East Delavan Sewer Improvements Project

(SPP 333 CSO-053_11)

Draft Environmental Impact Statement
June 25, 2025

BUFFALO SEWER AUTHORITY

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List of Acronyms

Abbreviation	Definition
µg/m3	microgram per cubic meter
AADT	Annual Average Daily Traffic
ADA	Americans with Disabilities Act
ATR	Automatic Traffic Recorder
AWSC	All-way stop-controlled
Bird Island WWTF	Bird Island Wastewater Treatment Facility
Buffalo Sewer	Buffalo Sewer Authority
CAA	Clean Air Act
Canisius	Canisius University
CDBG	Community Development Block Grant
City	City of Buffalo
CLEAR	Crash Location and Engineering Analysis Repository
CMP	Coastal Management Plan
CO	Carbon Monoxide
CRIS	Cultural Resources Information System
CSO	combined sewer overflow
cy	cubic yards
CWSRF	Clean Water State Revolving Fund
CZMA	Coastal Zone Management Act
dB	decibel
dB(A)	A-weighted decibel
DEIS	Draft Environmental Impact Statement
Draft Scope	Draft Scope of Work
EDU	Equivalent Dwelling Unit
EPPP	Enhanced Public Participation Plan
FHWA	Federal Highway Administration

Abbreviation	**Definition**
FTA	Federal Transit Administration
GIS	Geographic Information System
HCM	Highway Capacity Manual (HCM) 7th Edition
H2S	Hydrogen Sulfide
HASP	Health and Safety Plan
IPaC	United States Fish and Wildlife Service Information for Planning and Consultation Tool
ITE	Institute of Transportation Engineers
IUP	Intended Use Plan
L_{eq}	Equivalent Continuous Sound Level
LF	linear feet
LOS	level of service
LPC	Landmarks Preservation Commission
LTCP	Long-Term Control Plan
LWRP	Local Waterfront Revitalization Program
mg	million gallons
mgd	million gallons per day
MPH	Miles per Hour
MTBM	microtunnel boring machine
NAAQS	National Ambient Air Quality Standards
NFTA	Niagara Frontier Transportation Authority
NIOSH	National Institute for Occupational Health and Safety
NO2	Nitrogen Dioxide
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation

Abbreviation	**Definition**
NYSDOS	New York State Department of State
NYSDOT	New York State Department of Transportation
NYSOPRHP	New York State Office of Parks, Recreation, and Historic Preservation
O3	Ozone
OSHA	Occupational Safety and Health Administration
Pb	Lead
PCE	Passenger Car Equivalent
PEJA	Potential Environmental Justice Area
PEL	permissible exposure limit
PM	Particulate Matter
ppb	parts per billion
ppm	parts per million
QCCW	Queen City Clean Waters
RCRA	Resource Conservation and Recovery Act
SEQR	State Environmental Quality Review
SERP	State Environmental Review Process
SHPO	New York State Historic Preservation Office
SIP	State Implementation Plan
SO2	Sulfur Dioxide
SPDES	State Pollutant Discharge Elimination System
SPP	Sewer Patrol Point
SQG	Small Quantity Generator
STEL	short-term exposure limit
The Framework	Framework for Regional Growth
The Project	East Delavan Sewer Improvements Project (SPP 333)
TMC	Turning Movement Counts
TWA	time-weighted average

Abbreviation	Definition
TWSC	two-way stop-controlled
UDO	Unified Development Ordinance
USEPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
WRP	Waterfront Revitalization Program

1. Introduction

1.1 Project Background

The Buffalo Sewer Authority (herein referred to as Buffalo Sewer) is a public benefit corporation created, in part, to relieve the Niagara River, Buffalo River and Lake Erie from pollution by the sewage and waste of the City of Buffalo. Buffalo Sewer is responsible for the sanitary wastewater and stormwater collection and treatment system within the City of Buffalo (City). Through management of over 900 miles of storm, sanitary and combined sewer lines, this sewer system provides wastewater service to a population of approximately 450,000 people across its service area. The sewer system collects and conveys sanitary sewage and stormwater from the City of Buffalo and several surrounding communities to the Bird Island Wastewater Treatment Facility (Bird Island WWTF), owned and operated by Buffalo Sewer (**Figure 1-1**).

The proposed action, further described below, would build new underground facilities to store stormwater runoff and sewage, also known as combined sewage, which is generated during rainstorms or as the result of snowmelt. Following conclusion of the storm or snowmelt event, the combined sewage stored during the event would be sent to the Bird Island WWTF for treatment and discharge via the WWTF's existing outfall to the Niagara River. Storing combined sewage during times when the flow of stormwater or snowmelt to the sewer system exceeds its capacity would reduce the number and volume of combined sewer overflows, also known as CSOs, into Scajaquada Creek and other waterbodies.

CSOs are necessary in older systems, like the City's, to prevent combined sewage from backing up into buildings or flooding streets during large rain events. During wet weather, when the sewer system reaches capacity, untreated or partially treated combined sewage is diverted to receiving waterbodies in accordance with Buffalo Sewer's New York State Pollutant Discharge Elimination System (SPDES) permit, which is a permit that controls wastewater discharge. The SPDES program has been approved by the United States Environmental Protection Agency (USEPA) to help regulate wastewater and stormwater discharges in New York State in compliance with the Clean Water Act. The SPDES permit is regulated (issued, managed, and modified by) the New York State Department of Environmental Conservation (NYSDEC).

In addition to the state level permitting on discharges, there are also national permitting requirements known as the National Pollutant Discharge Elimination System (NPDES) permit program. In accordance with NPDES, USEPA has a national framework for controlling CSOs through the CSO Control Policy. This policy has led to broader collaboration between USEPA and communities across the United States to guide these communities in meeting the goals of the Clean Water Act. The CSO Control Policy has two phases to help communities manage CSOs. During the first phase, a community must develop a Long-Term Control Plan (LTCP), which is a plan that describes how a community will comply with water quality standards as well as other CSO Control Policy and Clean Water Act requirements. During the second phase, communities with CSO's must continue to implement water quality controls, meet the goals of any LTCP, and conduct monitoring to verify and ensure that water quality standards are being met.

In 2014, Buffalo Sewer received approval of their multi-year LTCP from NYSDEC and USEPA. In 2021, after an updated model was approved by USEPA and NYSDEC, it was determined that the projects within the LTCP would not, upon completion, meet the activation goals as specified in the 2014 LTCP. That is, if all projects in the 2014 LTCP were completed, the level of control required would not be attained for several waterbodies and additional work would still be required. The 2023 updated LTCP Optimization Selected Alternative identified the additional necessary projects to meet those requirements. The purpose of the LTCP, now known as the Queen City Clean Waters (QCCW) Initiative, is to reduce CSO activation within the existing collection system and to alleviate overall flow to the WWTF.

The original LTCP and QCCW program recommended constructing an offline CSO storage facility along East Delavan Avenue to temporarily store combined sanitary flow and stormwater that would typically overflow into Scajaquada Creek via a weir structure (a structure which manages the flow of water) at Sewer Patrol Point (SPP) 333 (CSO-053_11). This is referred to as the Buffalo Sewer's East Delavan Sewer Improvements Project (SPP 333 CSO-053_11), and also as project or proposed action. Another project identified in the LTCP in the vicinity of the East Delavan Sewer Improvements Project includes upsizing a pipe from Buffalo Sewer's SPP 229A at Florida Street (CSO-053_10). Construction of this project began in spring 2025 and is anticipated to be completed in 2026. Both the improvements at SPP 229A at Florida Street and the East Delavan Sewer Improvements Project (SPP 333 CSO-053_11) are located within the Masten District of the City of Buffalo in the vicinity of the Scajaquada Drain (**Figure 1-2**).

As a project that is directly undertaken by a local agency, as defined in Title 6 of New York Codes, Rules and Regulations (6 NYCRR), Part 617, and requires funding and approval from New York State, the East Delavan Sewer Improvements Project (SPP 333 CSO-053_11) is subject to environmental review under the State Environmental Quality Review (SEQR) Act. Buffalo Sewer will serve as Lead Agency for the SEQR process and will prepare the required environmental documentation consistent with Section 8-0113, Article 8 of the Environmental Conservation Law as set forth in 6 NYCRR, Part 617 and the State Environmental Review Process (SERP) as required by the State Revolving Fund loan program. The project is currently listed as part of the 2024 Clean Water State Revolving Fund (CWSRF). An updated Intended Use Plan (IUP) was submitted for the East Delavan Sewer Improvements and has been re-listed for the 2025 CWSRF IUP Multi-Year list.

Buffalo Sewer has determined that the East Delavan Sewer Improvements Project (SPP 333 CSO-053_11) (referred to herein as the proposed action) requires the preparation of a Draft Environmental Impact Statement (DEIS) in accordance with SEQR. Public scoping is the first step in the environmental review process and is the period during which government agencies, elected officials, community organizations, groups, and individuals can review and provide comments on the Draft Scope of Work (Draft Scope) to prepare a DEIS.

The Draft Scope for the project was issued on October 4, 2024, and describes the following: the purpose and need for the proposed action, a summary of the alternatives being considered for the proposed action, and the methodologies to be used in assessing the potential for impacts associated with the proposed action alternatives. A public comment period followed issuance of the Draft Scope and comments were addressed in the Final Scope of Work issued in conjunction with this DEIS. Pursuant to SEQR, the Notice of Completion and Notice of Public Hearing regarding the DEIS were published on July 9, 2025, and copies of the DEIS were filed for public review. The publication of these notices and the DEIS initiates a review period that will be open for forty-five (45) calendar days for comments from the public and involved agencies.

Because the SPP 229A project is a separate and distinct project which constitutes upgrades to existing infrastructure within the existing utility right-of-way of Florida Street, Buffalo Sewer has determined that the project constitutes a SEQR Type II Action, making it exempt from further environmental review. Therefore, this DEIS focuses on evaluation of the proposed action – construction of a CSO storage facility along East Delavan Avenue.

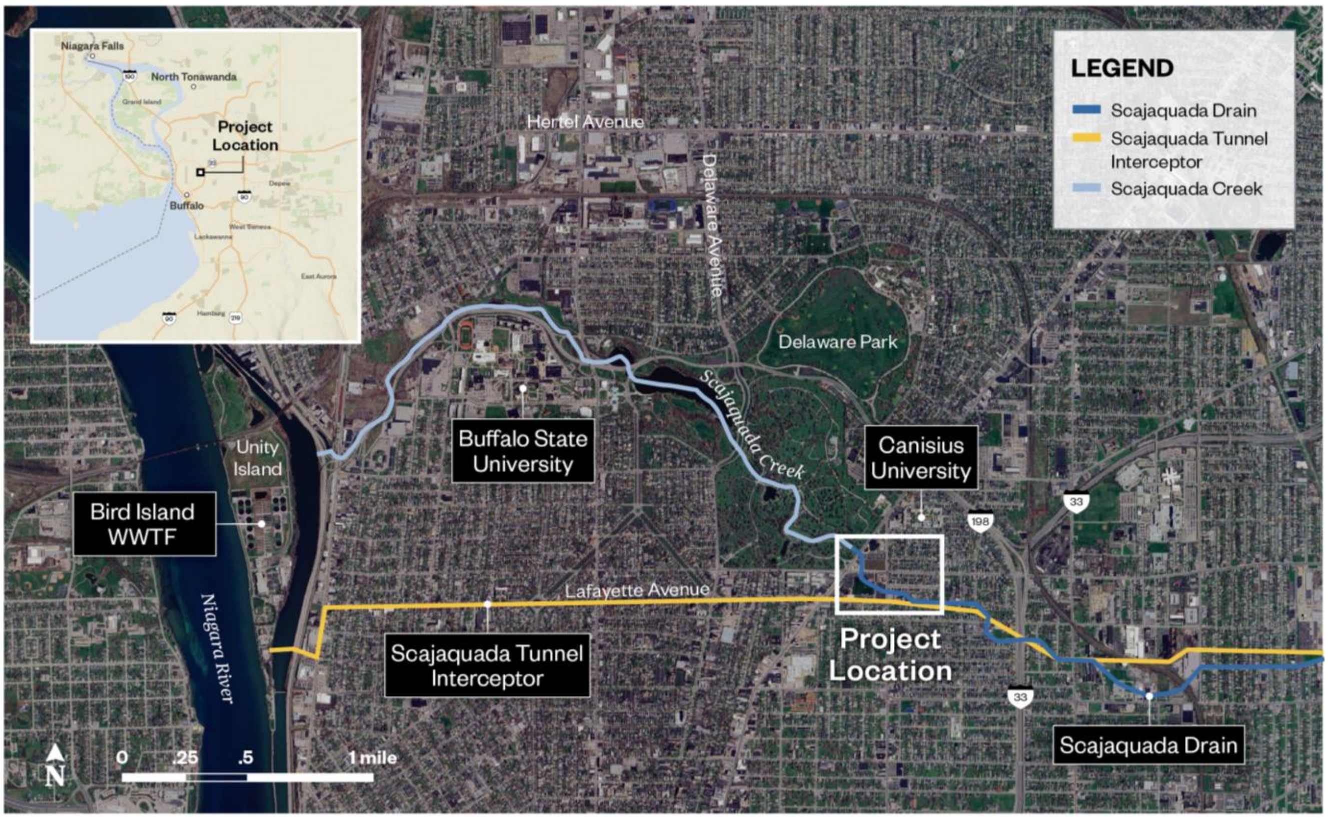


Figure 1-1: Project Location

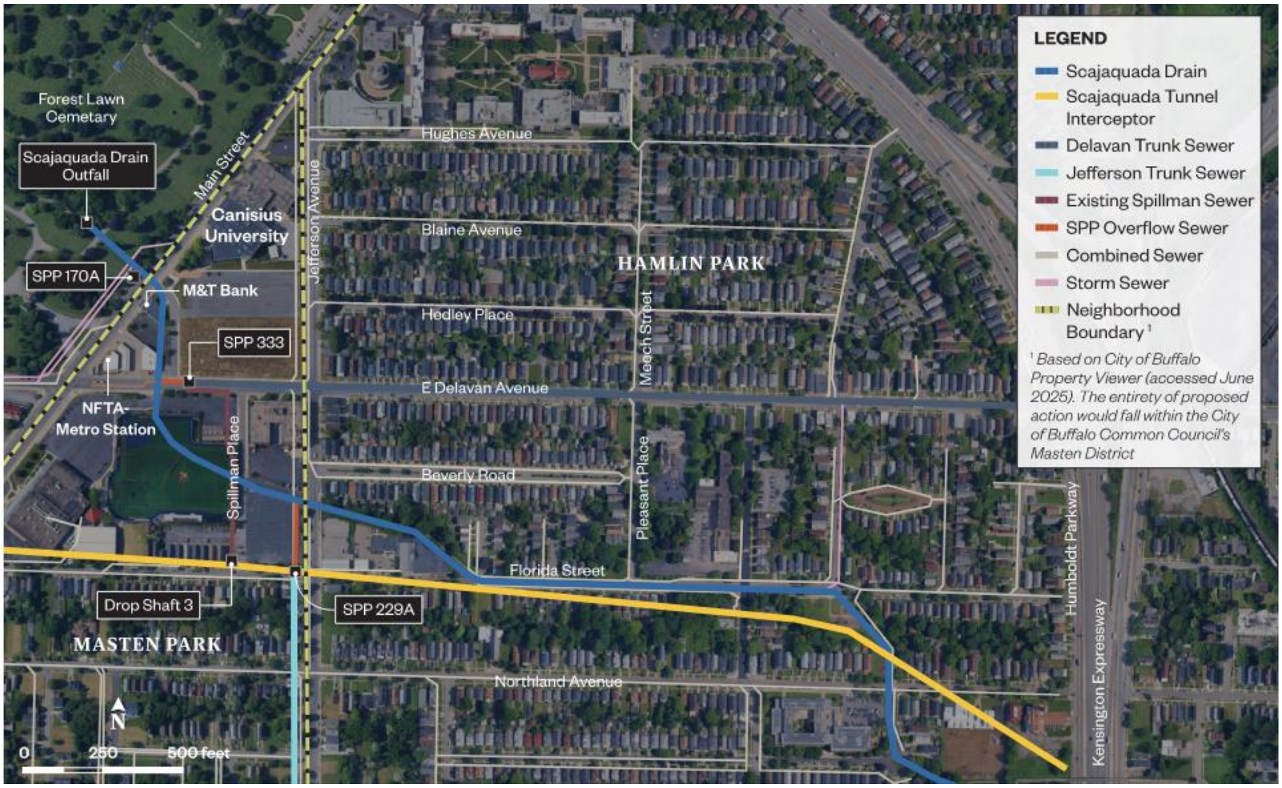


Figure 1-2: Existing Site Plan

1.2 Analytical Framework

This section outlines the analytical framework that will be used to evaluate both the potential benefits and impacts associated with the proposed action. For each environmental resource area, there will be an evaluation of baseline conditions, conditions in the Future Without the Proposed Action, and conditions in the Future With the Proposed Action. The DEIS also considers and assesses cumulative impacts from the proposed action that may potentially occur within the environmental resource areas evaluated.

Baseline Conditions. Baseline conditions, sometimes also referred to as existing conditions, were evaluated to establish a baseline from which future conditions can be compared. These conditions were developed based on data and studies collected and analyzed as part of the SEQR process.

Future Without the Proposed Action. The Future Without the Proposed Action describes the conditions of the project site without enactment of the proposed action. In the Future Without the Proposed Action, there would be no reduction in CSO activations from SPP 333 into Scajaquada Creek.

Future With the Proposed Action. The Future With the Proposed Action evaluates alternatives that support and comply with Buffalo Sewer's LTCP by reducing CSO activation events for SPP 333. Potential changes to the study areas which would result from the proposed action were compared to the Future Without the Proposed Action to assess the potential for both benefits and significant adverse impacts.

Shown in **Figure 1-3**, a project study area ranging from a quarter-mile to a half-mile from the project location was evaluated for the following environmental resource areas: Land Use, Zoning, and Public Policy; Community Facilities and Services; Open Space and Recreation; Archeological, Historic, and Cultural Resources; Visual Resources and Community Character; Natural Resources; Socioeconomic Conditions; and Environmental Justice. A quarter-mile study area is the standard for many of the resource areas identified above. However, for analysis focusing on service-based resources such as those detailed in the Community Facilities and Services section and the Open Space and Recreation section (which includes facilities such as parks, trails, and more), a half-mile study area was chosen to ensure that potential impacts to local community-based facilities that individuals within the vicinity of the project location may utilize were captured.

For the following environmental resource areas, the study areas were determined based on where direct impacts or changes may occur: Geology and Groundwater; Natural Resources; Hazardous Materials; Water and Sewer Infrastructure; Energy; Transportation; Air Quality, Greenhouse Gas Emissions, and Odor; Noise, Vibrations, and Light; and Public Health.

