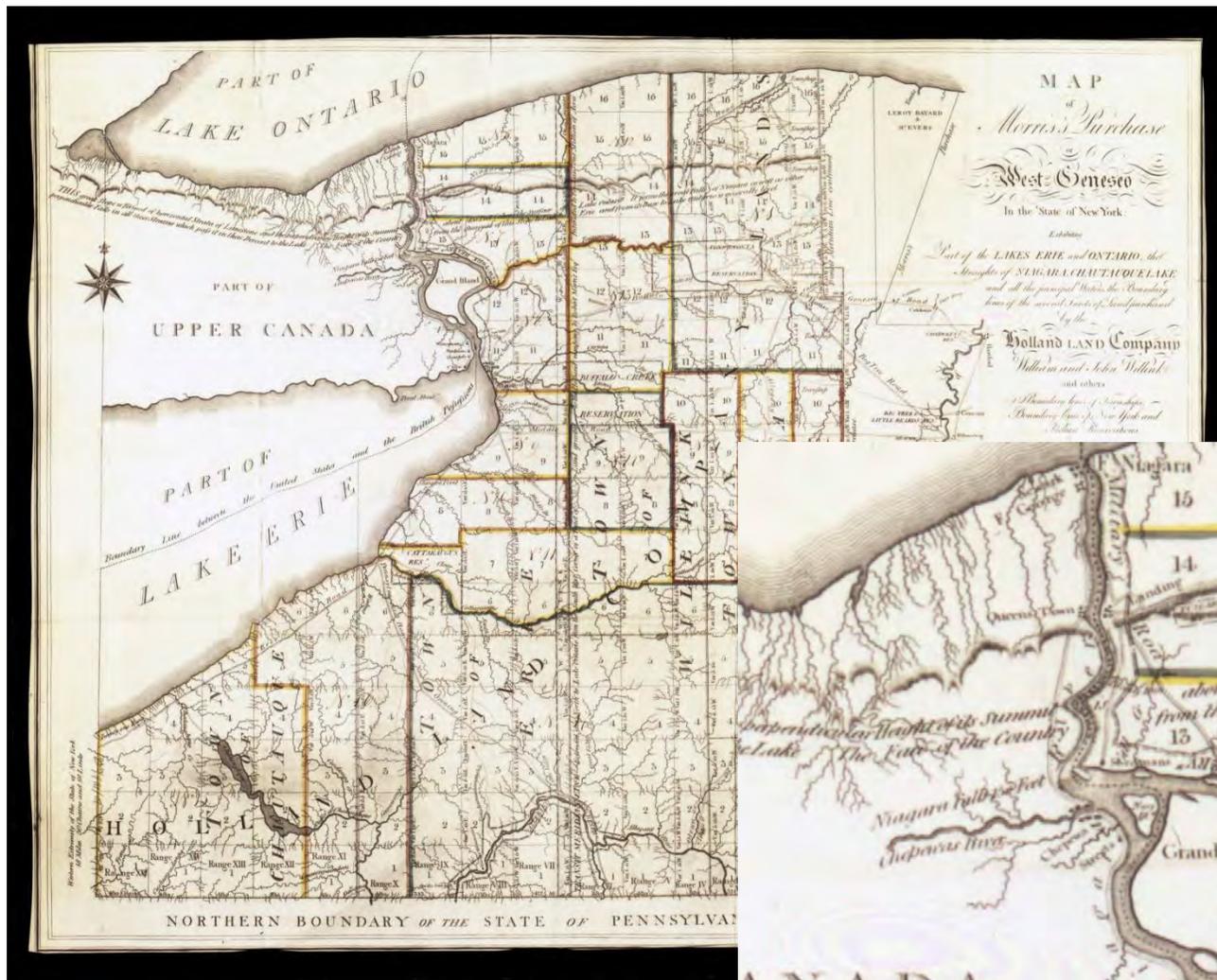


1805

Map Analysis

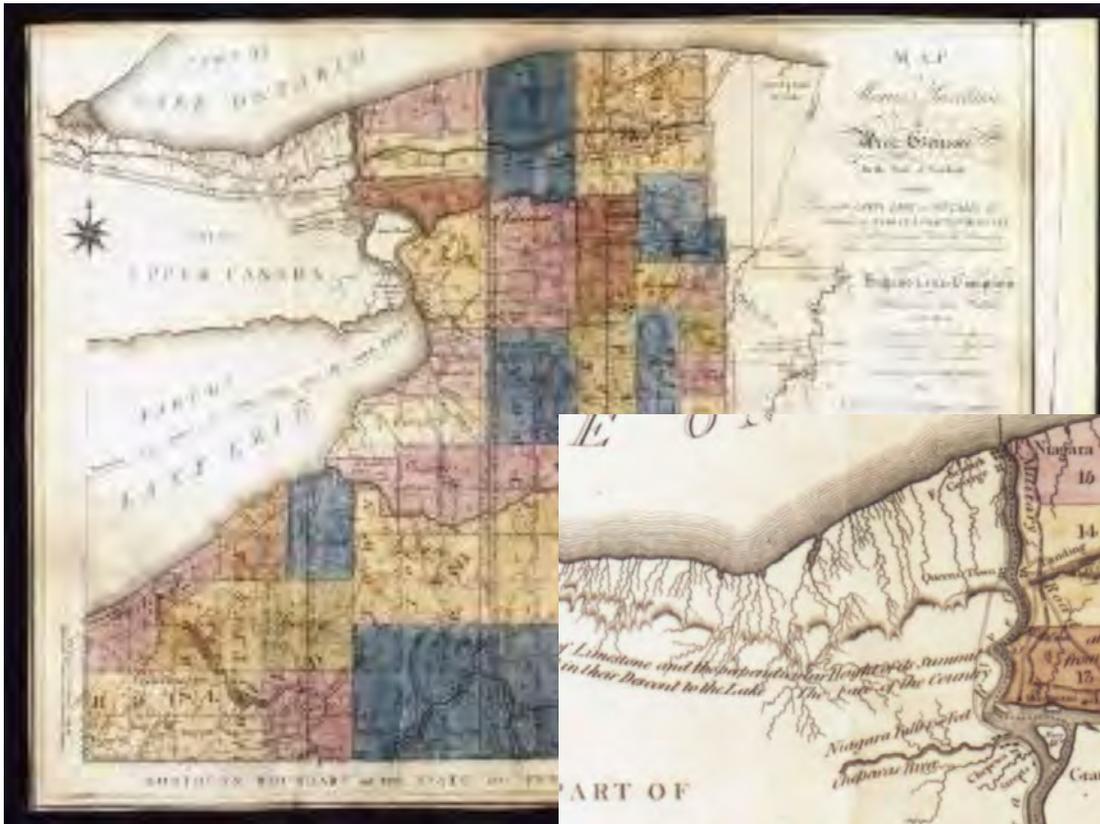
Source: SUNY Fredonia, <http://nyheritage.nynln.net/cdm/printview/collection/XFM001/id/374/type/singleitem>