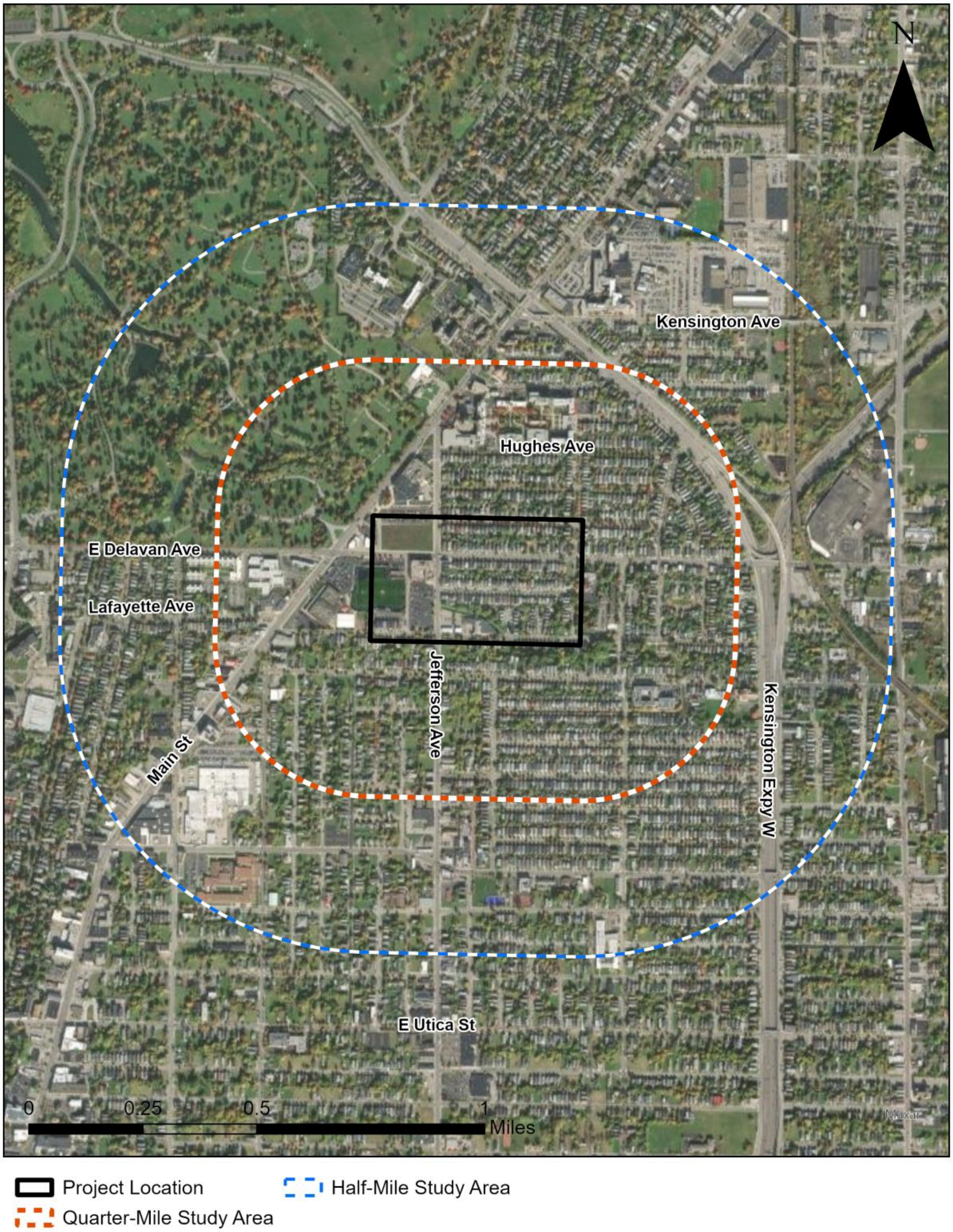


Figure 1-3: Project Location with Half-Mile and Quarter-Mile Study Areas

1.3 Project Purpose and Need

Buffalo Sewer's CSO LTCP was approved by NYSDEC and USEPA in 2014. The approved document outlines a multi-year plan for implementing projects to reduce CSO events in Buffalo Sewer's wastewater collection system to target levels for compliance with the water quality requirements of the United States Clean Water Act. On January 31, 2023, Buffalo Sewer submitted a draft LTCP Optimization Selected Alternative Technical Memorandum with updates to the LTCP model conducted since 2014. The 2023 draft LTCP used the updated model – the 2020 LTCP Model – to identify a new set of recommended projects for achieving LTCP compliance.

The East Delavan Sewer Improvements Project (SPP 333 CSO-053_11) is one of the projects described within the 2023 draft LTCP. As discussed in the 2023 draft LTCP, the proposed action would reduce the frequency of typical year CSOs from twenty-four (24) events to four (4) events at SPP 333, which corresponds to an overflow volume reduction from 25.25 million gallons (MG) to 6.62 MG. The waterbody that is most impacted by CSOs from SPP 333 is Scajaquada Creek.

If no engineering intervention is taken, the amount of CSO activations at SPP 333 would continue to increase due to increasing urbanization and the expansion of impervious surfaces – surfaces that do not absorb water such as sidewalks, driveways, parking areas – within the City. Implementation of this project within Buffalo Sewer's LTCP would ultimately support the overall health and environmental conditions of the receiving waterbodies by reducing the frequency and volume of combined sewage from entering Scajaquada Creek via the Scajaquada Drain.

In addition to providing water quality benefits downstream, the proposed action would also implement community betterment initiatives that may include tree replanting in the project vicinity, new water and sewer pipes, and workforce development opportunities.

1.4 Alternatives Considered

To address the requirements of SEQR, and as described above, this DEIS evaluates reasonable alternatives for providing the required 1.5 MG of offline storage for combined sewer flow at SPP 333. Two design alternatives that achieve the goals and objectives of the proposed action are analyzed in the DEIS, including: (1) construction of an underground storage tunnel (Storage Tunnel) (Alternative B), as depicted in **Figure 1-4**; and (2) construction of an underground deep storage tank (Deep Storage Tank) (Alternative C), as depicted in **Figure 1-5**. This DEIS also analyzes the No Action Alternative (Alternative A), which would not construct a CSO storage facility in the vicinity of East Delavan Avenue. The alternatives considered for the proposed action are described in greater detail below in Section 2.2, "Project Description."

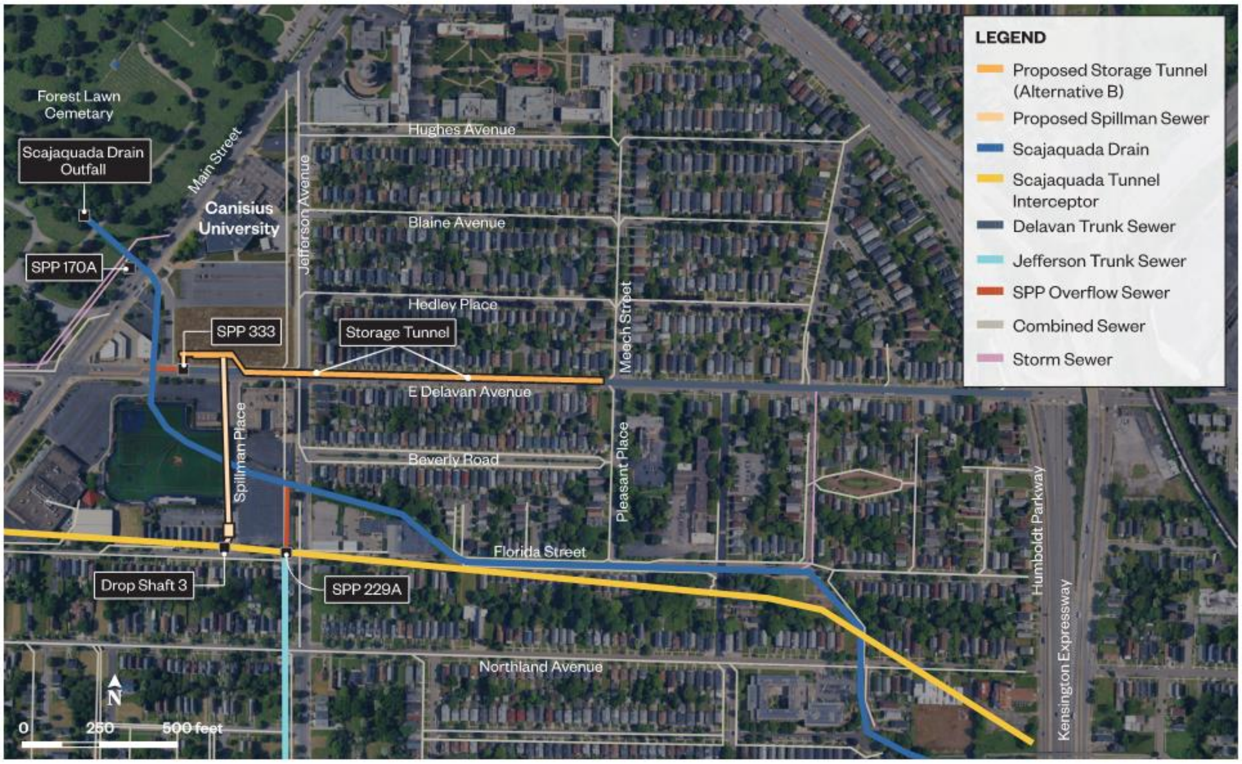


Figure 1-4: Storage Tunnel (Alternative B)

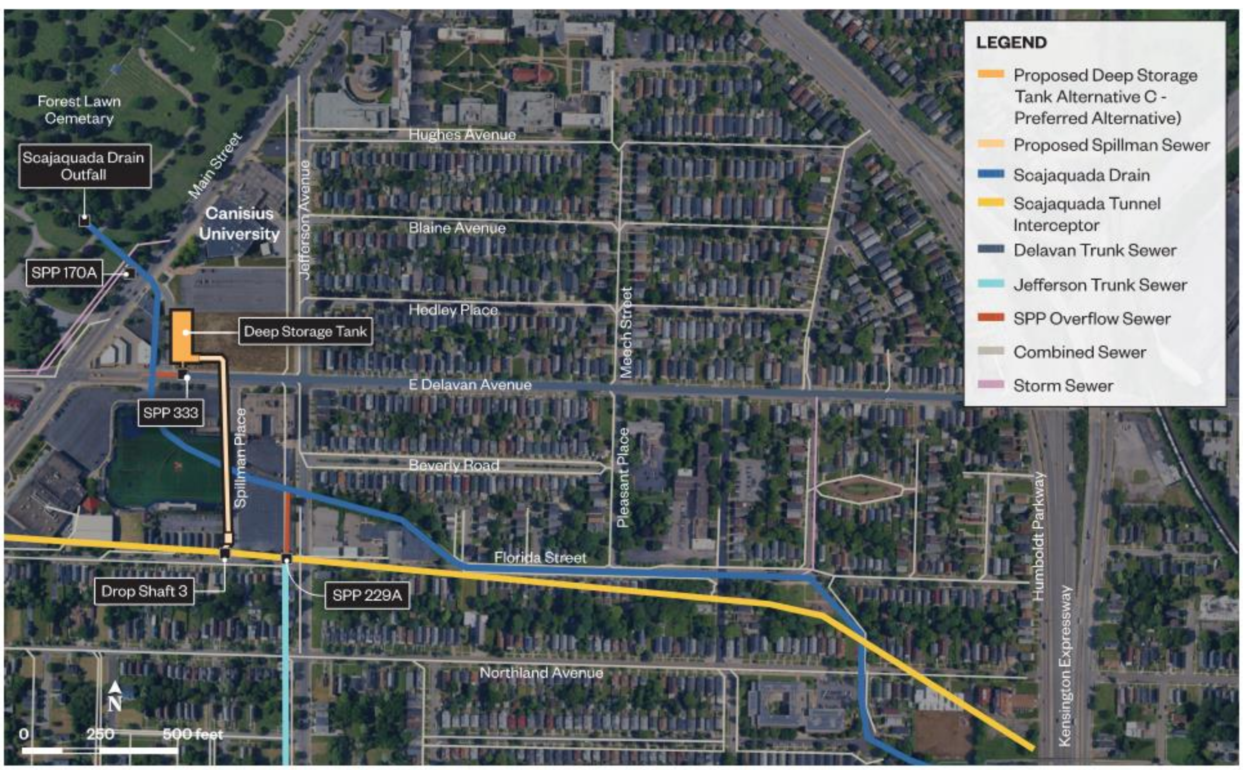


Figure 1-5: Deep Tank (Alternative C) – Preferred Alternative

2. Project Description

To comply with the LTCP and reduce CSO activations within the study area, the proposed action would allow Buffalo Sewer to divert flow at SPP 333, which is located at the southwest corner of Canisius University (Canisius) property, to a proposed 1.5 MG offline CSO storage structure during certain storm and snowmelt events. Flow would be temporarily held and subsequently discharged to the existing Scajaquada Tunnel sewer located along Florida Street at Spillman Place. Flow would be discharged from the storage facility and conveyed to and treated at the Bird Island WWTF following conclusion of the storm event when the capacity of the combined sewer stabilizes.

While both design alternatives for the proposed action referenced above are equally examined within each resource category, the Preferred Alternative is Alternative C, the Deep Storage Tank. The Preferred Alternative was selected following extensive community outreach and engagement activities aimed at gathering public feedback on both alternatives. Buffalo Sewer will continue to seek community feedback through both the environmental review process, which includes preparation of the DEIS and associated public hearings, and ongoing implementation of the project's Enhanced Public Participation Plan (EPPP), a requirement of Buffalo Sewer's SPDES permit.

Both alternatives for the proposed action include construction of a new sewer line beneath Spillman Place, referred to as the Spillman Sewer, to provide adequate sewer capacity to convey the combined sewage after a storm or snowmelt event has subsided. Following a storm event, this sewer would redirect sewage flow from the Deep Storage Tank or Storage Tunnel to the Scajaquada Tunnel, then to the Bird Island WWTF for treatment before it is discharged to the Niagara River. The Spillman Sewer is proposed to be installed by trenchless microtunneling and would require a shaft to launch sewer construction equipment, of which the location would vary minimally between alternatives. The permanent equipment associated with the Spillman Sewer would primarily be located approximately forty (40) feet to fifty (50) feet below ground surface, with above-ground maintenance and access structures proposed at certain locations along the alignment.

2.1 Environmental Setting

As shown in **Figure 1-1** and **Figure 1-2,** the project is located northeast of the downtown area within the City of Buffalo, Erie County, New York on the M&T Bank/Canisius parking lot driveway. The project location is situated in the Buffalo Common Council's Masten District and within the Hamlin Park and Masten Park neighborhoods, which contain moderately compact residential blocks with corners that are occasionally mixed-use to the east and south. Topographically, the project location is relatively flat and is typical of an urban area with sidewalks and light posts. Forest Lawn Cemetery is primarily situated to the west and north of the project site. Other open spaces near the project location are further discussed in Section 3.4, "Open Space and Recreation," and include Delaware Park, Trinidad Park, Horace "Billy" Johnson Park and Scajaquada Trail, Perkin's Park and a veteran's monument with green space to the west. Major roadways near the project location include Main Street to the west, Humboldt Parkway/Kensington Expressway (NY Route 33) to the east, and East Delavan Avenue and Jefferson Avenue, both directly adjacent to the project location. Prominent waterbodies in the vicinity include Scajaquada Creek and the Niagara River to the west, Hoyt Lake to the northwest, and Lake Erie and the Buffalo River to the south.

2.2 Description of the Proposed Action

2.2.1 No Action Alternative (Alternative A)

The No Action Alternative (Alternative A) does not involve construction of a CSO storage facility in the vicinity of East Delavan Avenue. This would mean that the existing conditions of the project site would remain the same and no water quality improvements to Scajaquada Creek would occur. With Alterative A, there would be no reduction in CSO activations from SPP 333 into Scajaquada Creek and Buffalo Sewer would not be able to meet the compliance requirements of the LTCP. As a result, Alternative A is not a viable alternative for Buffalo Sewer at this time; however, it is evaluated as the Future Without the Proposed Action Condition in the DEIS to provide a future condition with which to compare remaining project alternatives, as described below.

2.2.2 Future With the Proposed Action - Storage Tunnel (Alternative B)

Alternative B of the proposed action would consist of a 1.5 MG Storage Tunnel with a finished diameter of 14 feet beneath the East Delavan Avenue right-of-way, which is between Meech Street (eastward) and Main Street (westward) **(Figure 1-4)**. The storage tunnel would extend approximately 1,500 linear feet (LF) in the east-west direction beneath East Delavan Avenue at a depth of approximately fifty (50) feet below grade. Under this alternative, new Buffalo Sewer above- and below-grade facilities would be constructed to support operation of the Storage Tunnel, including above-grade electrical facilities, an access chamber and vent stacks, and a below-grade vault for controls and HVAC equipment. These facilities would require regular access for maintenance. Alternative B would require approximately 0.6 acres of permanent land transfer from Canisius, a private university within the City of Buffalo, to the City of Buffalo at the northern intersection of Spillman Place and Delavan Avenue. This acreage would primarily be located along frontage of Canisus property at East Delavan Avenue, north of Spillman Place. Construction of the tunnel would take approximately five years to complete and would involve temporary disturbance to Canisius property. Alternative B would involve construction activities that would be noticeable at businesses and residences along East Delavan Avenue, as well as temporary impacts in the vicinity of residences at Spillman Place and Florida Street.

2.2.3 Future With the Proposed Action – Deep Storage Tank (Alternative C) – Preferred Alternative

As shown in **Figure 1-5,** Alternative C of the proposed action would consist of a Deep Storage Tank with a storage volume of 1.5 MG located beneath Canisius property at the corner of East Delavan Avenue and Jefferson Avenue, north of Spillman Place. Similar to Alternative B, new Buffalo Sewer facilities would also be constructed above and below grade to support operation of the tank as part of Alternative C and would require regular access for maintenance. These facilities would include above-grade electrical facilities, access chamber and vent stacks, and a below-grade vault for controls and HVAC. The top of the Deep Storage Tank would be approximately twenty (20) feet below grade, and the deep storage tank would extend approximately 165 LF in the north-south direction and 120 LF in the east-west direction along the western edge of Canisius property. An equipment building that would house electrical, odor control, HVAC equipment, and instrumentation systems would be located above ground on existing Canisius property. Alternative C would require approximately 0.7 acres of permanent land transfer from Canisius to the City of Buffalo for the equipment building and its associated access and maintenance.

Construction of Alternative C would take approximately four years to complete and would involve temporary land disturbance that would primarily occur on or near Canisius property. Temporary impacts would also occur in the vicinity of residences at Spillman Place and Florida Street during construction of Alternative C.

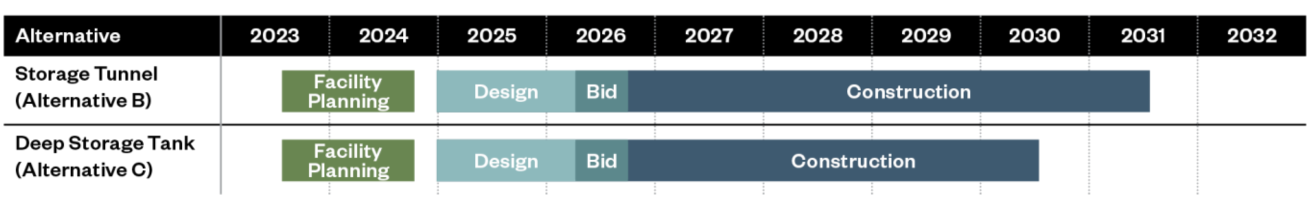
Due to the depth of the proposed storage tank, this alternative would provide Canisius with opportunities for future development of a large portion of the land adjacent to the tank. The Deep Storage Tank alternative would provide easier access for Buffalo Sewer when performing future operations and maintenance as compared with the Storage Tunnel alternative. As discussed above, the Deep Storage Tank alternative is the Preferred Alternative for the project and has been evaluated alongside the Storage Tunnel alternative in this DEIS.

2.3 Anticipated Construction Hours and Activities

Construction would comply with the existing Buffalo Sewer and City's requirements. It is anticipated that construction would typically occur Mondays through Fridays during daytime hours. Construction would not occur on federal holidays. Any work beyond the standard forty-hour work week would require the Contractor to notify Buffalo Sewer; however, emergency construction activities could be allowed without prior acceptance. Proposed construction activities for both Alternative B and Alternative C would consist of site preparation, pre-excavation grouting to limit groundwater infiltration into the excavations, groundwater pumping to dewater the construction site to facilitate construction, excavation of rock and soil, drill and blast activities to remove existing bedrock, equipment installation, utility relocation (as needed), installation of a sewer along Spillman Place, and site restoration including landscaping improvements, roadway paving, and sidewalk and curb replacement.

The anticipated project schedule is approximately five years for Alternative B and four years for Alternative C (Preferred Alternative), as seen in **Table 2-1**. Based on a projected construction start in 2027, Alternative B is anticipated to be operational by 2031, while Alternative C is anticipated be operational by 2030. For the purposes of the operational analyses in Section 3, "Impact Assessment," the year 2031 was selected to capture the later of the two projected construction completion dates. The work associated with the Spillman Sewer would be part of the construction activities for both Alternatives B and C.

Table 2-1: Overall Project Schedule



2.3.1 Future With the Proposed Action - Storage Tunnel (Alternative B)

The work areas for the Storage Tunnel (Alternative B) are shown in **Figure 2-1**, and the work activities and general sequence of construction would be as described herein. The first stage of the project would involve the Contractor mobilizing and preparing the site for construction. This would include acquiring the necessary permits, installing safety barriers, and setting up roadway and pedestrian detours. Once the site preparation is complete, excavation of soil and bedrock would begin, along with installation of support-of-excavation systems, to facilitate construction of the Storage Tunnel launch shaft. The Storage Tunnel launch shaft would be located on Canisius property northwest of the intersection of East Delavan Avenue and Spillman Place and would serve as a shared launch shaft for both the microtunnel boring machine (MTBM) to construct the Spillman Sewer and the drilling rig to construct the Storage Tunnel. Following installation of the launch shaft, the second stage of the project would consist of excavation of the Storage Tunnel and installation of its concrete lining. This work would be advanced through a controlled drill and blast excavation method taking place approximately forty (40) feet to fifty (50) feet below the ground surface. The drill and blasting activities would start at the western end of East Delavan at Spillman Place and continue to the tunnel's terminus to the east at Meech Street. All materials produced as part of the drill and blast excavation process would be transported below ground for removal via the launch shaft on East Delavan Avenue near Spillman Place. It is anticipated that the excavation and lining of the Storage Tunnel would take approximately two years of the five-year construction period.

Following or near the end of the Storage Tunnel construction period, construction of a shaft at Florida Street and Spillman Place (South Shaft) would begin along with installation of support-of-excavation. Controlled drilling and blasting would be required to construct the South Shaft. The South Shaft would be used to retrieve the MTBM equipment after the Spillman Sewer is constructed. After the tunnels are completed, the South Shaft would be used to connect the SPP 333 flows and the SPP 229A flows near the intersection of Florida Street and Spillman Place. The construction of these connections and the Spillman Sewer would take approximately one to two years. Use of an MTBM to construct the Spillman Sewer would trigger the need to provide an energy source at the project site. This energy source would be utilized over the course of two (2) to three (3) months to construct the Spillman Sewer. Energy source alternatives are currently being considered and may have the potential to result in air and noise emissions and/or temporarily increase energy needs in the project area. These emissions and increased energy needs would be limited to the extent possible and will be evaluated and described within the relevant resource categories prior to issuance of the Final EIS.

The final portion of the work would involve construction of the above-ground facilities to support operation of the Storage Tunnel and backfilling the excavated areas, including the Storage Tunnel launch shaft and the South Shaft. Upon completion of construction, the site would be restored with plantings and landscaping around the final structures.

The amount of rock and soil anticipated to be excavated would be approximately 25,000 cubic yards (cy) for Alternative B. The amount of concrete needed to construct the Storage Tunnel is anticipated to be approximately 7,500 cy. Trucks would be used to haul both excavated material offsite and provide concrete for construction. Other traffic entering and exiting the site would be associated with construction worker vehicles and trucks delivering equipment and materials. An assessment of how truck trips and worker vehicles would alter traffic and transportation in the area is presented in Section 3.12, "Transportation." All construction activities associated with the proposed action would be subject to and performed in accordance with applicable regulatory requirements.

Figure 2-1: Storage Tunnel (Alternative B) Construction Areas

2.3.2 Future With the Proposed Action - Deep Storage Tank (Alternative C)

The work areas for the Deep Storage Tank (Alternative C) are shown in **Figure 2-2**, and the work activities and general sequence of construction would be as described herein. The first stage of the project would involve the Contractor mobilizing and preparing the site for construction. This would include acquiring the necessary permits, installing safety barriers, and setting up roadway and pedestrian detours. Once the site preparation is complete, excavation of soil and bedrock would begin, along with installation of support-of-excavation systems, to facilitate construction of the concrete storage tank, currently located on Canisius property. This work would be advanced through controlled drill and blast excavation methods starting at the ground surface and moving deeper. The work area would be open to the atmosphere during the excavation period (i.e., it would not take place underground). All materials produced as part of the controlled drill and blast excavation process for the Deep Storage Tank would be hauled from the site via trucks. The second stage of the project would involve construction of the Deep Storage Tank as a cast-in-place (CIP) concrete structure. It is anticipated that the construction duration associated with excavation would be approximately eight (8) to ten (10) months of the four-year construction period while construction of the CIP tank would take approximately fourteen (14) months. The third stage of the project would involve construction of sewer channels and connecting tunnels from the Deep Storage Tank to the Spillman Sewer. It is anticipated that the construction duration associated with these structures would be approximately six (6) to eight (8) months.

The construction period would also include construction of a shaft at Spillman Place and East Delavan Avenue to launch sewer construction equipment (North Shaft) and a shaft (South Shaft) at Florida Street and Spillman Place to retrieve the MTBM equipment used for installation of the Spillman Sewer after the sewer is constructed. As with Alternative B, the South Shaft would be used to connect the SPP 333 flows to the SPP 229A flows near the intersection of Florida Street and Spillman Place and an energy source would be required at the project site to power the MTBM. Controlled drilling and blasting would be required to construct the South Shaft. The construction of these connections and the Spillman Sewer would take approximately one to two years. The final portion of the work would involve construction of the above-ground facilities to support the operation of the Deep Storage Tank and backfilling the excavated areas, including the North Shaft and South Shaft. Upon completion of construction, the site would be restored with plantings and landscaping around the final structures.

For Alternative C, it is anticipated that approximately 34,000 cy of rock and soil would be excavated. The amount of concrete needed to construct the Deep Storage Tank alternative is anticipated to be approximately 6,500 cy. Similar to Alternative B, trucks would be used to haul both excavated materials offsite and provide concrete for construction. Other traffic entering and exiting the site would be associated with construction worker vehicles and trucks delivering equipment and materials. An assessment of how truck trips and worker vehicles would alter traffic and transportation in the area is presented in Section 3.12, “Transportation.”

Figure 2-2: Deep Storage Tank (Alternative C) Construction Areas

2.4 Project Approvals, Permits, and Consultations

Implementation of the proposed action would require modification of Buffalo Sewer's wet weather operating plan as part of the SPDES Discharge Permit, as well as additional approvals from state and local agencies. Local permits and approvals, including site plan approvals and building permits, may be required for construction. Buffalo Sewer has notified relevant agencies about the proposed action including the New York State Department of Transportation, the New York State Department of Environmental Conservation's Office of Environmental Justice, and the City of Buffalo Mayor's Office of Strategic Planning. The following project approvals, permits, or consultations are anticipated to be required to support construction and operation of the proposed action. Additional work and non-discretionary construction permits may also be required to support the proposed action.

State of New York

- New York State Department of Environmental Conservation (DEC)
    - Beneficial Use Determination
    - Mined Land Reclamation Permit
    - SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-25-001)
    - SPDES Permit for Discharge of Industrial Wastewater and Stormwater (NY-2C)
    - Water Withdrawal Permit
- New York State Department of Environmental Conservation Natural Heritage Program (NYNHP)
    - Consultation
- New York State Office of Parks, Recreation and Historic Preservation (OPRHP)
    - Consultation
- New York State Environmental Facilities Corporation (EFC)
    - Clean Water State Revolving Fund - Design Review and Approval
- New York State Department of Transportation (DOT)
    - Special Hauling Permit(s)

County of Erie

- Erie County Department of Health
    - Public Water Supply Plan Approval

City of Buffalo

- City of Buffalo
    - Special Use Permit
    - Building Permit(s)
- City of Buffalo Department of Public Works
    - Design/Plan Review
- City of Buffalo Bureau of Forestry
    - Tree Work Permit
- Buffalo Sewer
    - Temporary Discharge Permit

3. Impact Assessment

3.1 Land Use, Zoning, and Public Policy

3.1.1 Introduction and Methodology

This section assesses the potential impacts the proposed action may have on land use, zoning, and relevant public policies within the quarter-mile project study area surrounding the project site, and it assesses the project's compatibility with land use and compliance with, and effect on, the area's zoning and applicable public policies. The primary source of zoning information was derived from Geographic Information System (GIS) parcel data provided by the City's open data program, Open Data Buffalo. A desktop review of the City's Zoning Map and aerial photography were used to verify land uses within the project study area. Applicable public policies were examined from both state and local level plans and programs.

The land use assessment of this section considers the proposed action's potential effect on existing and future land use within the study area, as well as the proposed action's potential effect on land use patterns. The zoning assessment reviews the compatibility of the proposed action with existing zoning regulations within the study area. The public policy assessment reviews consistency with existing public policies applicable to the proposed action and study area. A project that would be located within areas governed by public policies concerning land use, or that has the potential to affect land use regulation or related policies, requires an assessment of such public policies.

3.1.2 Baseline Conditions

The land use, zoning, and public policy study area established for the proposed action is located between Jefferson Avenue and East Delavan Avenue within the Masten Park and Hamlin Park neighborhoods, as shown in **Figure 3-1**. Within the municipality, planning and land use is guided and governed by the *Buffalo Green Code* (Green Code), a form-based code that provides comprehensive development strategies and zoning regulations (Buffalo Green Code, 2017). The Green Code is made up of multiple components, two of which are relevant to the proposed action – the Land Use Plan and the Unified Development Ordinance (UDO). The Land Use Plan, prepared in 2016, offers direction on land use, transportation, and urban form over a 20-year span. It provides an outline of community needs and a framework for decision-making regarding future urban development. The UDO serves as the municipal zoning ordinance, codifying the Citywide Zoning Map, land use policies established in the City's 2006 Comprehensive Plan, and the remaining components of the Green Code into the Code of the City of Buffalo.

Development guidance is additionally provided in the *City of Buffalo 2023-2027 Four-Year Strategic Plan: Building an Equitable City* (Strategic Plan) (City of Buffalo, 2023). The Strategic Plan, prepared by the City's Office of Strategic Planning, is a city charter-mandated planning document intended to articulate near- to mid-term land use, policy and economic objectives, strategies to achieve such objectives, and specific actions for implementation. For example, the Strategic Plan identifies improvements in stormwater infrastructure as a strategy in addressing impacts of climate change, such as localized flooding during heavy rain events.

Land Use

As per the Land Use Plan of 2016, land uses within the project study area include residential, civic, retail & service, open space, and vacant land, as shown in in **Figure 3-1**. Existing land uses were additionally identified based on the City of Buffalo's land use data, aerial imagery, and other relevant planning and policy documents detailed below.

The project site contains a portion of Canisius property on its northern and southern sides. West of the project site, land uses within the study area consist of open space such as Delaware Park and Forest Lawn Cemetery, outdoor recreation facilities, and Main Street, a major transportation thoroughfare which provides light rail transit service operated by the Niagara Frontier Transportation Authority (NFTA). The Delavan-Canisius College transit station is located immediately west of Canisius. To the east of the project site, land uses primarily include low-rise, one- and two-family buildings and multi-family walk-up residential uses characteristic of the late 19th and early 20th centuries. Additionally, there are some adjacent smaller open space and commercial uses, such as a local food store and delicatessen.

In the future, it is expected that land use patterns within the study area would remain relatively unchanged, pursuant to the Green Code UDO, which went into effect in April 2017. Based on a review of information available through the City of Buffalo's Office of Strategic Planning, one development project within Canisius property was identified within the land use, zoning, and public policy study area, involving the demolition of a three-story parking garage structure. Upon completion of the proposed action, Canisius would utilize the property as needed to support their operations (Office of Strategic Planning, n.d.).

Zoning

The UDO is a form-based zoning code which focuses on physical form, scale, and character of development, differing from traditional Euclidean zoning which separates land uses by type and density. Form-based codes consider the relationship between the public realm, the scale of streets and blocks, and the bulk and design of buildings. Buffalo's UDO provides three categories of zoning districts: Neighborhood Zones, District Zones, and Corridor Zones. Each category includes a variety of zoning districts mapped in accordance with the physical form of buildings and public spaces, as opposed to land use and density. Pursuant to the UDO's Citywide Zoning Map and as depicted in **Figure 3-1**, the project's study area comprises the following zoning districts: an Educational Campus District Zone (D-E); a Mixed-Use Center Neighborhood Zone (N-2C); a Green District Zone (D-OG); a Residential Neighborhood Zone (N-3R); a Mixed-Use Edge Neighborhood Zone (N-3E); and a Flex Commercial District Zone (D-C).

Neighborhood Zones address a variety of mixed-use and walkable areas within Buffalo. They range in character, function, and density – they may comprise intense, compact mixed-use centers with a diversity of uses, or of residential blocks with single-family homes on wide lots. District Zones each correspond to an area providing a predominate use. They may include large-scale residential campuses, commercial areas, medical or educational campuses, or manufacturing sites. Corridor Zones are not mapped within the project's study area.

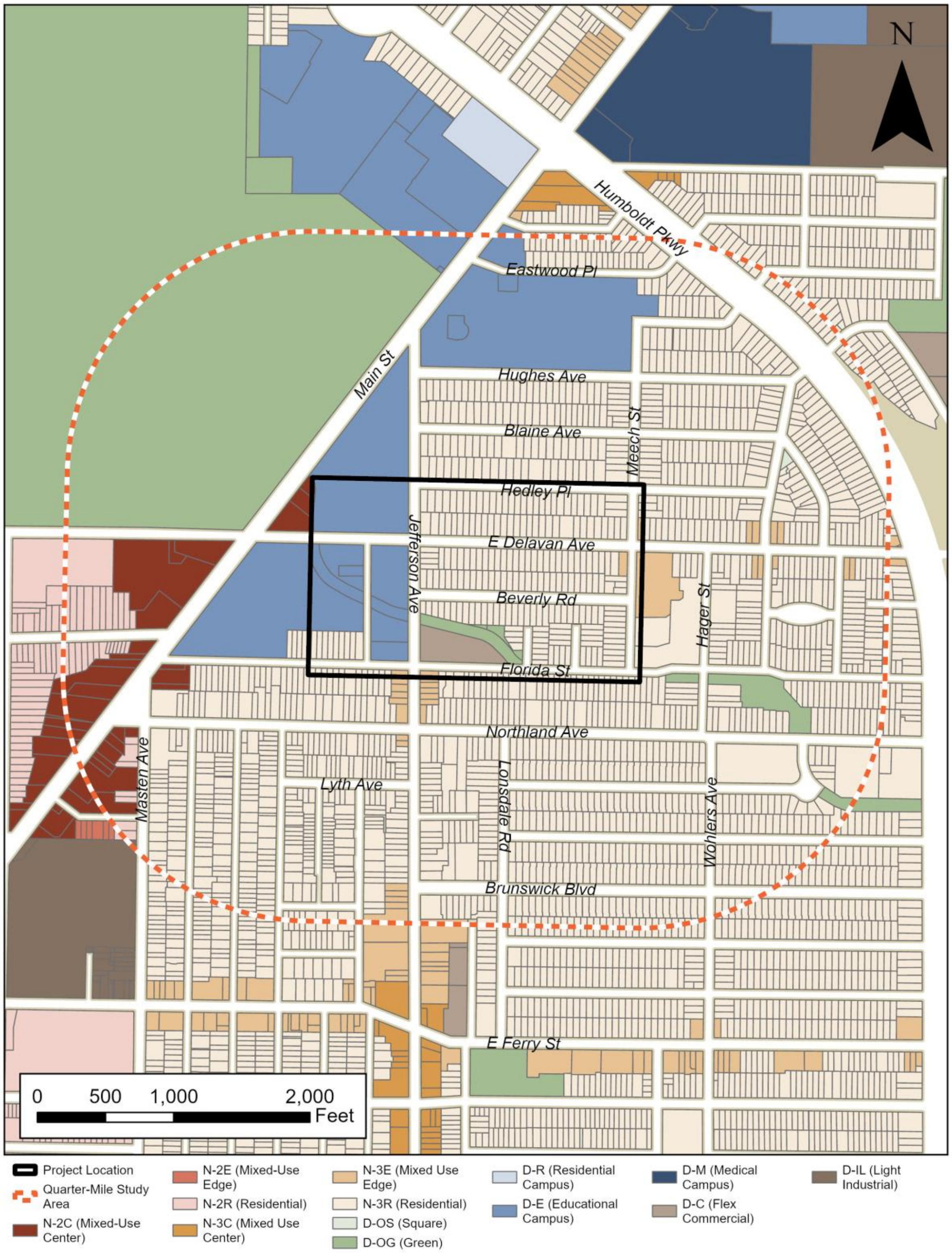


Figure 3-1: Land Use, Zoning, and Public Policy Study Area

Public Policy

Applicable State and local public policies and planning documents relevant to the proposed action are described below.

State

<u>*New York State Coastal Zone Management Program*</u>

After enactment of the federal Coastal Zone Management Act (CZMA) in 1972, the New York State Department of State (NYSDOS) enacted legislation (Waterfront Revitalization and Coastal Resources Act) in 1981, and developed a Coastal Management Plan (CMP) in 1982 with the purpose of achieving a balance between economic development and preservation in the coastal zone, thus promoting waterfront revitalization and water-dependent uses and protecting open space, scenic areas, and public access to the shoreline, fish, wildlife, and farmland. The program also aims to minimize significant adverse impacts on ecological systems, erosion, and flood hazards. The location of the proposed action falls immediately outside of the coastal zone boundary; therefore, a coastal consistency review is not required. Nevertheless, the proposed action is consistent with the goals identified in the CMP, as described in greater detail below.

Local

<u>*Framework for Regional Growth Erie + Niagara Counties, New York (2006)*</u>

The Framework for Regional Growth (Framework) was published in October 2006 to address a region-wide absence of a plan that considers the future of conservation, development, and public investment in Erie and Niagara Counties (Erie-Niagara Framework for Regional Growth, n.d.). The Framework outlines 7 principles which guide its policies and strategies to be implemented over a 15-year period: (1) A Vital Economy; (2) Sustainable Neighborhoods; (3) Strong Rural Communities; (4) Improved Access & Mobility; (5) Efficient Systems & Services; (6) Effective Regional Stewardship; and (7) Conserved Natural & Cultural Assets.

The Framework defines the City of Buffalo as a *developed* planning policy area, which also includes a *regional center* subarea. *Developed* areas "include contiguous blocks of urban and suburban development served with public sewer, water, and transportation infrastructure," while *regional centers* are "recognized for their existing and potential economic vitality, diverse mix of land uses, concentrations of public facilities and services, and potential as locations for higher intensity, mixed use development and enhanced public transportation service." Within developed areas, policies and strategies are designed to encourage (1) the preservation and stabilization of existing neighborhoods; (2) pedestrian-oriented and mixed-used infill development; and (3) high-density, employment-focused, mixed-use and transit-oriented development.

The Framework also includes conservation overlays which delineate regional planning areas focusing on the management of waterfront lands, river and stream corridors, greenways, and other significant natural and cultural resources. Policy strategies for these overlay areas are designed to support local initiatives that preserve and improve natural assets and adhere to SEQR by evaluating environmental impacts.

City of Buffalo Land Use Plan (2016)

The City of Buffalo Land Use Plan includes policies that assess existing conditions and development trends, and it provides direction on land use, transportation, and urban design intended to guide Buffalo's development over a 20-year period (City of Buffalo, 2016). The Land Use Plan, together with the 2006 Comprehensive Plan and the City's Unified Development Ordinance comprise the Buffalo Green Code, which is a broader revisioning of Buffalo's land use and zoning policies that seek to encourage local investment, job creation, and sustainability measures. The plan outlines three primary objectives: (1) grow the economy; (2) strengthen neighborhoods; and (3) repair the environment, with each objective providing specific land use policies.

The project site is located within the Masten Planning Area, as identified by the Land Use Plan. The Masten Planning Area is a 5.5-square mile area encompassing eight neighborhoods located in central and eastern Buffalo. Land use recommendations for the Masten Planning Area include the designation of pedestrian-friendly, mixed-use centers and the preservation of residential uses. The Land Use Plan also identifies a goal of reducing annual CSO events from sixty-nine (69) events in 2015 to a maximum of six (6) events by 2035.