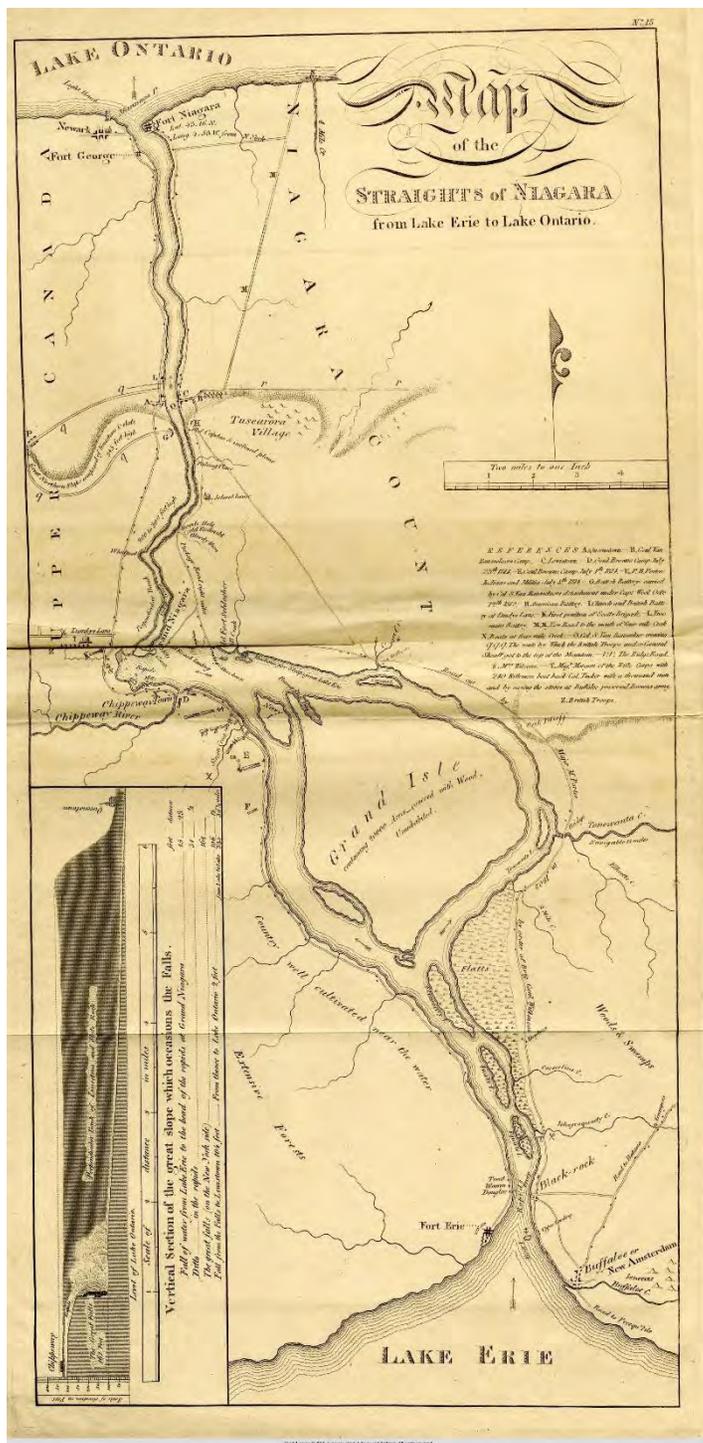
1812

Map Analysis



1814

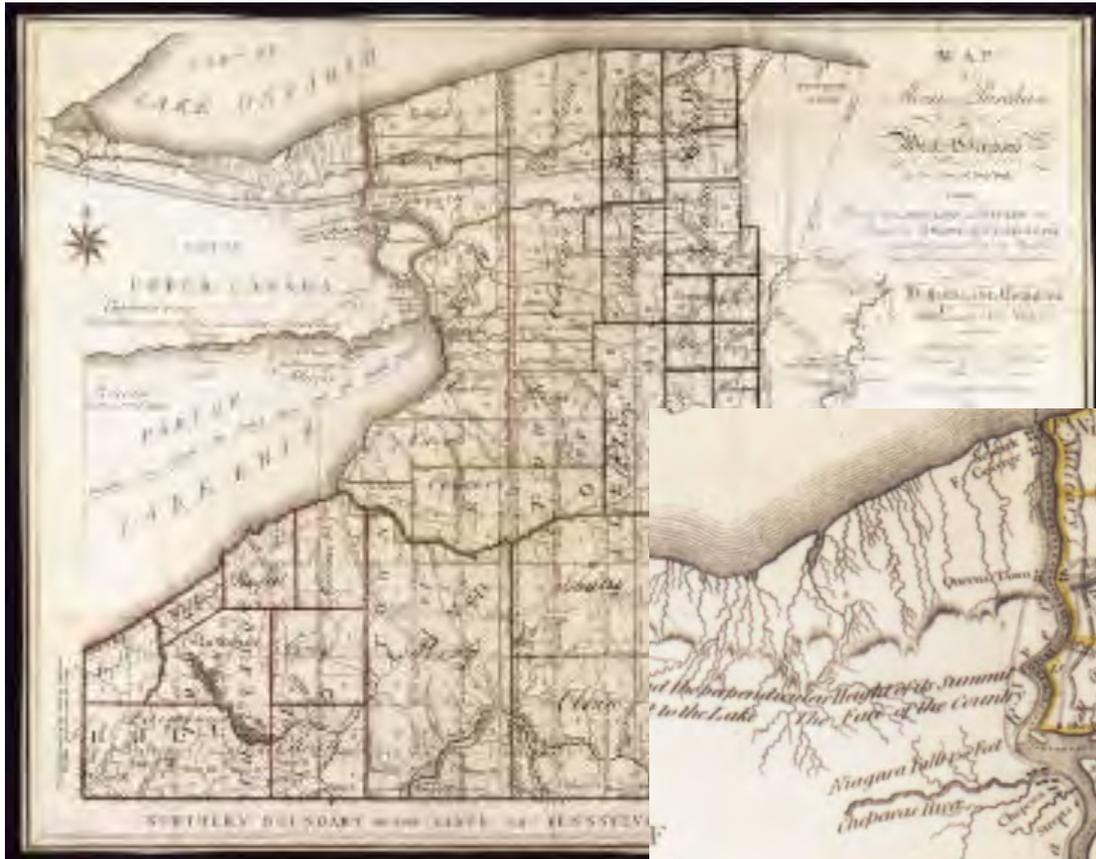
Map Analysis



\* Battle of Scajaquada Creek Labeled

1814

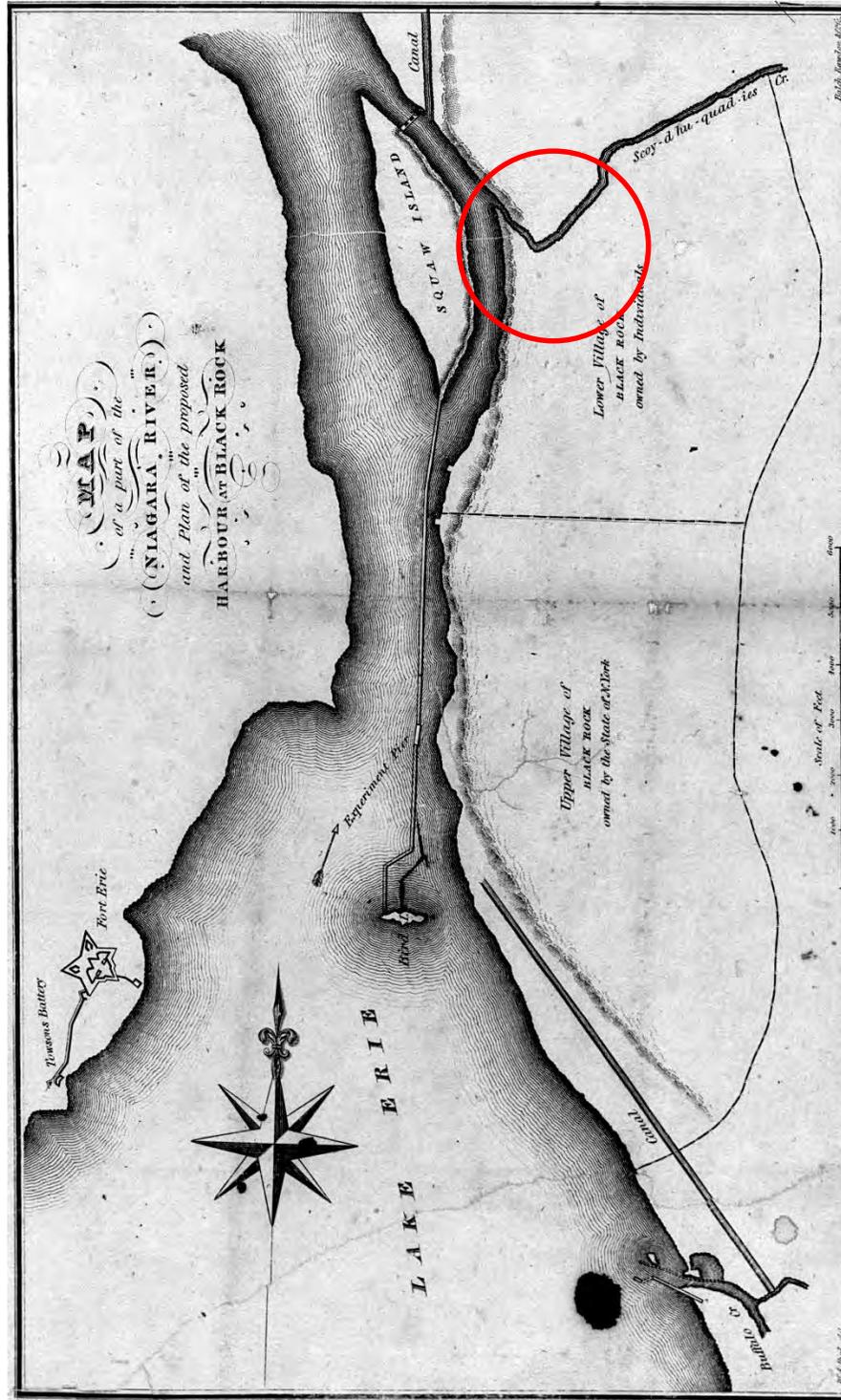
Map Analysis



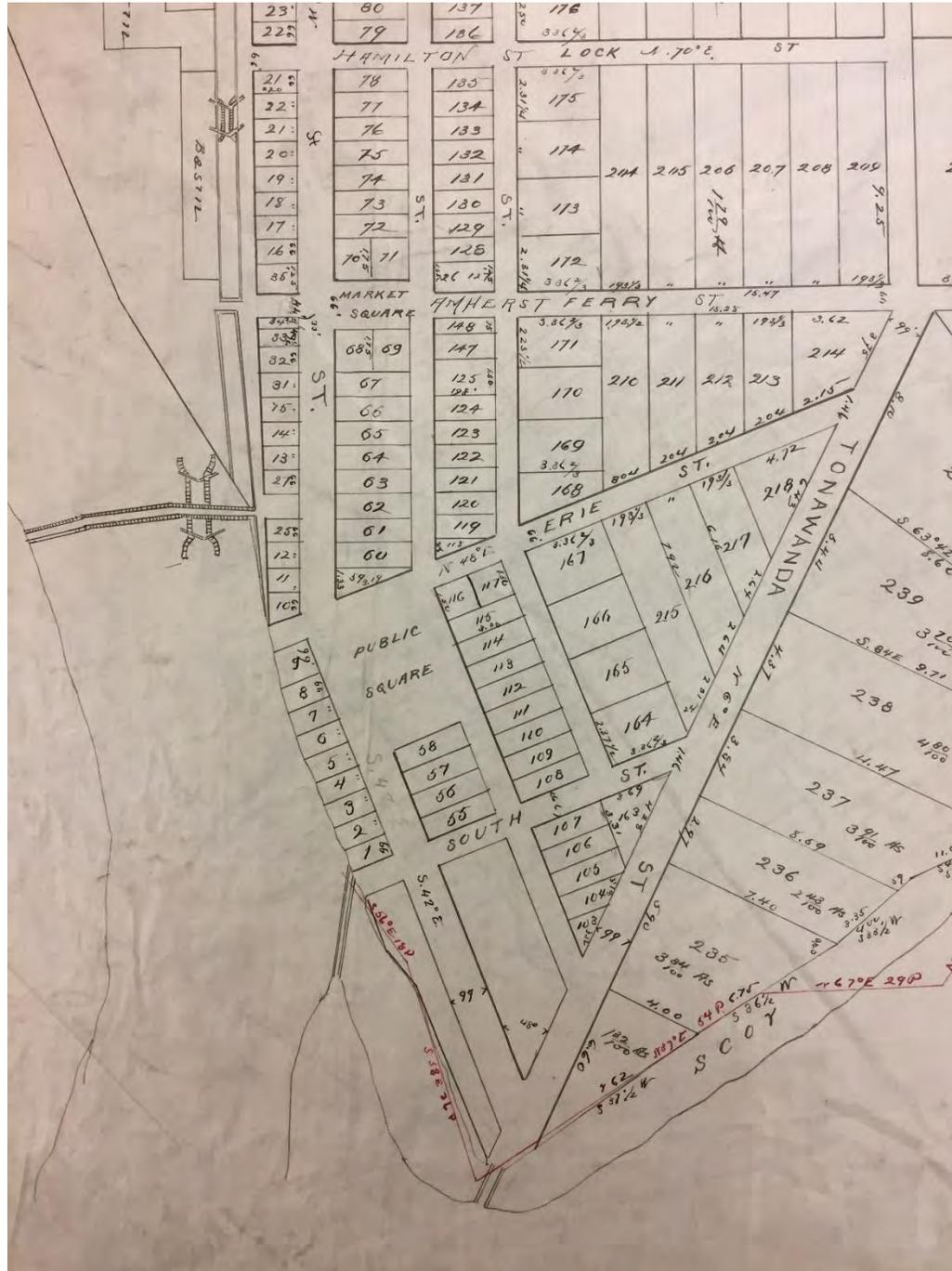
1818

Map Analysis

1829



Map Analysis



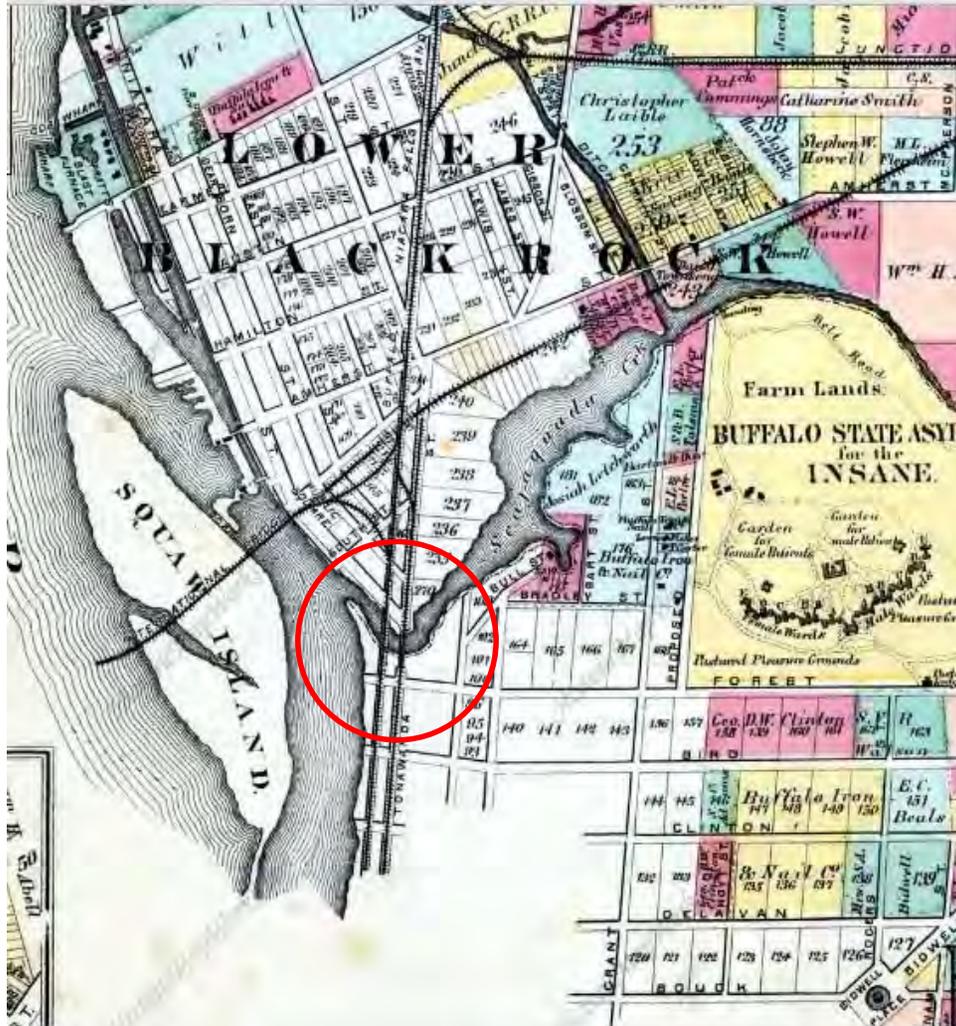
1830

Map Analysis





1854



1872

Map Analysis

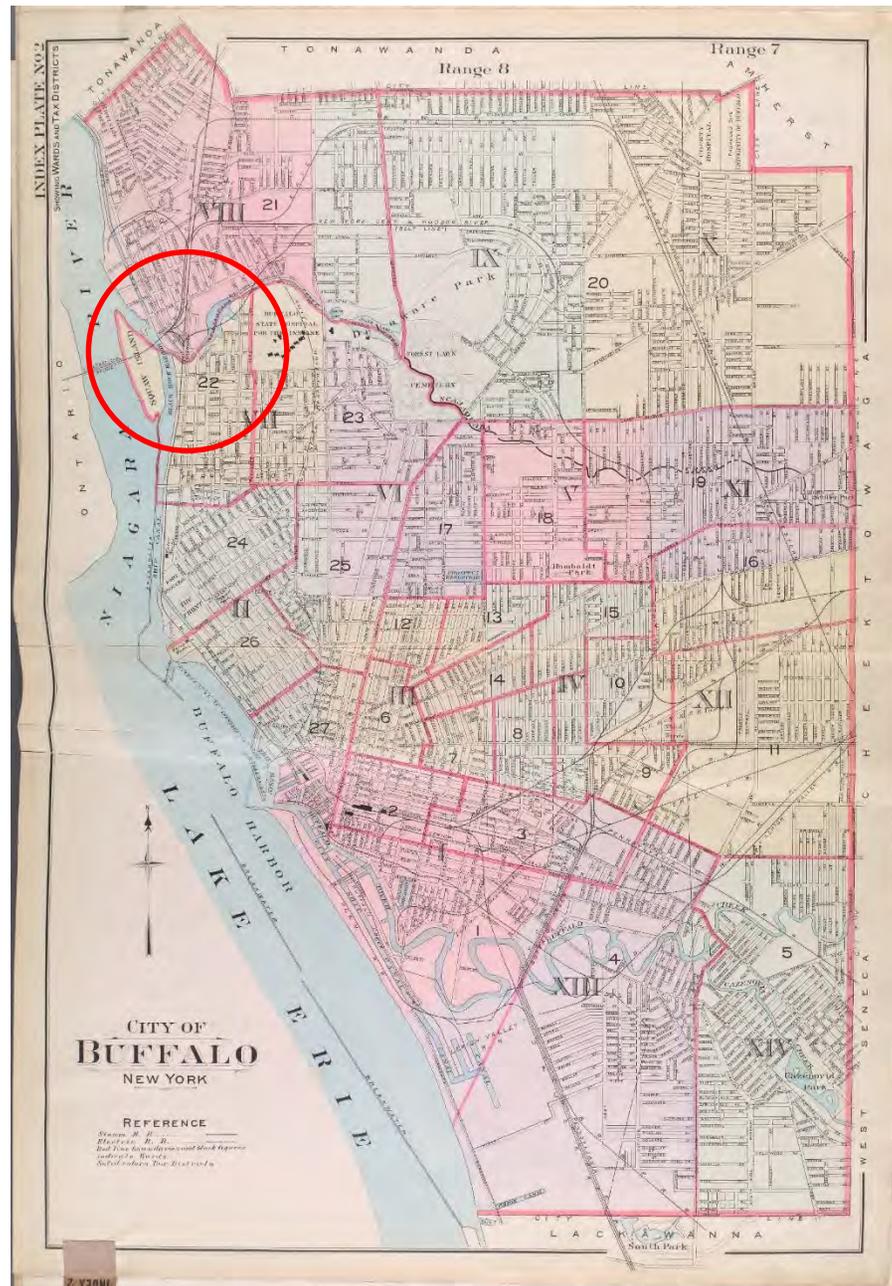


1889

Map Analysis



1915



Map Analysis



2016

Map Analysis

Source: NYPL Digital Collections, <http://digitalcollections.nypl.org/items/a67b70f1-9e7a-26b0-e040-e00a18060827>