City of Buffalo Local Waterfront Revitalization Program (2019)

Pursuant to the New York State Waterfront Revitalization and Coastal Resources Act of 1981, city officials prepared a Local Waterfront Revitalization Program (LWRP) in cooperation with the NYSDOS. Policies provided in the LWRP are designed to be consistent with the State CZMA. The location of the proposed action falls immediately outside of the coastal zone boundary; therefore, a coastal consistency review is not required.

City of Buffalo 2020-2024 Consolidated Plan (2020)

The purpose of the Consolidated Plan is to address priority funding needs involving housing and community development activities which are locally identified by the City (Buffalo, NY, n.d.). The plan outlines three main goals: (1) the preservation and increased production of affordable housing; (2) providing a suitable living environment that prioritizes safety and accessibility; and (3) expanding economic opportunities through job creation and homeownership. Though the Consolidated Plan does not outline specific policies, it identifies a goal of improving the City's public facilities using Community Development Block Grant (CDBG) funding, which includes the construction, installation, and rehabilitation of water and sewer infrastructure.

City of Buffalo Parks Master Plan (2021)

The City's Parks Master Plan serves as a guide for the development and improvement of parkland throughout Buffalo. It identifies existing successes of the Buffalo parks system, and it highlights targeted areas of improvement seeking to increase equitable park access, enhance park safety, improve and add amenities, and improve park conditions throughout the City. The Parks Master Plan specifically identifies a strategy to incorporate green infrastructure and natural areas into parks, in alignment with the proposed action.

City of Buffalo 2023-2027 Four-Year Strategic Plan: Building an Equitable City (2023)

The purpose of the Strategic Plan is to identify land use and planning goals that promote sound development and equitable economic prosperity (Buffalo, NY, n.d.). The plan focuses on four elements: (1) thriving neighborhoods and people; (2) smart and sustainable infrastructure; (3) climate resilience; and (4) economic opportunities and mobility. Over the life of the Strategic Plan, the City seeks to meet eighteen (18) goals through specific action steps outlined therein.

3.1.3 Future Without the Proposed Action (Alternative A)

Land Use

In the Future Without the Proposed Action condition, any anticipated changes to land use would be a result of existing and current land use trends and development patterns, characterized by development of a mix of uses, including residential, mixed-use, retail/commercial, and parking facilities. No new high-intensity or high-density developments are anticipated within the study area. Furthermore, Buffalo Sewer has consulted with the City's Office of Strategic Planning and the Erie County Department of Environment and Planning and has determined that there are no significant developments proposed within 0.5 miles of the proposed action. Other projects within the vicinity are described below in **Table 5-1.**

As explained in Section 1.1, "Introduction," there is a project in the vicinity of the East Delavan Sewer Improvements Project, the scope of which would upgrade the sizing of an existing pipe from the Buffalo Sewer's SPP 229A. This project (known as the Delavan Trunk Sewer Improvements at Florida Street [SPP 229A] Project) is currently under construction, and it remains separate and distinct from the subject East Delavan Sewer Improvements Project. As such, in the Future Without the Proposed Action, it is assumed that baseline conditions would remain the same. Absent the proposed action, the frequency of CSO activations would continue to increase as the frequency of storm events resulting from climate change increases and as growing urbanization in the area results in more impervious surfaces. Flows would continue to overwhelm existing infrastructure during heavy rainfall events, thereby impacting the quality of receiving waterbodies downstream, including the Scajaquada Creek via the Scajaquada Drain.

Zoning

Absent the proposed action, there are no known proposals that would change the zoning in the study area. Therefore, baseline conditions would remain the same.

Public Policy

Absent the proposed action, there are no known proposals that would affect or conflict with public policy in the study area. Therefore, baseline conditions would remain the same. In the Future Without the Proposed Action condition, the frequency of CSO activations would continue to increase as urbanization continues. During heavy rainfall events, water flows would continue to overwhelm the existing infrastructure, negatively impacting the quality of receiving waterbodies downstream, which conflicts with goals and strategies outlined in relevant public policy documents described in 3.1.2, "Baseline Conditions."

3.1.4 Future With the Proposed Action (Alternatives B and C)

Construction

As described in Section 2, "Project Description," the proposed action includes the construction of an offline CSO storage facility to temporarily store combined sanitary flow and stormwater that would otherwise overflow into Scajaquada Creek at SPP 333 during certain storm events. The proposed structure would hold up to 1.5 MG of storage for combined sewage, minimizing the frequency of CSO activations, resulting in improved water quality benefits downstream.

According to the UDO, the proposed use of either alternative presented herein would be designated as a "Utilities and Services, Minor" use, which is allowed as-of-right in the zoning districts affected by the proposed action. Both storage alternatives evaluated in the Future With the Proposed Action condition provide for the proposed storage structure to be constructed below grade, requiring the blasting of bedrock for the construction of proposed infrastructure improvements. Typical development standards concerning bulk, height, and setbacks would not apply to these below-grade structures, and any accessory above-grade portions of the facility would be constructed to comply with the regulations of the D-E (Educational Campus), N-3R (Residential) and N-2C (Mixed-Use Center) zoning districts that comprise the project location. In the Future With the Proposed Action, construction activities presented in both Alternative B and Alternative C would be temporary in nature and would predominately occur within the public right-of-way.

Alternative B proposes the construction of an approximately 1,500 LF Storage Tunnel situated approximately forty (40) feet to fifty (50) feet below East Delavan Avenue in the east-west direction. Construction of Alternative B would take approximately five years and would involve temporary disturbances to Canisius property. Construction activities would also have the potential to impact businesses or residences located along East Delavan Avenue, Spillman Place, and Florida Street. New Buffalo Sewer facilities would be constructed above- and below-grade that would require regular access for maintenance, including accessory above-grade electrical facilities, access chamber and vent stacks, and a below-grade vault for controls and HVAC equipment for the real-time control actuated gate and instrumentation systems. Due to the consolidated site layout of this alternative, there would be impacts to the Canisius property frontage. Canisius has expressed a desire to redevelop the frontage land along East Delavan Avenue near Spillman Place in future redevelopment plans; however, implementation of Alternative B would limit that opportunity with construction of the tunnel and associated structures.

The Preferred Alternative (Alternative C) proposes the construction of a Deep Storage Tank located approximately twenty (20) feet below Canisius property at the corner of East Delavan Avenue and north of Spillman Place, with the tank extending approximately 165 LF in the north-south direction and approximately 120 LF in the east-west direction. An above-ground mechanical building proposed on Canisius property that would house electrical and HVAC equipment would be a use accessory to the Deep Storage Tank. Construction of Alternative C would take approximately four years and would involve temporary and permanent disturbances to Canisius property, while having limited impacts on residences located at Spillman Place and Florida Street. Other than the installation of the above-ground structures presented in both alternatives, no other improvements are proposed on Canisius property. It is anticipated that all other temporarily disturbed areas resulting from construction activities would be restored to baseline conditions following project completion. As such, implementation of the proposed action, including related construction activities, does not require any changes in land use or zoning, nor would it conflict with existing zoning district regulations. Further, no significant adverse public policy impacts are anticipated as a result of the construction of the proposed action.

Operation

Following construction of the proposed action, it is anticipated that any area temporarily disturbed would be restored. The addition of Alternative B would comply with the requirements of the D-E (Educational Campus), N-3R (Residential), and N-2C (Mixed-Use Center) zoning designations that span the project location, and it would not result in any changes to the land use or zoning of the study area. Under Alternative C, the above-ground equipment building would be a use accessory to the principal below-grade infrastructure use, and it would also not result in any changes to zoning or land use, as it would also comply with the requirements of the applicable zoning districts. In either alternative presented in this analysis, land transfers and easement agreements would be made between Buffalo Sewer and Canisius University to allow Buffalo Sewer access to and use of portions of privately owned property, as appropriate. Alternative B would require approximately 0.6 acres of permanent land transfer from Canisius University to the City of Buffalo, specifically at the northern intersection of Spillman Place and Delavan Avenue. Alternative C would require approximately 0.7 acres of permanent land transfer from Canisius to the City of Buffalo for the equipment facility and associated access and maintenance. Therefore, no significant adverse impacts to land use and zoning are anticipated as a result of the proposed action.

Operation of the proposed action would result in a reduction of CSO activation events for SPP 333 during certain storm events, in furtherance of and consistent with the policies, goals, and strategies outlined in the relevant public policy documents described above in 3.1.2, “Baseline Conditions.” The proposed action supports regional development goals and strategies outlined in the *Framework for Regional Growth Erie + Niagara* Counties, as it is a public infrastructure investment that would improve water quality throughout the region. Though the extent of work to facilitate the proposed action is limited to an area immediately outside of the coastal zone boundary, and therefore a coastal consistency review is not required, the Preferred Alternative would be aligned with state policies identified under the New York State Coastal Zone Management Program. The proposed development would ensure discharge of pollutants into coastal waters would conform to State and federal water quality standards, and it would implement best practices to support the management of stormwater runoff and CSO activations. At the municipal level, the local WRP is designed to be consistent with the state CMP; therefore, the proposed action would support policy goals described in the *City of Buffalo Local Waterfront Revitalization Program*. In addition, the proposed action complements goals and strategies identified in a variety of Buffalo’s development plans by prioritizing green infrastructure and climate resilience, promoting a reduction in CSO events, and protecting natural assets to support the overall health and environmental conditions of nearby waterbodies.

It is therefore concluded that the Preferred Alternative would be compatible with land use, zoning, and public policies within the study area and no significant adverse impacts associated with operation are anticipated with the proposed action.

3.2 Socioeconomic Conditions

3.2.1 Introduction and Methodology

This section assesses the potential impacts the proposed action may have on socioeconomic conditions within the quarter-mile study area. This section presents census data with respect to average median household income within the study area and includes a discussion on how the proposed action may impact sewer rates.

3.2.2 Baseline Conditions

The project site is in Erie County, New York (population of 951,232 people) within the City of Buffalo (population of approximately 276,688 people). The quarter-mile project study area includes five census tracts (Census Tracts 33.01, 52.02, 53, 168.02, and 169). There are 11,442 households in this study area with an average owner-occupied housing percentage of approximately 47.2% and 52.8% of renter-occupied housing units. The project study area has an average annual median-income of approximately $42,498, which is higher than the median-income in the City of Buffalo of approximately $38,626 (U.S. Census Bureau, 2023).

Buffalo Sewer's service area includes the City of Buffalo; the Towns of Alden, Cheektowaga, Elma, Lancaster, Tonawanda, and West Seneca; the Villages of Depew, Lancaster, and Sloan; and Erie County Sewer District Nos. 1 and 4. Buffalo Sewer's current number of equivalent dwelling units (EDUs) within their service area is 182,000, with the current annual debt service payments totaling $6,203,338. The current annual operating and maintenance (O&M) costs for all Buffalo Sewer facilities are $60,519,422. There is an anticipated increase of $154,715 for O&M costs associated with the proposed action, and an anticipated increase of $4,000,000 for annual debt service for this project. The average annual cost per EDU is $389.44, inclusive of the proposed action. EDUs were calculated on the basis of fees for public water use, however, there are significant industrial contributors in the combined sewer system. Buffalo Sewer's LTCP is anticipated to include implementation of more than fifty (50) projects that total upwards of approximately $1 billion and are anticipated to be completed in 2038. Outside districts are estimated to provide $13,750,000 and industrial customers are estimated to provide $3,525,000 in the 2023-2024 budget.

The primary sources for Buffalo Sewer's funding are sewer rates paid by users, fees from outside municipalities that connect to Buffalo Sewer system, and fees charged by waste haulers that dispose at the Bird Island WWTF. These fees include costs estimated with sewer rent, water used, and fees associated with drainage connections.

3.2.3 Future Without the Proposed Action (Alternative A)

Absent the proposed action, no impacts on socioeconomic conditions are anticipated within the quarter-mile study area, and demographics of the study area are anticipated to remain as existing conditions.

3.2.4 Future With the Proposed Action (Alternatives B and C)

Construction

Overall, it is anticipated that the proposed action would not result in any significant adverse impacts to the socioeconomic conditions evaluated within the study area during construction, which includes not having any impacts on residential markets or rents. Construction is also anticipated to be completed by workers who reside in the area and is not expected to result in a significant increase in population.

Operation

Following the completion of construction activities, socioeconomic conditions are anticipated to exist as described in baseline conditions. No change in individual sewer rates is anticipated, as Buffalo Sewer plans to maintain rate stability for local users by securing grant funding and/or adjusting rates for external users to mitigate any cost impacts. Additionally, there is a potential opportunity as part of the overall QCCW program for the proposed action and other ongoing Buffalo Sewer projects to include workforce development opportunities. Therefore, there would be no impacts to socioeconomic conditions during operations.

3.3 Community Facilities and Services

3.3.1 Introduction and Methodology

This section examines the potential effects the proposed action would have on community facilities and service-oriented uses in and around the proposed action area. For the purpose of this analysis, a community facility is defined as a public or publicly funded facility, such as schools, healthcare facilities, faith-based institutions, fire stations, police stations, and libraries. Impacts on community facilities and services can be either direct or indirect. Direct effects would physically alter or displace a community facility. Indirect effects to community facilities and services can occur when a proposed action would lead to an incremental increase in residential population. The community facilities and services study area established for the proposed action includes a half-mile radius surrounding the project site, as seen in **Figure 3-2**.

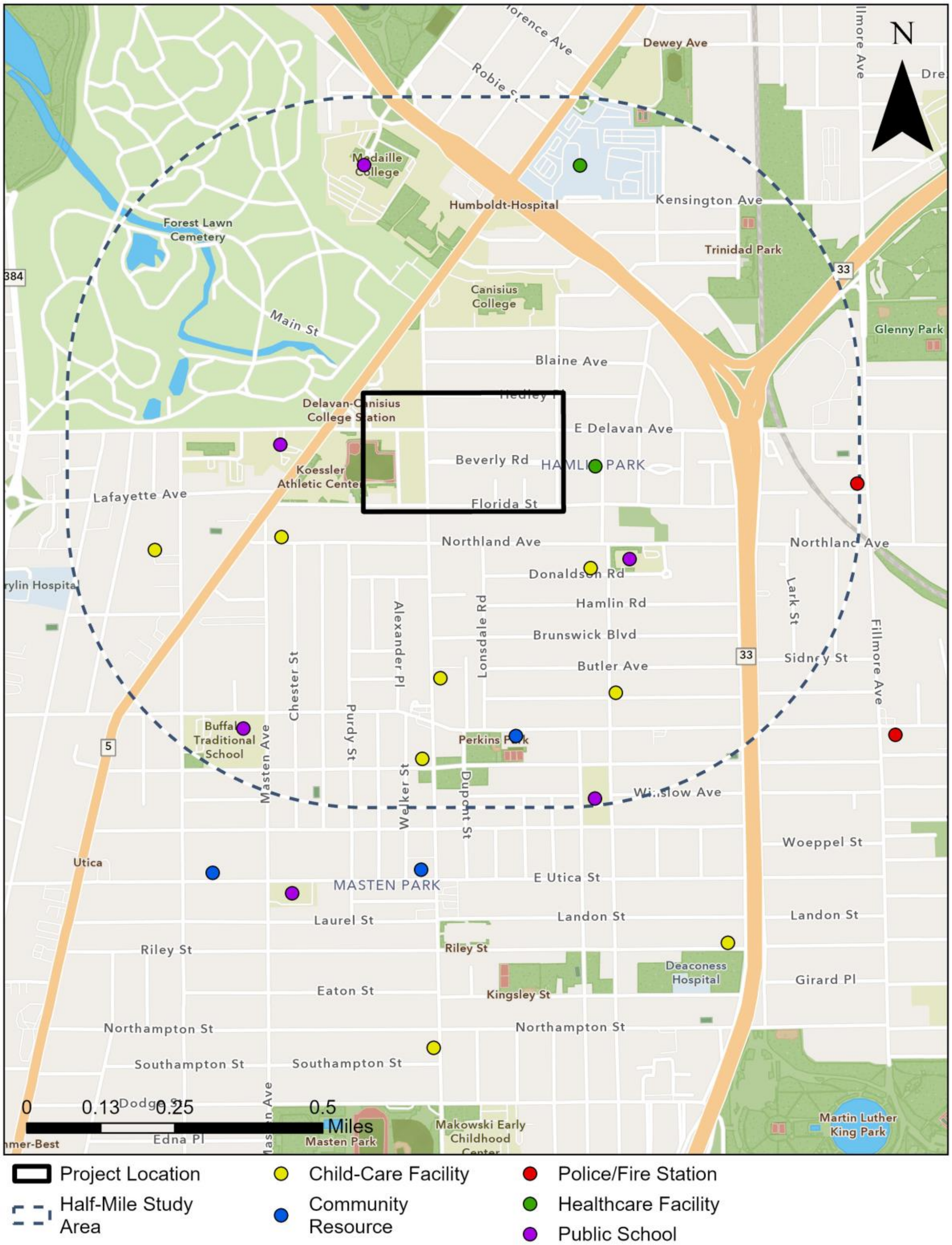


Figure 3-2: Community Facilities and Services Study Area

3.3.2 Baseline Conditions

Though there are no community facility and service uses within the project site, twenty-two community facility and service uses were identified within or slightly outside the study area. These facilities include public schools, healthcare facilities, child-care facilities, community resources, police stations, and fire stations, as listed in **Table 3-1**. Effects of the proposed action on community facilities and services were considered for those facilities located within the half-mile study area.

Table 3-1: Community Facility and Services within Half-Mile Study Area

Type	Name
Public School	Public School 74
	Buffalo School 17
	PS 53 Community School
	Buffalo Academy of Science Charter School
	Buffalo Academy for Visual and Performing Arts
	Leonardo DaVinci
Child-care Facility	Sweet Pea Family Daycare Inc
	Nanny's Nook Quality Daycare Center, Inc.
	Head Start Program of Erie
	ABC Learn and Play Daycare Buffalo NY
	CAO (Community Action Organization)
	CAO Head Start, Inc.
	Urban League of Buffalo
	Say YES Buffalo
Community Resources	Dorothy Collier Community Center; VIVE
	Merriweather Library
	Resource Council of WNY
Healthcare Facility	Sisters of Charity Hospital
	Humboldt House
	Healthcare: Community Services for Every1
Police/Fire Service	Buffalo Fire Station E33
	Buffalo PD C District

3.3.3 Future Without the Proposed Action (Alternative A)

Absent the proposed action, it is anticipated that current land use trends and general development patterns within the study area would continue. Such trends and patterns are characterized by the development of a mix of uses, including residential, mixed-use, retail/commercial, and parking facilities, as well as general alterations to existing uses. Utilization of community facilities and services would potentially be affected by current development trends. Therefore, it is assumed that baseline conditions would remain the same.

As identified in Section 3.1, “Land Use, Zoning, and Public Policy,” and further described in Section 5, “Cumulative Impacts,” minimal development proposals and public works improvements are planned within or adjacent to the project site in the time period over which the proposed action would be implemented. Within the vicinity of the East Delavan Sewer Improvements Project is a project currently under construction and would upgrade existing pipe sizing at SPP 229A. As previously noted, immediately north of the project site, Canisius has recently demolished a three-story parking garage structure. As no residential use is proposed at either location, neither of these proposed actions would lead to an incremental increase in residential population in the area that would place an increased demand on local community facilities and services.

However, absent the proposed action it is assumed that baseline community facilities conditions would remain the same.

3.3.4 Future With the Proposed Action (Alternatives B and C)

Construction

In both Alternative B and the Preferred Alternative (Alternative C), the proposed action would not result in physical changes to any existing community facilities in the study area during construction. It is anticipated that the extent of construction of the proposed action would be limited to the project site in either alternative. Because the proposed action would construct a 1.5 MG storage structure located well below grade, direct impacts or displacement that could preclude the use of community facilities in the study area would not occur.

Construction activities have the potential to impact access to any community facilities adjacent to the project site; however, construction activities would be temporary in nature and detours would be planned to maintain access to critical community services such as emergency and healthcare facilities. It is not anticipated that the proposed action would require the relocation of a large number of construction personnel to the area that would create a new demand for community facilities. It is anticipated construction would be completed by workers living in or near the City of Buffalo that would commute to the site each day. As discussed in Section 3.12, “Transportation,” temporary alternate traffic detours would be established during the construction period and access to community facilities would be maintained to the greatest extent practicable. Therefore, there would be no significant adverse impacts to community facilities and services associated with construction of the proposed action.

Operation

The infrastructure upgrades that comprise the proposed action would improve operations of SPP 333 within the larger Buffalo Sewer system, and all primary components of such upgrades would be located below grade during operation. Operation of the proposed action following construction is not anticipated to result in an increased residential population within the study area or otherwise generate new or additional demands to community facilities and services. Additionally, it would not replace or eliminate existing community facilities, structures, areas of historic importance, open space, or recreational resources. Therefore, it is anticipated that the operation of the proposed action would not have any adverse impacts on community facilities and service-oriented uses.

3.4 Open Space and Recreation

3.4.1 Introduction and Methodology

Open space and recreational resources are defined as publicly owned or privately owned land that is publicly accessible and available for leisure, play, or sport, or is set aside for the preservation of the natural environment. An open space and recreation assessment is conducted to determine whether a proposed action would result in a direct impact caused by the elimination or alteration of open space and/or indirect impact resulting from overburdening available open space or recreational resources. As shown in **Figure 3-3**, a half-mile study area was established around the project site to analyze any potential impacts from the proposed action on open space and recreational resources. The study area is based on the distance a person is assumed to be willing to walk to reach a neighborhood open space or recreational facility. This section evaluates the potential effects of the proposed action on open space and recreational resources within the study area.

3.4.2 Baseline Conditions

The study area comprises a mix of residential, educational, and open space uses, as well as portions of the roadway network surrounding the scope of the proposed action. Mapped open spaces that are most adjacent to the proposed action and within the study area include the Forest Lawn Cemetery and portions of Delaware Park to the north; Trinidad Park, Horace “Billy” Johnson Park, Hon. Horace Billy Johnson Playground, and Scajaquada Trail to the east; Perkin’s Park to the south; and a veteran’s monument with green space to the west, as shown in **Figure 3-3**. According to the American Community Survey 5-Year Estimates, the half-mile study area established for Alternative B comprises ten (10) census tracts with a population of approximately 10,481. The study area for Alternative C comprises seven census tracts with a population of approximately 8,458 (U.S. Census Bureau, 2022).

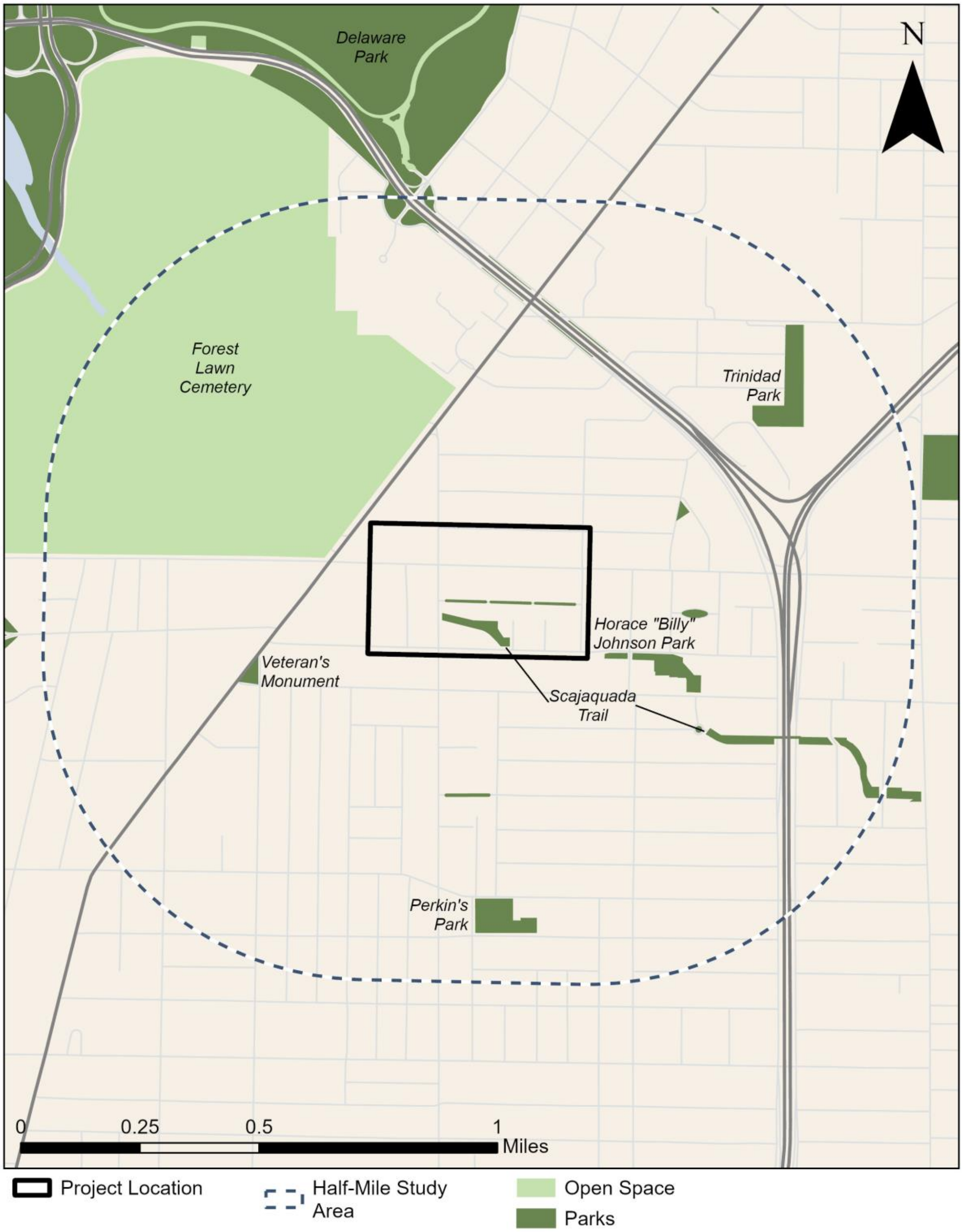


Figure 3-3: Open Space within Half-Mile Study Area

3.4.3 Future Without the Proposed Action (Alternative A)

In the Future Without the Proposed Action, no impacts to open space within the study area are anticipated. As the proposed action would not result in the physical loss of existing open space resources nor would it result in the overburdening of such resources, absent the proposed action, it is expected that current land use trends and general development patterns within the study area would continue. Such trends and patterns are characterized by the development of a mix of uses, including residential, mixed-use, retail/commercial, and parking facilities, as well as general alterations to existing uses. Absent the proposed action, the existing conditions of the project site would remain the same and there would be no water quality improvements to Scajaquada Creek. Under Alternative A, no reduction in CSO activations would occur from SPP 333 into the Creek, which daylights in Forest Lawn Cemetery and runs below the portion of Scajaquada Trail located within the open space study area. In the Future Without the Proposed Action condition, current recreational and open space uses within the study area are expected to continue, and therefore, it is assumed that baseline conditions would remain the same.

3.4.4 Future With the Proposed Action (Alternatives B and C)

Construction

Generally, the project site is surrounded by roadways, open space, residential areas, and educational facilities. Portions of the construction of the proposed action in either alternative would encroach upon adjacent property owned and operated by Canisius University. While the proposed action would not encroach upon any open space during either construction or operation, temporary increases in noise and vibration levels at adjacent open space areas may occur during weekday construction hours, as discussed in Section 3.13.1, “Noise” and Section 3.15, “Vibrations”. Construction of Alternative B is anticipated to take approximately five years, and construction of Alternative C is expected to take approximately four years. Both alternatives presented in the Future With the Proposed Action require drilling and blasting along roadways for the construction of infrastructure improvements.

Similarly, due to the activities associated with the construction of either Alternative B or the Preferred Alternative (Alternative C), temporary roadway closures are anticipated, and vehicular traffic detours would be necessary. As such, a temporary change in traffic at study area intersections generated by these roadway closures is anticipated, as discussed in Section 3.12, “Transportation”; however, these traffic changes would not alter access to or use of open space resources.

As described in the 2021 Buffalo Parks Master Plan, approximately 89% of the City’s population live within a 10-minute walk from a park, as is the case for residents within the half-mile study area (City of Buffalo & The Trust for Public Land, 2021). In both alternatives presented in the Future With the Proposed Action, pedestrian access to certain open space resources within the study area may be temporarily impacted. During construction, pedestrian traffic detours would be demarcated to facilitate consistent access to the surrounding roadway and open space networks as described in 3.12, “Transportation.”

Though there may be disruptions in accessing open space and recreational resources during the construction periods for either alternative, these impacts would be temporary in nature. It is therefore concluded that construction of the proposed action would not result in any significant adverse impacts to open space and recreational resources in the study area.

Operation

Following construction, it is anticipated that any temporary roadway closures would be eliminated, returning pedestrian and vehicular traffic activities to the baseline condition. As both design Alternative B and design Alternative C situate the new 1.5 MG offline CSO storage structure well below grade, Any noise associated with operation of the structure would not impact open space and recreation resources within the study area. Upon completion of construction, implementation of the proposed action would not result in any loss of, or adverse impact to, open space and recreational resources within the half-mile study area. Therefore, there are no anticipated significant adverse impacts to open space and recreation resources resulting from the operation of the proposed action.

3.5 Geology and Groundwater

3.5.1 Introduction and Methodology

This section identifies the existing bedrock, soil, and groundwater conditions in the vicinity of the proposed action. An assessment of geology is needed to identify conditions that would prevent construction from its intended plan and ensure the conditions are suitable for project implementation. The analyses provided in each subsection are based on geotechnical studies conducted from 2022 through 2024. The geotechnical report for the proposed action was published in May 2024 (McMahon and Mann, 2024).

3.5.2 Baseline Conditions

Regional Bedrock and Geology

The *Geologic Map of New York – Niagara Sheet* and the *Geology of Erie County* identify that the bedrock stratigraphy in the region consists of flat-lying sedimentary rocks (Rickard and Fisher, 1970; Buehler and Tesmer, 1963). **Figure 3-4** illustrates the rock formations in and around the project location. These include the Onondaga, Akron, Bertie, and Camillus Formations.

NOTE:
1. Base map image adapted from "Geologic Map of Erie County, New York Bedrock Geology" by Buehler & Tesmer dated 1963.

2000' 0 1000' 2000'
APPROXIMATE SCALE: 1" = 2000'

Figure 3-4: Soil Type Locations Across the Project Location

The bedrock in the project location is composed of Upper Silurian to Middle Devonian-age sedimentary rock. In the order from closest to the topsoil to deepest, the bedrock formations are as follows: Onondaga Limestone; Akron Dolostone; Bertie Formation, consisting of the four following members: Williamsville Member, Scajaquada Member, Falkirk Member, Oatka Member; and Camillus Shale.

The Onondaga, Akron, and Bertie Formations are generally moderately hard rock consisting of limestone, dolostone, and dolomitic shale. These hard rock layers are composed of sedimentary rock and are underlain by the softer Camillus Shale. Sedimentary rocks are formed by the layered deposition of sediment which is eventually lithified to form bedrock. The layered deposition causes numerous bedding planes to occur within the rock. Some of the bedding planes are tight and intact, while other bedding planes have open gaps, often serving as conduits for groundwater flow. The depth to bedrock within the project location ranges from approximately six (6) feet below grade to sixteen (16) feet below grade.

Soil Characteristics

The subsurface conditions in the project location consist of a thin layer of soil (mostly fill) over Onondaga Limestone. Soil depths were found to be thickest on Spillman Place, with depth-to-rock heights of 16.1 feet and 12.7 feet, respectively. Soil depths thin towards East Delavan Avenue, generally ranging between five (5) feet and ten (10) feet thick in the Canisius parking lot, and thinner than five (5) feet thick to the east of Jefferson Avenue in most locations. Fill was found to overlie bedrock in most locations. In a few locations, fill overlies a four (4)- to five (5)-foot-thick deposit of silty-clay lacustrine sediments, which overlies rock, or overlies intermixed lacustrine sediments and outwash sediments, which overlies glacial till and then rock.

The fill in the project location is either clayey silt or sand, and it contains cinders, brick, slag, and concrete. The fill depth is greatest in the Canisius parking lot area where it consists of mixtures of sand, silt, and clay. Considering the multiple-use history of this area, the fill likely contains large pieces of concrete or other debris unsuitable for construction. No signs of soil contamination were observed as part of the subsurface investigation, but it is possible that deleterious materials exist in the fill. Petroleum or other industrial contamination may exist in the areas where facilities existed in the past.

Groundwater and Hydraulics

Information collected during the recent geotechnical study shows that the groundwater in the project location has a downward gradient. Groundwater levels in the upper rock were measured to be approximately fifteen (15) feet to twenty (20) feet higher than wells in lower bedrock zones. Field hydraulic conductivity testing identified a lower hydraulic conductivity zone in the subsurface known as the confining layer. This zone is responsible for the difference in water levels between the upper and lower bedrock.

Groundwater in the lower bedrock was found to contain more sulfates and sulfides than groundwater collected from the upper wells. This is a result of the mineralogy of the lower portion of the Bertie Formation which contains pyrite (iron sulfide) and the underlying Camillus Formation which contains gypsum (calcium sulfate). Camillus Formation material was found only in one boring taken as part of the study; the other borings did not extend into the Camillus.

Based on this investigation, it is anticipated that excavation that could extend into the lower bedrock zone within the project location would be more likely to encounter higher rates of groundwater inflow and higher levels of hydrogen sulfide than excavation at shallower depths, as further described below.

3.5.3 Future Without the Proposed Action (Alternative A)

Absent the proposed action, no impacts to geology and groundwater conditions are anticipated. Baseline bedrock, soil, and groundwater properties and conditions would remain the same.

3.5.4 Future With the Proposed Action (Alternatives B and C)

Construction

In the Future With the Proposed Action, the total site clearing and excavation would be limited to only what is necessary for either the Deep Storage Tank (Alternative C) or the Storage Tunnel (Alternative B) construction. Pre-excavation activities would include adding designated material staging and temporary stockpile areas, erosion and sediment controls, and pre-excavation grouting for groundwater control to limit the potential for sedimentation or groundwater treatment and discharge impacts during construction.

The removal of excavated bedrock and the addition of imported fill would be required for either alternative. Bedrock would be hauled offsite and used for gravel. Alternative B has a larger footprint due to the horizontal stretch of the tunnel, requiring a greater movement of excavated materials as compared to Alternative C.

Alternative B requires approximately 26,000 cy of excavation, 4,000 cy of imported fill, and 18,500 cy of exported fill. Considering a swell factor for the soil, approximately 28,000 cy of total hauling is anticipated.[1] Alternative C requires 33,500 cy of excavation, 8,500 cy of imported fill, and 24,000 cy of exported fill. Considering a swell factor for the soil, approximately 40,000 cy of total hauling is anticipated.

There is a potential for hydrogen sulfide to be encountered in pumped groundwater during construction of the CSO storage facility. However, the potential for hydrogen sulfide to be present is primarily anticipated to be associated with Alternative B. As stated above, hydrogen sulfide is associated with the Camillus Formation layer and that layer was found to be located only in the excavation area associated with Alternative B. For either alternative, monitoring points would be in place across the project site to assess air quality during construction, including detection of hydrogen sulfide. Due to the confined tunnel nature of Alternative B, there would be an increased risk to construction workers for encountering hydrogen sulfide. The construction of Alternative C, the Deep Storage Tank, would reduce the potential hydrogen sulfide risk to construction workers as compared to Alternative B as crew members would work in an excavated space open to the atmosphere. Construction of the Preferred Alternative therefore reduces the potential for hydrogen sulfide contamination to cause harm to construction workers. Further, to ensure safety during blasting and excavation, an established response protocol would be in place that addresses the presence of hydrogen sulfide should it be encountered. The plan would guide parties through appropriately managing the situation to minimize associated risks.

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[1] The swell factor for soils refers to the increase in volume that occurs when soil is excavated from its natural state. This happens because the soil is removed from the ground it expands as air pockets and voids are created and becomes less dense, resulting in a larger volume.

Provisions would be made during the construction phase to have excavated water and sediments pumped, containerized, and disposed of in accordance with applicable regulations and guidelines, including hazardous waste management policies and procedures, if applicable. All excavated materials and water from the project site would meet all regulatory requirements including the requirements of 6 NYCRR, Part 360 for off-site disposal facilities and treated accordingly before discharge. All analytical results developed during the project development stage would be used to facilitate the selection of a suitable disposal facility. If excavated materials require additional characterization depending on the acceptance requirements of the selected disposal facility permit, such additional characterization would be conducted at that time. Buffalo Sewer would typically coordinate this with the industrial waste department to identify a potential temporary holding location and make NYSDEC aware. Any dewatering effluent resulting from dewatering activities would be treated onsite before being released to Buffalo Sewer's collection system for treatment at Bird Island WWTF. During periods where dewatering activities and wet weather events are overlapping, Buffalo Sewer would work with NYSDEC to determine how best to handle dewatering activities and manage the effluent to reduce the potential for exacerbating CSO discharges in the area, if possible.

As part of the project, solid waste or miscellaneous debris encountered during the construction process would be isolated, characterized, recycled, or salvaged where possible. All remaining materials, waste, or debris would be excavated, removed, and transported offsite for proper disposal. Following clearing, grubbing, and any other disturbance to the development site, the proposed project would grade or stabilize cleared slopes, followed by additional seeding and landscaping activities.

With monitoring and response plans in place should hydrogen sulfide be encountered, and the planned proper storage, handling, treatment and disposal of excavated materials, waste, and groundwater during construction, significant adverse impacts to geology and groundwater are not anticipated in association with construction of the proposed action.

Operation

No significant adverse impacts to the soils, topography, or bedrock at the project location are anticipated to result from the implementation of the proposed action based on the geotechnical and groundwater condition in the area. Once operational, additional impacts to geology, soils or groundwater at the project sites would not be necessary. Therefore, there would be no significant adverse impacts to geology or groundwater associated with operation of the proposed action.

3.6 Archaeological, Historic, and Cultural Resources

3.6.1 Introduction and Methodology

This section evaluates existing archaeological, historic, and cultural resources within the quarter-mile study area. The assessment is based on consultation with the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP). To facilitate the consultation with OPRHP, a desktop analysis was conducted on the New York State Historic Preservation Office's (SHPO) online Geographic Information Systems tool known as the Cultural Resources Information System (CRIS) to identify the potential for known historic and cultural resources to within or adjacent to the project location.

3.6.2 Baseline Conditions

According to the information available on CRIS, the Hamlin Park Historic District (NR Number: 13NR06421) is located east of Jefferson Avenue. Portions of the project location on the north side of Florida Street are part of the Berrick & Sons Demonstration Homes Building District (NR Number: 20NR00117), which is part of the National Register of Historic Places (NRHP). There are two buildings within the project vicinity that are eligible for listing on the NRHP. One building is located at 79 East Delavan Avenue (USN Number: 02940.004062) and is historically known as the New York Telephone Company Warehouse. This building is eligible for inclusion in the NRHP since it embodies the history of technology and industry within the City of Buffalo. The other building is located on 131 Florida Street (USN Number: 02940.004012) and is eligible for inclusion in the NRHP as it embodies the distinctive characteristics of a type, period or method of construction; or represents the work of a master; or possesses high artistic values; or represents a significant and distinguishable entity whose components may lack individual distinction.

3.6.3 Future Without the Proposed Action (Alternative A)

Absent the proposed action, it is anticipated that there would be no impacts to archaeological, historical, and cultural resources in the study area.

3.6.4 Future With the Proposed Action (Alternatives B and C)

Construction

It is anticipated that there would be no potential impacts to archaeological resources during construction of the proposed action since excavation would be localized to the project site of each alternative and would not occur within a historic or cultural resource area as examined in the desktop analysis. Further, a request for cultural resources information for the proposed action was sent to OPRHP on February 10, 2025, describing the project, project location, and desktop analysis findings. A response was received from OPRHP on March 10, 2025, confirming that no properties including archaeological and/or historic resources, listed in or eligible for the New York State and National Registers of Historic Places, would be impacted by the proposed action. Therefore, significant adverse impacts to historic or cultural resources associated with construction of the proposed action are not anticipated.