# Research Development

## Details of The Battle

### CONJOCKETT ACCOUNT

passed Geneva on his way from Sackett's Harbour to the command on the Niagara frontier, Maj. H. obtained the permission of the General to follow him with his company, and he, accordingly, soon after marched, with one hundred and thirty other riflemen, to Buffalo. Maj. L. Morgan was then at Buffalo in command of about the same number of the 11<sup>th</sup> Regt. Riflemen. These detachments of the 11<sup>th</sup> and 4<sup>th</sup> were united under the command of Maj. Morgan and signally distinguished themselves. Their first <sup>engagement</sup> at Conjoctta Creek, in its important results, seems never to have been duly noticed or appreciated, nor the memory of Morgan properly estimated. The British, a force consisting of about 1,300 <sup>men</sup>, were landed during the evening on Squaw Island and thence landed about one o'clock upon the American shore below the Conjoctta. Maj. Morgan had been apprized, the afternoon of the day previous, of the crossing of the British troops to Squaw Island, and the riflemen had been silently marched, through the woods, to the point where the road from the Falls to Black Rock crossed the Conjoctta. The bridge across that stream was taken up and a temporary breastwork was made by piling one upon another the logs of an old building which stood near that place. The riflemen were then conducted, out of view of the enemy, until the former reached Black Rock. There were at this time a few Americans, with two or three guns, occupying Black Rock. From thence the Riflemen were marched around on the margin of the river and lake back to Buffalo, making as much noise with trumpets, music &c. as could be conveniently made, in order to arrest attention from the British on the opposite shore and induce in them the conclusion that the entire force upon the American shore would be stationed for the approaching

"Maj. Morgan had been apprized, the afternoon of the day previous, of the crossing of the British troops to Squaw Island, and the riflemen had been silently marched, through the woods, to the point where the road from the Falls to Black rock crossed the Conjoctta. The bridge across that stream was taken up and a temporary breastwork was made by piling one upon another the logs of an old building which stood near that place."