Operation

Once operational, there would be no potential for the proposed action to impact historic or archeological resources since operation would not involve ground disturbance, and all access and maintenance activities would be contained to the above-grade structures associated with Alternatives B or C. Therefore, significant adverse impacts to historic or cultural resources associated with operation of the proposed action are not anticipated.

3.7 Visual Resources and Community Character

3.7.1 Introduction and Methodology

This section analyzes the potential impacts of the proposed action on the visual and community character within the half-mile study area. Visual and community character includes the distinguishing physical and social quality of a region, town, city, village, or other jurisdiction. This character is shaped by natural, cultural, societal, and economic forces over time. It can include the aesthetics provided by the built environment and its impact on the quality of life in the area. It may also refer to the collective impression a given region makes on residents and visitors.

3.7.2 Baseline Conditions

As described in Section 2, "Project Description," the project is located within the Masten Park neighborhood in the City of Buffalo. The project study area extends approximately a half-mile around East Delavan Avenue between its intersection with Main Street to the west and Jefferson Avenue to the east (**Figure 1-2**). As previously stated, the project location includes portions of Canisius on its northern and southern sides and is situated in the East Delavan Avenue, Jefferson Avenue, Spillman Place, and Florida Street rights-of-way (**Figure 3-5**), all of which have been improved as vehicular roadways with sidewalks. Thus, the project location is primarily hardscaped with vehicular circulation areas (parking lots, public rights-of-way) interspersed with landscaped medians, planting strips, and street trees.

The topography of the project location is relatively flat, with very gradual sloping from the east and southeast edges at approximately 630 feet above sea level to approximately 620 feet above sea level at the west and northwest edge, approaching Scajaquada Creek (**Figure 3-6)**. Therefore, clear views of Forest Lawn Cemetery are provided looking westward along East Delavan Avenue from the project site (**Figure 3-5).** Eastward, views of tree-lined residential blocks are provided, described further below.

As described in Section 3.1, "Land Use, Zoning, and Public Policy," the areas surrounding the project location beyond Canisius on its eastern and southern sides are primarily characterized by residential uses comprising of low-rise, one- and two-family buildings and multi-family walk-up buildings, with some neighborhood commercial uses such as a local food stores and eating and drinking establishments. A majority of the residential uses in the areas surrounding the project location are contributing buildings to the Hamlin Park Historic District, a national historic district designated by the NRHP in 2013 (NR Number: 13NR06421) and administered by the National Park Service (NPS) as described in Section 3.6, "Archaeological, Historic, and Cultural Resources."

Many of the contributing buildings include architectural styles and features popular between the late 19^{th} and mid-20^{th} centuries, such as bungalow housing and unique Queen Ann-style manor homes (**Figure 3-7**). Upon reviewing the OPRHP's CRIS, two structures listed separately on the NRHP identified in the historic district are the Robert T. Coles House and Studio and the Stone Farmhouse.

Figure 3-5: Photo of East Delavan Avenue

Figure 3-6: Photo of Scajaquada Creek

Figure 3-7: Photo of Florida Street

3.7.3 Future Without the Proposed Action (Alternative A)

In the Future Without the Proposed Action condition, the sewer infrastructure improvements proposed at SP 333 would not be implemented, and the frequency of CSO activations would continue to increase as development continues. During heavy rainfall events, water flows would continue to overwhelm the existing infrastructure, negatively impacting the quality of important visual resources in the area surrounding the proposed action, such as receiving waterbodies downstream (**Figure 3-8**). Absent the proposed action, existing visual and community character would remain and continue to evolve as current land use trends and general development patterns continue. Therefore, it is assumed that in the Future Without the Proposed Action, the area would be the same as those under baseline conditions.

Figure 3-8: Photo of Existing Outfall 053

3.7.4 Future With the Proposed Action (Alternatives B and C)

Construction

Because the physical structures associated with the proposed action in either design alternative would be primarily below-grade, with the exception of a few accessory structures that would be above ground (e.g., mechanical and HVAC equipment), impacts to community character would be minimal. Temporary disturbances to the project site and surrounding area would occur only during construction.

Construction of Alternative B is anticipated to take approximately five years and would involve temporary disturbances to Canisius property. Pedestrian and vehicular access would be temporarily altered and noticeable at business and residences along East Delavan Avenue and in the vicinity of Spillman Place and Florida Street.

It is anticipated that construction of Alternative C would take approximately four years to complete and would involve temporary disturbances to Canisius property. Pedestrian and vehicular access would be temporarily altered and noticeable at businesses and residences in the vicinity of Spillman Place and Florida Street. In either alternative, views of and toward the project site during the temporary construction period would be similar to those of a typical construction project and would include excavators, trucks and other construction equipment, construction fencing and workers, and materials deliveries. Therefore, construction of the proposed action is not anticipated to result in significant adverse impacts to visual resources and community character.

Operation

Following completion of construction activities, visual resources and community character are generally anticipated to return to baseline conditions. As seen in **Figure 3-9**, the proposed action would include the above-grade structure necessary to support operation of the CSO storage facility and landscaping activities, including street tree plantings and additional groundcover, to be selected by community members through community polling. Therefore, it is not anticipated that the operation of the proposed action would result in significant adverse impacts to visual resources and community character.

Figure 3-9: Rendering of Future With Proposed Action – Aerial View (Alternative C)

3.8 Natural Resources

3.8.1 Introduction and Methodology

This section evaluates natural resources within the quarter-mile study area, which can include but are not limited to vegetation, plants, wildlife, wetlands, and species of special concern (e.g., threatened or endangered). Natural resources of concern within the vicinity of the proposed action include potential endangered species, quality, and health of natural bodies of water (such as the Scajaquada Creek), and street trees.

Consultations with the U.S. Fish and Wildlife Service (USFWS) and New York Natural Heritage Program (NYNHP) were conducted to identify any species of special concern that are located in the vicinity of the project location and would potentially be impacted during construction and implementation of the proposed action.

Community outreach was also conducted by Clementine Gold Group which led to the development of the *East Delavan Sewer Project Preliminary Community Sentiment Report* (Clementine Gold Group, 2024). This report contains a community survey evaluating proposed tree planting as part of the community betterment initiative associated with the proposed action.

3.8.2 Baseline Conditions

Endangered Species and Critical Habitats

An informal consultation with USFWS was conducted using their Information for Planning and Consultation (IPaC) system to generate a list of threatened and endangered species, species of special concern, and the presence of critical habitat under the USFWS jurisdiction that are known or expected to occur on or near the proposed action. An IPaC report was generated that found four endangered species that may potentially be affected by project activities: the Northern Long-eared Bat, Tricolored Bat, Salamander Mussel, and Monarch Butterfly (**Table 3-2**). However, the study area does not contain any critical habitats for these species. In addition, desktop analyses conducted to determine the potential for New York State-listed species did not indicate the potential for any critical habitat areas nor fall within an area displayed in the Rare Plants and Rare Animals layer or in the Significant Natural Communities layer within NYNHP's Environmental Resource Mapper.

Table 3-2: Potential Endangered Species

Species	Protected Status
Northern Long-eared Bat	Endangered
Tricolored Bat	Endangered
Salamander Mussel	Proposed Endangered
Monarch Butterfly	Candidate

Scajaquada Creek

Scajaquada Creek, a 13-mile stream within the 29-square-mile Niagara watershed (subwatershed to the Niagara River/Lake Erie Watershed), is located within the quarter-mile study area and is the primary waterbody of interest for the proposed action. Scajaquada Creek daylights in Forest Lawn Cemetery and flows through Buffalo's Olmstead Park System in the heart of the City. The lower portion of Scajaquada Creek is a part of the Niagara River "Area of Concern" and a major tributary in the Great Lakes – the largest freshwater ecosystem in the world. The Buffalo Niagara Waterkeeper states that Scajaquada Creek hosts a resilient ecosystem and serves as a backbone to many valuable public green spaces, despite the creek's impairments due to CSO discharges (Buffalo Niagara Waterkeeper, n.d.).

Trees

A tree inventory was conducted on Florida Street and Main Street in 2024. Hedge maple *(Acer campestre)* and Norway maple *(Acer platanoides)* were the most prominent species inventoried. A majority of the trees inventoried were listed in fair condition.

3.8.3 Future Without the Proposed Action (Alternative A)

In the Future Without the Proposed Action, there would be no reduction in CSO discharges from SPP 333 into Scajaquada Creek, and the frequency of CSO discharges would continue to increase as development continues. Heavy rainfall events would continue to overwhelm the existing infrastructure and impair Scajaquada Creek's ecosystem and overall health.

Absent the proposed action, any proposed street tree improvements would not occur. In addition, other activities proposed by the *East Delavan Sewer Project Preliminary Community Sentiment Report*, such as improvements to the water service lines that would have been potentially disrupted natural resources during construction, would not occur.

3.8.4 Future With the Proposed Action (Alternatives B and C)

Construction

To facilitate construction of the proposed action, six trees are currently recommended for removal under either Alternatives B or C due to their condition and conflicts with the proposed action. To avoid impacting summer roosting habitats for the protected bat species, tree clearing would be restricted to the window provided by the USFWS 4(d) rule and would be limited to between October 1 and March 31. Additional elements of the *Preliminary Community Sentiment Report* indicate the project would include developing a pest control plan and making improvements to any lead service lines that could be potentially disturbed during construction. These replacements could cause temporary impacts to natural resources such as grass and trees. However, as described below, any temporarily disturbed natural resources would be restored to baseline conditions as part of the project; therefore, significant impacts to natural resources as a result of construction are not anticipated.

Operation

Based on results of the *Preliminary Community Sentiment Report*, it is anticipated that any disturbed trees would be replaced with tree species such as the Eastern Redbud *(Cercis canadensis)*, Spire Cherry Tree *(Prunus x hillieri)*, and Japanese Tree Lilac *(Syringa reticulata)*.

In the Future With the Proposed Action, the frequency of CSO discharges into the Scajaquada Creek would be reduced as a result of the upgrades to Buffalo Sewer's collection system. Implementation of the proposed action, and further, projects within Buffalo Sewer's LTCP, would ultimately support the overall water quality health and environmental conditions of receiving and downstream waterbodies like the Scajaquada Creek. Additionally, Buffalo Sewer is considering incorporating ecological enhancements into the proposed action, such as including wildflower and/or meadow plantings at the location of the proposed offline CSO storage facility to provide habitat preferred by the Monarch Butterfly *(Danaus plexippus)*. Therefore, operation of the proposed action would not result in significant adverse impacts to natural resources and would provide both a water quality and ecosystem benefit to the Scajaquada Creek.

3.9 Hazardous Materials

3.9.1 Introduction and Methodology

This section assesses the potential for subsurface hazardous material contamination to be present within the quarter-mile study area and evaluates potential hazardous materials related exposure that may pose health and safety concerns through construction and operation of the proposed action.

A *Hazardous Waste/Contaminated Materials Technical Memorandum* was prepared for the proposed action in January 2025 by Lu Engineers. This assessment included a site inspection and review of historic past and current land use research, published databases, and government records.

3.9.2 Baseline Conditions

As discussed in Section 3.1, "Land Use, Zoning, and Public Policy," land uses with the project location are predominantly residential and commercial. As is typical of development within the City of Buffalo, historic fill was likely placed within areas directly adjacent to or within the project location. The site investigation conducted on October 18, 2024, contained the following potential environmental concerns:

- discolored soil
- stressed or dead vegetation
- air emissions or odors
- seeps or discolored springs
- aboveground storage tanks (ASTs)
- lagoons or impoundments
- evidence of previous fires
- spills, leaks, leachate, or discolored water
- oil sheens on water
- fill vents or pipes/underground tanks
- hills, mounds, or depressions
- sumps, drums, ponds, or basins
- landfill or dump sites
- dumpsters/bulk wastes
- exhaust/vent stacks
- railroad tracks
- drainage ditches
- monitoring wells
- transformers or electrical equipment
- pipelines or pipes
- berms or dikes
- posted signs
- sewers or manholes
- floor drains
- stored hazardous materials

Review of historic past and current land use research, published databases, and government records found nine properties that may include environmental impairment as seen in **Figure 3-10** and summarized in **Table 3-3.**

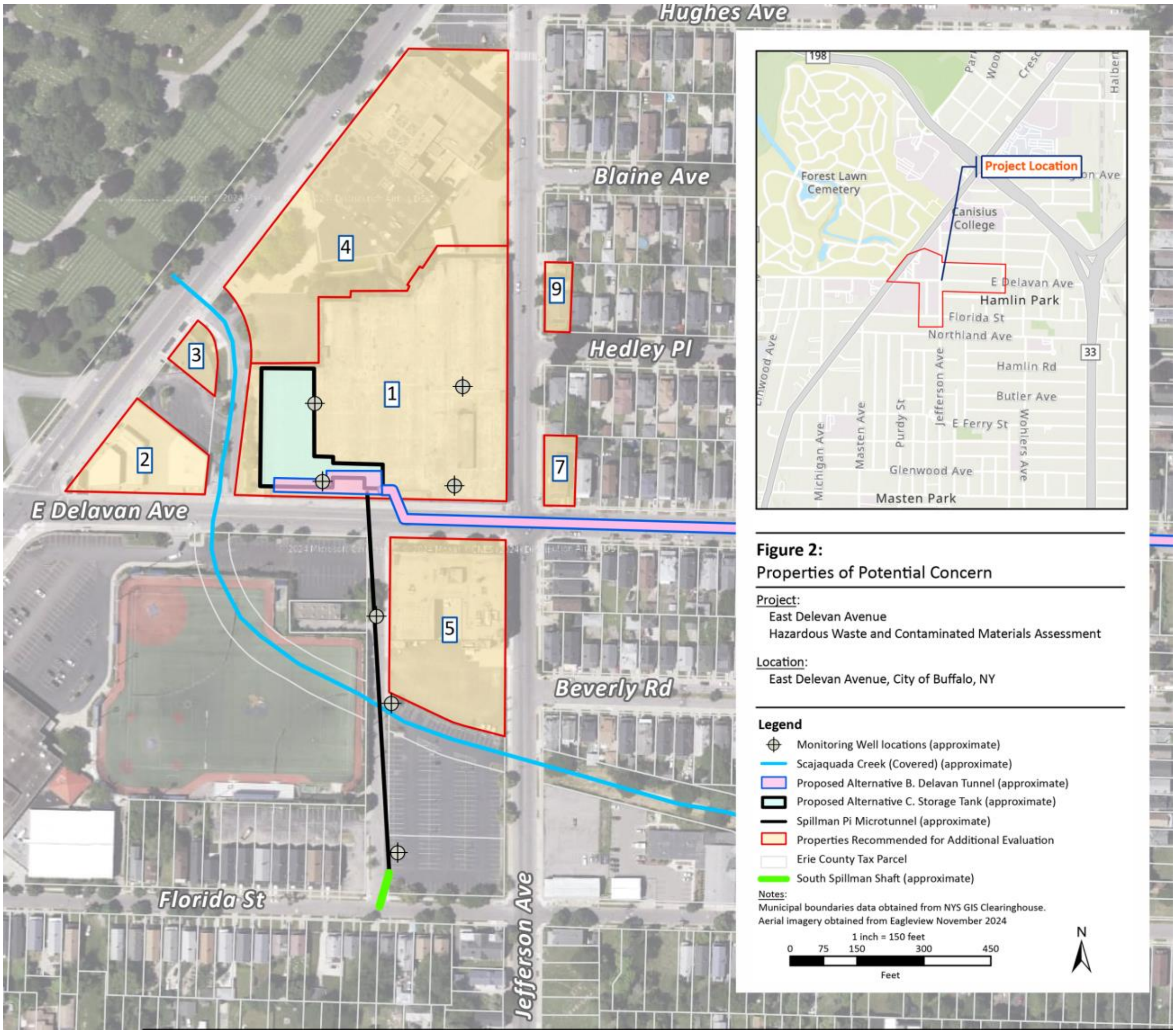


Figure 3-10: Location of Properties of Potential Concern for Contamination

Table 3-3: Properties of Potential Concern for Contamination

Property	Address	Summary of Potential Contamination
1	46 East Delavan Avenue	Based on the former use of the western portion of the property as a dry-cleaning facility, the presence of urban fill, potential orphan tanks, residual petroleum impacted soil and/or groundwater, and potential residual chlorinated solvents, and/or other environmental impairment may exist within and in the vicinity of 46 East Delavan Avenue
2	1853 Main Street	Based on the former use of the property as a gasoline station from approximately the mid-1930s to the mid-1970s, potential orphan tanks, potential petroleum impacted soil and/or groundwater, urban fill and/or other environmental impairment may exist in soil and/or groundwater within and in the vicinity of 1853 Main Street.
3	1877 Main Street	Based on the former use of the property as an auto repair facility in the 1930s and the fact that it was redeveloped in the late 1940s, it is likely that tanks or hydraulic lifts associated with the former auto repair facility would have been removed. However, residual petroleum impacted soil and/or groundwater, urban fill and/or other environmental impairment may exist in soil and/or groundwater within and in the vicinity of 1877 Main Street.
4	1901 Main Street	Based on the former use of the property as an auto repair facility in the 1930s, and the fact that this area was redeveloped in the 1950s, demolished and redeveloped in the 1980s, it is likely that the tanks identified on the 1935 Sanborn Map were removed. However, possible residual petroleum impacted oil and/or groundwater, urban fill and/or other environmental impairment may exist in soil and/or groundwater within and in the vicinity of 1901 Main Street.
5	63 East Delavan Avenue	Based on the former presence of gasoline tanks on the northern portion of the property, orphan tanks, residual petroleum impacted soil and/or groundwater, urban fill and/or other environmental impairment may exist in soil and/or groundwater within and in the vicinity of 63 East Delavan Street.
6	208 East Delavan Avenue	Based on former use of the property, chlorinated solvents and/or other environmental impairment may exist in soil and/or groundwater within the vicinity of 208 East Delavan Avenue.
7	92 East Delavan Avenue	Based on historical use of the property as a funeral home, environmental impairment may exist in soil and/or groundwater within and in the vicinity of 92 East Delavan Avenue.
8	168 East Delavan	Based on historical use of the property as a funeral home, environmental impairment may exist in soil and/or groundwater within and in the vicinity of 168 East Delavan Avenue.
9	2 Hedley Place	Based on historical use of the property as a funeral home, environmental impairment may exist in soil and/or groundwater within and in the vicinity of 2 Hedley Place.

3.9.3 Future Without the Proposed Action (Alternative A)

Absent the proposed action, the project sites would remain unchanged, and no hazardous material impacts associated with operation of Buffalo Sewer's infrastructure in the project location would be anticipated.

3.9.4 Future With the Proposed Action (Alternatives B and C)

Construction

Since the proposed action would include permanent land transfer, a Phase I Environmental Site Assessment (ESA) and a Phase II Detailed Site Investigation (DSI) would be completed for the Site #1 shown in **Figure 3-10** prior to construction. A Phase I ESA would also be conducted for the property that would be acquired adjacent to Spillman Place and, depending on the findings of that ESA, a Phase II DSI would be conducted, if warranted. Excavation and soil disturbance activities would increase the potential for exposure to materials present within the project location that could require special handling and/or other measures to minimize exposure to individuals and the environment and prevent offsite impacts stemming from the disturbance of chemical constituents or hazardous materials during construction. Sampling and analysis of groundwater in existing wells within the project site, including potential pollutants that may be associated with past use of properties within the project site will be considered based on the Phase I ESA and Phase II DSI findings for each portion of the project site.

Prior to any site excavation, additional testing (i.e., soil borings as part of a Phase II DSI) would be conducted within the project site to further characterize subsurface conditions. Additionally, the Contractor would be required to prepare a Soil Excavation, Reuse, Transport and Disposal Plan outlining the soil management plan procedures to be implemented during construction. No site grading, excavation, or reconstruction would occur until a soil management plan outlining the proper handling of excavated soils has been approved by Buffalo Sewer. Soil disturbance or disposal would adhere to construction specifications and all applicable federal, state, and local laws and regulations. A project-specific Soil and Groundwater Management Plan would also be prepared to outline proper procedures addressing health and safety concerns, ensuring compliance with applicable regulations for soil, groundwater, and subsurface conditions.