Lt. Kearsley, Memoirs

- Lieutenant Kearsley's Account is more detailed than any other primary sources we have seen previously.
- It is clear the "Road from the falls to Black Rock" is Military Road.

# Research Development Location

## The Niagara Frontier Landmark Association: A Record of Its Work

That neighborhood has abundance of historic association, none, however, of greater interest than the battle which was fought at the bridge over the Scajaquada, on August 3, 1814. Early in the morning of that day a force of British, under Lieut.-Col. Tucker of the 41st British Line, with the design of capturing Buffalo and destroying the stores, arms, and supplies there, attacked the American forces at Scajaquada Creek, at the bridge, a rod or so to the west of where Niagara Street now crosses the creek. The American forces were loosely entrenched on the south bank of the creek, and consisted of the First Battalion of the First Regiment, commanded by Major Morgan, with a small number of scattered auxiliaries. The Americans had partially removed the road-

Places the Battle a “rod” west of  
the current Niagara Street Bridge

## Searching for the Forgotten War - 1812

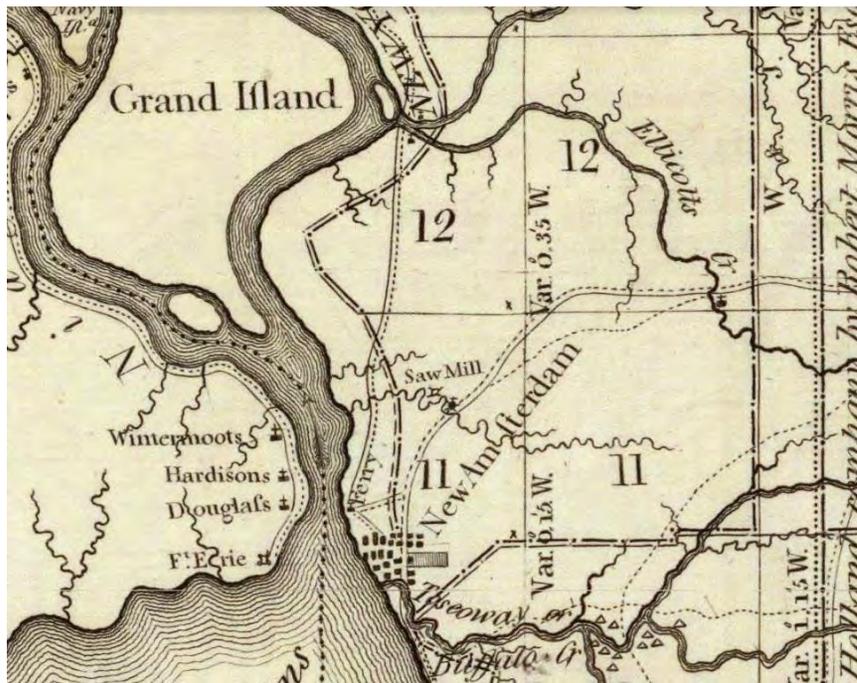
Patrick Carstens & Timothy  
Sanford

It is difficult to read without...  
Battle of Scajaquada Bridge fought early in the morning of August 3, 1814. A British forces under Lieutenant Colonel Tucker of the Forty-first British Line, on their way to Buffalo, was attacked by the American Forces at Scajaquada Creek, at the bridge, a little west of where Niagara Street crosses the creek. The American forces commanded by Major Morgan, with a small number of scattered auxiliaries, were loosely entrenched on the south bank of the creek. The Americans, to halt the British advance, removed the planking on the bridge. The British assault failed after severe fighting. The British attempted to repair the bridge under fire, but failed. A third assault on the bridge, about two hundred feet above the bridge, also failed, and the British retreated to the Canadian side. The British forces, in the Battle of Scajaquada Bridge, was 1,200, and on the American side, not more than 350. The battle was bloody and saved the supplies at Buffalo. Although this was an important battle, the site remains unmarked.

Places the Battle at Niagara  
Street West of the Bridge

# Research Development

## Bridge/Road Location



Ellicott's 1804 Map shows the Military Road but does not provide enough detail to definitively show where it crossed the creek.



# Research Development

## Bridge/Road Location



“Navigable for Ships of War Half Mile”

- Historians have previously reasoned that the Bridge must be near Grant Street because the bridge would not have been able to swing open to allow ships through and there is a narrow point where the bridge may have been.