The Contractor would also be required to prepare a comprehensive construction Health and Safety Plan (HASP) to be implemented prior to commencing construction that would include a description of measures necessary to protect the health and safety of on-site personnel during construction. The plan would include a discussion of soil handling, disposal, dust suppression, air monitoring, covering of stockpiles, and chemical testing of backfill brought from off site, at a minimum. In addition, all health and safety protocols contained within the contract specifications would be followed.

Based on the alignment of the proposed Storage Tunnel, Alternative B would involve construction activities in the vicinity of more properties with potential concern for contamination included in **Table 3-3** as compared to construction of the Deep Storage Tank (Alternative C). However, with the implementation of the measures discussed above, the proposed action would not be expected to result in significant adverse impacts related to the presence of hazardous materials that may be encountered during construction for either alternative presented in the Future With The Proposed Action analysis. All excavated materials would be hauled away for off-site disposal or allowable reuse and suitable fill materials would be delivered to the project site as needed. Excavated material would be properly disposed of and/or recycled in accordance with all applicable federal, state, and local regulations at an off-site regulated facility, as needed.

Operation

Following proposed construction activities, any construction-related disturbed areas would be restored to existing conditions or enhanced as part of the project, thus reducing the potential for exposure to hazardous materials in disturbed areas in the future. Therefore, it is not anticipated that the operation of the proposed action would result in significant adverse impacts associated with hazardous materials.

3.10 Water and Sewer Infrastructure

3.10.1 Introduction and Methodology

This section assesses the potential effects of the proposed action on existing and planned water and sewer infrastructure, including whether the proposed action would create new or expanded demand for water, generate sanitary or industrial wastewater, and/or result in stormwater discharges.

As discussed in Section 2, **"**Project Description," the proposed action would introduce a 1.5 MG CSO storage facility to Buffalo Sewer's collection system and include associated sewer infrastructure upgrades and system rerouting necessary to reduce the volume of CSOs entering Scajaquada Creek. Therefore, this section includes an assessment of the proposed CSO facilities and associated new or modified infrastructure components, including new or modified sewer pipes, storage tank, drop shafts, and building.

3.10.2 Baseline Conditions

Buffalo Sewer owns, operates, and maintains the combined sewage collection system within the City. The combined sewage collection system conveys sanitary sewage and stormwater from parts of the Towns of Alden, Cheektowaga, Elma, Lancaster, Tonawanda, and West Seneca; the Villages of Depew, Lancaster, and Sloan; and Erie County Sewer District Nos. 1 and 4 to Buffalo Sewer's Bird Island WWTF. Wastewater is treated at the WWTF before it is discharged to the Niagara River as effluent via three SPDES-permitted outfalls depending on the conditions under which water is flowing to the WWTF. One outfall (002) operates continuously, during dry and wet weather conditions. It is the only outfall of the three that discharges fully treated effluent under all flow conditions. During a wet weather event, if the capacity of Outfall 002 is exceeded, Buffalo Sewer can use one or two of the additional permitted outfalls to release effluent. This includes Outfall 001 which is capable of releasing partially treated effluent and Outfall 01A that releases partially treated or untreated effluent. In addition, during certain wet weather events – when the capacity of the sewer network upstream of the WWTF is exceeded – untreated combined sewage is diverted to receiving waterbodies in accordance with Buffalo Sewer's SPDES permit. Buffalo Sewer is required to maximize the use of its collection system for storage. The WWTF is permitted for an average daily flow of 180 million gallons per day (MGD) and must maintain a minimum of 450 MGD through the plant headworks and a minimum of 300 MGD through its secondary treatment system during wet weather. Upgrades to the facility are expected to increase overall capacity through the headworks to 560 MGD and 400 MGD for secondary treatment during wet weather flow.

The City's overall combined sewer system is separated into networks of drainage areas, each with interconnected pipes that consolidate and transport combined sewer flow to larger sewers that bring the wastewater to the WWTF for treatment. Within the project location, several combined sewers convey flow to the larger sewer – namely, the Scajaquada Tunnel – a 96-inch sewer, which directs flow generally from the southwest to northwest. Combined sewage overflows to the Scajaquada Drain Outfall at overflow weir structures SPP 333 and SPP 229A, in the vicinity of the project location. Combined sewer overflow events from SPP 333 and 229A would be controlled as a result of this project. An overall site map is included in **Figure 1-2**.

During dry weather conditions, sewage is directed to the Scajaquada Tunnel, as shown in **Figure 3-11**, and then is treated at the WWTF before it is discharged to the Niagara River.

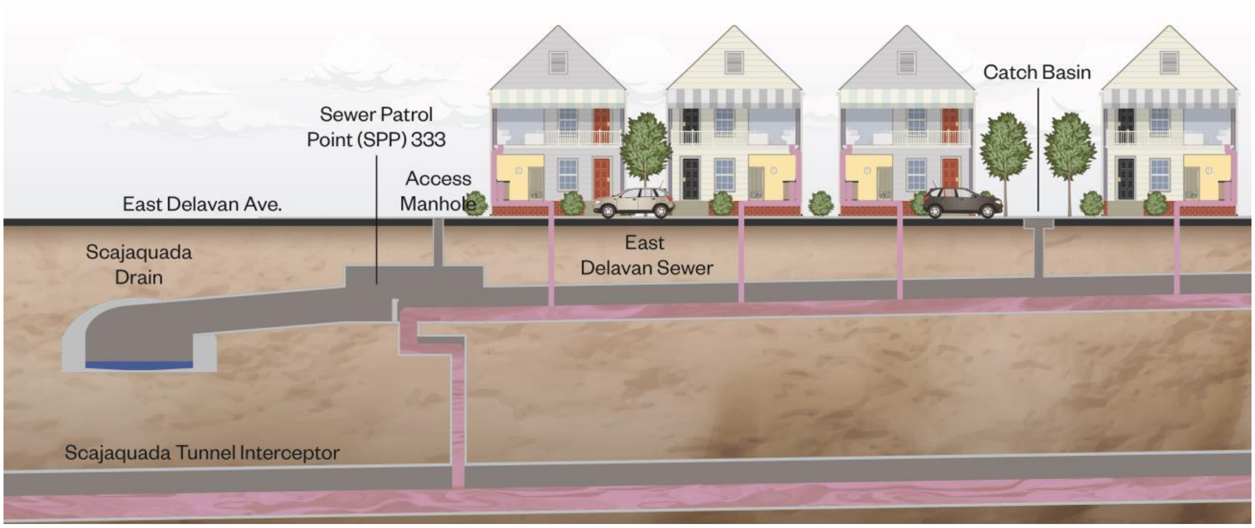


Figure 3-11: Existing Dry Weather Flow Conditions

During and immediately following certain wet weather (storm) and snowmelt events, the combined sewer lines convey both sanitary flow and stormwater. During some of these events, when flows exceed the capacity of the Bird Island WWTF to treat incoming flow, a portion of combined sewage can be diverted and conveyed through the Scajaquada Drain to the Scajaquada Creek while the rest is sent to the WWTF for treatment, as shown in **Figure 3-12**.

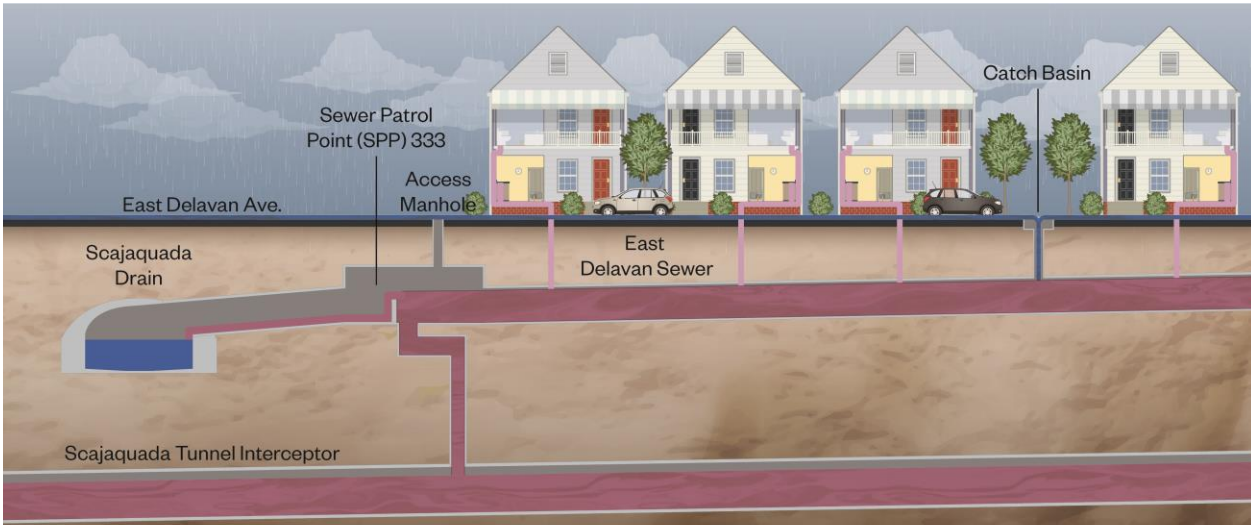


Figure 3-12: Existing Wet Weather Flow Conditions

3.10.3 Future Without the Proposed Action (Alternative A)

In the Future Without the Proposed Action, no changes to water and sewer infrastructure, including stormwater management, are anticipated. In the Future Without the Proposed Action, an offline CSO storage facility would not be constructed, and there would be no reduction in CSO activations from SPP 333 into Scajaquada Creek. The existing conditions of the project site would remain the same and no water quality improvements to Scajaquada Creek would occur. Thus, Buffalo Sewer would not be able to meet the compliance requirements of the LTCP.

3.10.4 Future With the Proposed Action (Alternatives B and C)

Construction

The proposed action is expected to result in soil disturbance of one or more acres, which requires construction to be completed in accordance with NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001. A Stormwater Pollution Prevention Plan (SWPPP) would be prepared for the proposed action in accordance with *New York Standards and Specifications for Erosion and Sediment Control* and *New York State Stormwater Management Design Manual*. The SWPPP would be submitted for review to and acceptance by the City of Buffalo operating as the NYSDEC-designated administrator of the local MS4 program for municipal separate storm sewer systems. Once accepted, the SWPPP would be implemented during construction to manage pollution associated with stormwater runoff.

For necessary groundwater dewatering associated with the proposed excavation activities, it is anticipated that an appropriately sized settling tank would be used to treat the dewatering effluent prior to its discharge to Buffalo Sewer's collection system. In order to prevent the discharge of hydrocarbons, grease, and other floatable materials into the sewer system, appropriately sized oil/water separators would also be used. Dewatering effluent or groundwater requiring treatment based on applicable regulatory limits for sewer discharge would be treated prior to its discharge. If effluent cannot be treated on site, it would be removed from the site and disposed of at an approved and permitted disposal facility. Stormwater from the site would be managed in accordance with the approved SWPPP as required by the SPDES General Permit for Stormwater Discharges from Construction Activity. As discussed in Section 3.5, "Geology and Groundwater," during periods where dewatering activities and wet weather events are overlapping, Buffalo Sewer would work with NYSDEC to determine how best to handle dewatering activities and manage the effluent to reduce the potential for exacerbating CSO discharges in the area.

With these measures in place, the Future With the Proposed Action would not result in any significant adverse impacts related to stormwater discharges during construction. Additionally, the Future With the Proposed Action would not result in any expanded demand for potable water or sewer capacity during construction, nor would it result in interruption in water and sewer system service.

Operation

The Future With the Proposed Action would result in a reduction in volume and frequency of combined sewer overflow activation events in a typical year from twenty-four (24) events to four (4) events at SPP 333. Following construction, the volume of CSO discharges into Scajaquada Creek would be reduced from approximately twenty-five (25) MG in a typical year to nearly seven (7) MG, improving water quality, and increasing system-wide resiliency throughout Buffalo Sewer's collection system.

The Future With the Proposed Action would not result in development that would create new or expanded demand for potable water service or sewer capacity. Therefore, operation of the proposed action would not have a significant adverse impact to water and sewer infrastructure and would result in an overall benefit to Buffalo Sewer's system.

3.11 Energy

3.11.1 Introduction and Methodology

This section will examine energy use and whether the proposed action may cause an increase in the use of any form of energy.

3.11.2 Baseline Conditions

Electricity and gas services within the project location are provided by National Grid and National Fuel, respectively. There is no existing energy demand associated with Buffalo Sewer's operations at the project location, as it lacks any Buffalo Sewer infrastructure requiring energy.

3.11.3 Future Without the Proposed Action (Alternative A)

Absent the proposed action and as discussed in Section 3.1, "Land Use, Zoning, and Public Policy," it is anticipated that current land use trends and general development patterns within the quarter-mile study area would continue in the Future Without the Proposed Action. Therefore, there would be no increase in existing energy demand for Buffalo Sewer infrastructure in the study area.

3.11.4 Future With the Proposed Action (Alternatives B and C)

Construction

Compared to baseline conditions, the proposed action would generate additional energy demand due to electricity which would be needed to power construction equipment such as power tools. In the event that temporary power is not available, the Contractor would coordinate with National Grid to identify a means for the utility to provide temporary power to the project site or would use portable power in the form of a portable generator(s). Construction vehicles would be gas or diesel powered. All construction vehicles and equipment used as part of the project would comply with the federal and state regulations regarding energy efficiency ratings and emissions related to the use of construction vehicles and equipment. Overall, it is anticipated that the proposed action would not result in any significant adverse impacts to energy use during construction.

Operation

Following the completion of construction activities, it is anticipated there would be a slight increase in energy demand as compared to baseline conditions to power HVAC equipment and provide electrical power and lighting to the above-grade structure associated with either Alternatives B or C. The total increase in energy use is anticipated to be approximately 360,000 kWh annually, which would be available from the local electrical grid. Because the necessary electrical distribution network is already in the area, it is anticipated that there would be no adverse impacts to energy use in the project location as a result of operation of the proposed action.

3.12 Transportation

3.12.1 Introduction and Methodology

This section evaluates the potential transportation impacts associated with the proposed action, comparing baseline (existing) conditions to forecasted future year conditions, both with and without the proposed action. The analysis identifies how the proposed action may affect traffic operations, safety, and multimodal transportation systems (i.e., pedestrian and bicycle connectivity) on roadways that could be impacted by the proposed action. Comparative analysis was performed using traffic modeling software and level-of-service (LOS) thresholds to assess potential changes in congestion, travel times, and overall network performance.

The transportation impact analysis was conducted consistent with federal, state, and local guidelines. The impact analysis consisted of: (1) conducting a crash analysis using information from the New York State Department of Transportation (NYSDOT); (2) establishing and describing baseline conditions using a combination of both the most recent publicly available traffic counts as well as traffic counts collected on roadways in and around the project sites in fall 2024, and infrastructure inventories; (3) establishing future conditions without the proposed action by identifying any other projects that would result in changes in land use or an increase in traffic within the study area that are anticipated to be completed in the same timeframe as the proposed action; (4) conducting a screening assessment to determine the worst impact condition based on whether construction vehicle traffic or the detouring and rerouting associated with construction of the proposed action would have a greater potential to result in impacts within the study area; and (5) modeling the selected scenario with the greatest impact to alter traffic conditions and identifying resulting impacts to traffic, along with pedestrian and bicycle connectivity.

The study area for the transportation assessment primarily considered the anticipated need for a long-term road closure along East Delavan Avenue between Main Street and Jefferson Avenue during construction of the proposed action. Given the nature and scale of the construction activities, extended closures of key roadway segments are expected, necessitating detours and rerouting of local traffic. The transportation study area encompasses the primary corridors directly affected by these closures, as well as adjacent routes likely to experience increased traffic volumes due to diversion. Selection of the study area was informed by traffic flow patterns, detour feasibility, emergency access requirements, and potential impacts on non-motorized travel. This approach ensures that all areas with the potential to experience direct or indirect transportation impacts from construction-related disruptions are thoroughly evaluated. A map of the transportation study area is shown in **Figure 3-13**.

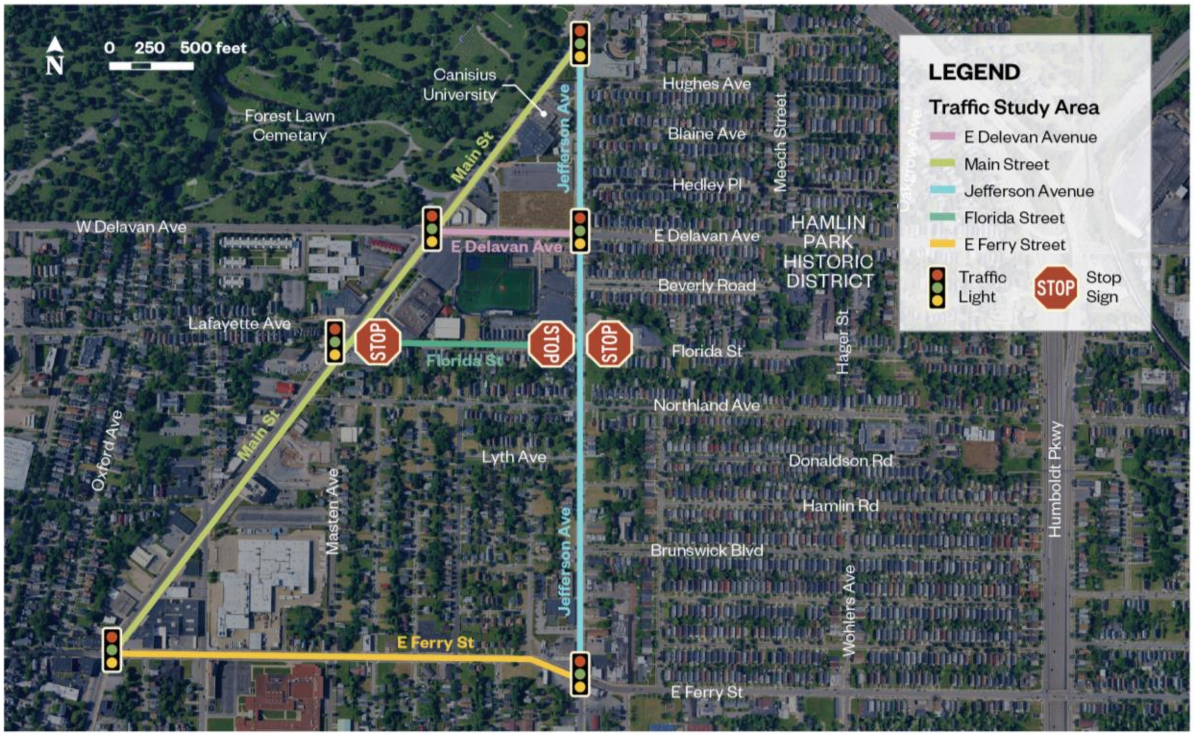


Figure 3-13: Transportation Study Area

When traffic is detoured due to a road closure, it is rerouted along alternate routes that have sufficient capacity to handle the additional vehicles. The existing traffic flow and operations were analyzed to identify suitable detour routes for both passenger vehicles and heavy vehicles (e.g., trucks) that would minimize congestion and travel time. The alternate routes were selected based on factors such as roadway width, traffic control, speed limits, traffic volumes, and available capacity. See **Figure 3-14** for the specified passenger vehicle detour route, and heavy vehicle detour route. It is anticipated that trucks would enter and leave the site primarily via an access point on East Delavan Avenue between Main Street and Jefferson Avenue for the duration of the project and travel toward or away from the site via the intersection of East/West Delavan and Main Street.

Figure 3-14: Proposed Signed Detour Routes

Local drivers often rely on their familiarity with the area to choose detour routes that differ from the officially signed routes. Instead of following designated detours, they may opt for what they perceive as the "path of least resistance," which includes routes that avoid congestion, traffic signals, or known bottlenecks. This behavior is influenced by drivers' personal experience, real-time observations, and their desire to save time. While this can help distribute traffic more evenly across the network, it can also lead to unexpected congestion on smaller local roads not designed for heavy volumes, potentially undermining the effectiveness of planned detour strategies. Realizing that most drivers will choose their own detour route based on their perception of the best available route, traffic modeling conducted to analyze the proposed action was distributed among various detour routes to better represent real world conditions rather than assuming all drivers would utilize the signed detour route.

Crash Analysis

A crash analysis for roadways within the transportation study area was performed using data obtained from the NYSDOT Crash Location and Engineering Analysis Repository (CLEAR) Crash Data Viewer. Crash reports were compiled within the study area for the three-year period from March 1, 2021, to February 29, 2024. A summary of the crash analysis results follows in Section 3.12.2, "Baseline Conditions," below.

Traffic Volumes

To support the baseline conditions analysis, vehicular turning movement counts (TMCs) were conducted at eight (8) study intersections during the typical morning and evening peak commuter periods from 6:30

AM to 8:30 AM and from 4:00 PM to 6:00 PM during the month of September 2024. A 2024 base year was utilized as the existing condition since it coincides with the time period when the traffic data was collected. Counts were summarized in fifteen (15) minute intervals and were totaled to produce hourly volumes. The sixty (60) minute windows with the greatest total vehicular volumes were determined to be 7:30 AM to 8:30 AM and 4:00 PM to 5:00 PM for the morning and evening commuter peaks, respectively. Automatic traffic recorders (ATRs) were placed along key study area roadways to record continuous twenty-four-hour traffic volumes for a minimum of seven (7) consecutive days at eight (8) locations. The ATRs were placed in October 2024 and collected volume, speed, and classification of vehicles passing in both directions. **Figure 3-15** shows the locations of TMC and ATR counts.

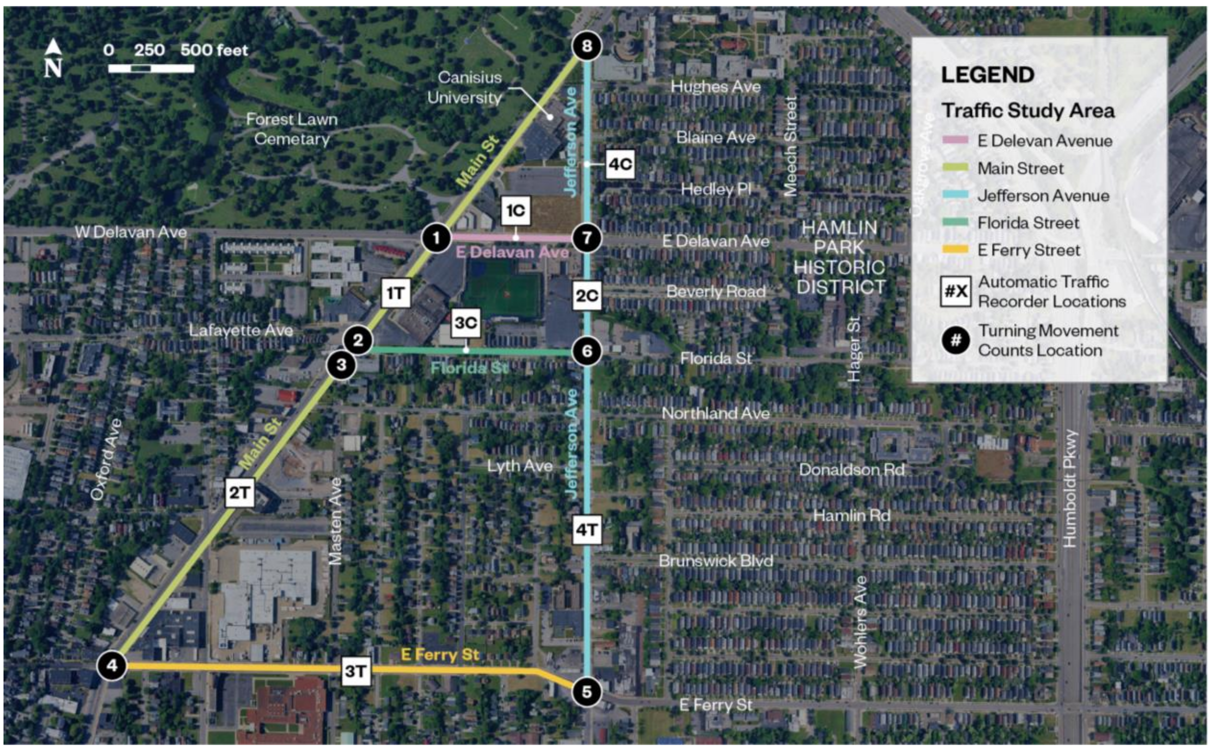


Figure 3-15: Traffic Data Collection Map

In addition to field data collection, traffic volume data was also developed for additional roadway segments and intersections in the study area to support the noise analysis presented in Section 3.14, "Noise." To develop this data, existing traffic data was collected from historically available traffic counts within the NYSDOT Traffic Data Viewer. This data was factored with a background annual growth rate to bring it to the base year of 2024, as further described below. Additional traffic data was assumed where collected or historic data was not available using the methodologies prescribed within the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. Utilizing this methodology, totals for peak hour exiting and entering traffic are calculated based on historic data of a particular land use. This data was calibrated against actual data collected; however, it should be noted that the assumptions were broad and would not be utilized to represent a balanced network model, rather a representative sample of traffic based on known conditions and verified methodologies.

Capacity/Level of Service Analysis

Intersection LOS and capacity analysis relate traffic volumes to the physical characteristics of an intersection. Intersection evaluations were completed using Cubic ITS, Inc., Synchro plus SimTraffic 12, Signal Timing and Analysis Software which automates the procedures contained in the *Highway Capacity Manual* (HCM), 7th Edition. The operating performance of a roadway segment or intersection is commonly measured by level of service based on such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. The HCM defines six (6) LOS ratings (letters A through F), with LOS A representing free-flow conditions and LOS F signifying unstable or breakdown conditions. The remaining LOS letters represent gradually declining traffic conditions as traffic performance drops from LOS B through LOS E, with E being the capacity of the roadway.

LOS for intersections is defined in terms of average control delay (in seconds) per vehicle during peak traffic demand periods. Control delay is defined as the portion of the total delay attributed to traffic control devices, either traffic signals or stop signs. For signalized intersections, LOS is related to the control delay for all movements, while for unsignalized intersections, LOS is for each stop-controlled movement. For two-way stop-controlled (TWSC) intersections, LOS depends on the amount of delay experienced by drivers on the minor (stop-controlled) approaches. All-way stop-controlled (AWSC) intersections require drivers on all approaches to stop before proceeding into the intersection, so LOS is determined by the average computed delay for all movements. By comparing the level of service between the Future Without and Future With the Proposed Action conditions, the potential for project impacts within the study area can be determined and potential solutions can be developed to minimize project impacts. To further assess and simulate existing traffic conditions, existing traffic signal timings were obtained from the City of Buffalo. The signal timings were input into Synchro to model the existing operations. SimTraffic was then utilized to model existing traffic operations by simulating real-world traffic scenarios using data from traffic signal timing, roadway geometry, and traffic volumes. By comparing the simulated outputs such as delays, queue lengths, and travel times with actual field observations, model parameters are adjusted to better reflect real conditions. This iterative calibration process ensures the software accurately represents existing operations, improving the reliability of future analyses and planning decisions.

Multimodal Considerations

For the purpose of transit facilities, the bus lines and stops within reasonable walking distance to the project site were delineated in the study area. However, it was assumed that construction and maintenance workers, once the proposed action is operational, would all travel to the project site by private automobile; therefore, a bus transit analysis was not conducted. A pedestrian assessment was completed due to the location of the project site on and adjacent to the Canisius campus. Students cross East Delavan Avenue to access campus facilities on either side of the roadway. The potential for pedestrian impacts was assessed by identifying alternative routes, crossing points, and potential safety enhancements, with emphasis on Americans with Disabilities Act (ADA) compliance and minimizing pedestrian detours when possible. These multimodal considerations were integrated into the traffic and mobility analysis to ensure a balanced approach to transportation planning during construction of the proposed action. To support an analysis of pedestrian traffic in the project area, pedestrian counts were collected at three (3) study area intersections including Main Street at East/West Delavan Avenue, East Delavan Avenue at Spillman

Place, and Jefferson Street at East Delavan Avenue. In addition, midblock pedestrian crossings were collected along East Delavan Avenue at two (2) locations; one captured crossings of East Delavan Avenue between Main Street and Spillman Place, and the other captured crossings of East Delavan Avenue between Spillman Place and Jefferson Street. Midblock crossings consisted of any pedestrian or bicyclists that did not utilize a marked crosswalk at an intersection. These counts were conducted in early November 2024 while Canisius was in session during typical morning, afternoon, and evening peak hours of 6:30 AM to 8:30 AM, 11:00 AM to 1:00 PM, and 4:00 PM to 6:00 PM, respectively.

Growth Projections

To define transportation conditions in the No Action Alternative (Alternative A), existing traffic volumes were adjusted for background annual growth to the future design year to simulate traffic conditions during the time period when the proposed action would be constructed. To accurately predict what the background annual growth rate for traffic should be based on regional data and resources, coordination with the Greater Buffalo Niagara Regional Transportation Council was initiated to utilize their 2020 base model and 2050 Long Range Transportation Plan model. Compound annual growth rates for the Main Street/East Ferry Street/Jefferson Avenue area were provided for the AM and PM peak hour periods. Based on the results provided, an annual growth rate of 2% per year was utilized across all study area roadways. To prepare a baseline for No-Action versus With-Action comparison, the existing volumes for 2024 were adjusted using the 2% per year background growth rate to the analysis year. This allows for a direct comparison of the LOS under No-Action and the LOS under With-Action and diverted traffic volumes associated with the proposed long-term construction detour.

Screening Assessment

While both alternatives being considered for implementation of the proposed action would add vehicle traffic to the study area during construction and require similar detouring and re-routing of traffic patterns, the timing of the projects differ slightly and therefore, would potentially result in different impacts. Therefore, a screening assessment was completed to determine the worst impact condition based on the period during construction of Alternatives B and C with the greatest potential to result in adverse traffic impacts. This was done in three parts: (1) determining the peak-hour vehicle trips (including transportation Passenger Car Equivalents [PCEs],[2] for inbound and outbound trips) that would temporarily be generated by each alternative within the study areas; (2) adding the trips associated with the alternative generating a higher number of PCEs to background traffic anticipated to occur in the study area during the timeframe of the proposed action after applying the growth projections described in the prior section; (3) modeling these conditions in conjunction with changes in traffic patterns that would occur in the study area as a result of the proposed detours; and (4) ensuring the modeled conditions represent the worst-case traffic conditions that could occur in the study area as a result of the proposed action and, if not, updating the assessment accordingly.

[2] A PCE is the number of passenger cars that will result in the same operational conditions as a single heavy vehicle of a particular type under identical roadway, traffic, and control conditions. The larger a vehicle, the larger its passenger car equivalent. This is used to convert counts of heavy vehicles into counts of passenger cars such that a mixed flow of heavy and light vehicles is converted to an equivalent traffic stream consisting entirely of passenger cars for analysis purposes.

Construction of Alternative C, the Deep Storage Tank, would require a shorter construction time as compared to Alternative B, the Storage Tunnel, which would result in a higher concentration of construction vehicles. Therefore, to identify potential impacts related to the addition of construction vehicles to study area roadways, this transportation assessment modeled the number of project-generated construction vehicles that could be added to the local roadway network during construction of the proposed action based on Alternative C, which was considered the worst-case scenario for traffic generation.

Based on the anticipated construction schedule for Alternative C, the fourth quarter of 2027 represents the period when the number of construction vehicles that would be added to local roadways is highest **(Table 3-4)**. The number of vehicles that could be added to the local roadway network during construction was determined by considering the amount of excavation and concrete that would be needed to construct Alternative C. It is estimated that Alternative C would require approximately 33,500 cubic yards of excavation, 8,500 cubic yards of imported fill, and 24,000 cubic yards of exported fill. Considering a swell factor for the soil, approximately 40,000 cubic yards of total hauling is anticipated.[3] Overlap of truck trips to support these key construction activities would be limited since excavation would occur prior to placement of concrete. Other truck deliveries were also estimated based on the anticipated construction activities that would occur over the duration of the construction period. Worker and truck trips were estimated by quarter to select the peak construction quarter as presented in **Table 3-4**. As discussed in Section 2.3, "Anticipated Construction Hours and Activities," construction of Alternative C would commence in the fourth quarter of 2026 and is anticipated to be completed in the second quarter of 2030.

Table 3-4: Construction Worker Vehicle Trip Calculation

Year	2026	2027				2028				2029				2030	
Quarter	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Truck Trips per Hour	1	3	11	15	13	7	2	3	3	3	3	5	2	1	0
Total Worker Trips AM	6	21	45	53	54	47	20	20	33	40	40	40	27	40	13
Total Worker Trips PM	6	21	45	53	54	47	20	20	33	40	40	40	27	40	13

Typically, the peak construction period would represent the time when construction of a project would have the greatest potential to alter traffic conditions on the surrounding roadway network. However, the screening assessment indicated that even with the addition of construction vehicles associated with the more conservative number of trips associated with Alternative C, the roadway detours associated with construction of the proposed action would have a greater influence on area traffic as compared to the addition of construction-related vehicles to these same roadways. It was therefore important to model the alternative where the detours would have the greatest potential to impact traffic conditions in the study area.

[3] The swell factor for soils refers to the increase in volume that occurs when soil is excavated from its natural state. This happens because the soil is removed from the ground it expands as air pockets and voids are created and becomes less dense, resulting in a larger volume of material.

As described above, background traffic conditions are anticipated to change each year, increasing by 2% per year. Therefore, it was determined that the alternative with the greater potential to require detours over a longer time horizon would instead have the greater potential for generating project-related changes in traffic. Construction of Alternative B is anticipated to extend to 2031. While it is not anticipated that detours would be required through 2031, there is a potential for detours to occur during this time. Therefore, 2031 was selected as the analysis year for this transportation assessment since it is the period between the Alternative B and Alternative C projected construction schedules that would coincide with the greatest increase in background traffic based on the annual growth rate utilized for the transportation assessment.

To complete modeling associated with the proposed action and identify any potential impacts, the peak hours when traffic conditions may be altered were evaluated to determine the potential for impacts to transportation in the study area in 2031 as a result of the proposed action. Peak traffic hours for construction activities differ slightly from those associated with typical commuter peak hours since construction traffic tends to arrive prior to and leave before the typical AM and PM hours associated with individuals commuting to and from work and school. However, similar to selection of the analysis year of 2031, the hours where the detour would have the greatest potential to result in changes to area traffic were analyzed. Therefore, the peak hours analyzed within the transportation assessment are 7:30 AM to 8:30 AM and 4:00 PM to 5:00 PM, which are the hours when peak traffic conditions occur within the project area.

3.12.2 Baseline Conditions

Transportation Network

East Delavan Avenue is a primary east-west connector through the East Side neighborhoods within the City of Buffalo, linking residential areas with major routes such as Main Street, Jefferson Avenue, and Bailey Avenue. East Delavan Avenue transitions into West Delavan Avenue west of its intersection with Main Street and continues the east-west connectivity from Main Street into the Elmwood Village and West Side neighborhoods. The functional classification of East Delavan Avenue is minor arterial, and it functions as a key surface street with access to/from the Kensington Expressway and Humboldt Parkway. It is a two-way, two-lane roadway with a posted speed limit of thirty (30) miles per hour (MPH). East Delavan Avenue is an NFTA bus corridor and supports bicycle and pedestrian movement with sidewalks along both sides of the roadway. There are signalized intersections with East Delavan Avenue at Main Street and Jefferson Street with pedestrian crossings. There are no marked bike lanes.

Main Street (NY Route 5) serves as a primary north-south arterial in the City and is a crucial multimodal corridor that provides direct access to downtown Buffalo, the Canisius campus, and the University at Buffalo (South Campus). Main Street supports high vehicular, transit, pedestrian, and bicycle volumes and is integral to the local street network and regional connectivity. The functional classification of Main Street is a principal arterial, and the posted speed limit is thirty (30) MPH. North of East Delavan Avenue, Main Street has three southbound lanes, two northbound lanes with on-street parking, and no marked bike lanes. South of East Delavan Avenue, Main Street has one travel lane in each direction with on-street parking on both sides separated by a marked bike lane. Dedicated turning lanes are provided at key intersections and are interconnected by a two-way left turn lane in the center of the roadway. In addition to the signalized intersection at East Delavan Avenue, Main Street also has signalized intersections with Jefferson Avenue, Masten Avenue, Michigan Avenue/Harvard Place, and East Ferry Street/West Ferry Street, each with pedestrian crossings.

Jefferson Avenue is a key north-south arterial and a historic and cultural spine of Buffalo’s East Side. It supports moderate vehicular volumes and is a significant corridor for local commerce, civic institutions, and religious centers. Jefferson Avenue is used heavily by NFTA buses and pedestrians; therefore, streetscape conditions are central to community safety and accessibility. As such, the design of streetscape improvements was recently completed and is tentatively scheduled to begin construction in 2025 with a phased two-year construction timeline. The functional classification of Jefferson Avenue is a minor arterial with a posted speed of thirty (30) MPH. As it exists now, Jefferson Avenue is a two-lane, two-way roadway with sidewalks and on-street parking along both sides of the street with no marked bike lanes. In addition to the signalized intersections at Main Street and East Delavan Avenue, traffic signals are located at Brunswick Boulevard and East Ferry Street. The Brunswick Boulevard intersection has a signalized pedestrian crossing for the north approach of Jefferson Avenue, but pedestrian signals are not present at the East Ferry Street intersection.

Humboldt Parkway and Kensington Expressway (NY Route 198 and NY Route 33) are limited-access expressways and major regional commuter routes connecting downtown Buffalo with the Buffalo Niagara International Airport and inner-ring suburbs. Originally part of Olmsted’s parkway network (Humboldt Parkway), much of the corridor was converted to an expressway in the mid-20th century. The corridors carry functional classifications of principal arterial expressway; and therefore, have limited direct pedestrian and bicycle access due to their design which significantly impacts local surface street traffic patterns. Posted speed limits in the project study area are fifty-five (55) MPH.

East Ferry Street is a significant east-west connector, providing local access between Main Street and Bailey Avenue. It links educational institutions, residential areas, and small commercial nodes. The functional classification is minor arterial with a posted speed limit of thirty (30) MPH. The corridor supports NFTA bus service and features sidewalks along most of its length, but there are no marked bike lanes. In addition to the signalized intersections with Main Street and Jefferson Avenue, East Ferry Street also has traffic signals with pedestrian crossings at Michigan Avenue and Masten Avenue. East Ferry Street is a two-way, two-lane roadway with room for on-street parking along both sides of the street, although various signed parking restrictions and limitations exist throughout the corridor.

Florida Street and Northland Avenue are both local roadways that could be influenced by traffic conditions associated with the proposed action. Florida Street is a short, residential street located between Jefferson Avenue and Humboldt Parkway, primarily serving as a local connector within a dense neighborhood grid. It has limited regional transportation significance but plays an important role for residents accessing larger corridors. Northland Avenue between Main Street and Humboldt Parkway is similar to Florida Street and is primarily a local connector within a dense neighborhood grid; however, east of Humboldt Parkway it is an emerging innovation corridor with a mix of light industrial, institutional, and residential uses. Both Florida Street and Northland Avenue between Main Street and Humboldt Parkway are part of the City of Buffalo Slow Streets Program which reduces the posted speed limit to twenty (20) MPH and has installed permanent speed humps for traffic calming.

Crash Data

Based on review of the NYSDOT CLEAR database, there were 271 crashes in the study area over the three-year period analyzed. Of the 271 documented crashes in the study area, none resulted in fatalities (0%), nineteen (19) were serious personal injury crashes (7%), eighty-seven (87) were personal injury crashes (32%), 161 were property damage only crashes (59%), and four (4) were non-reportable crashes (2%). A crash is considered non-reportable, rather than reportable, if there was no personal injury and if either no motorist report was filed, no dollar value of vehicular damage was entered on the report, or the amount of vehicular damage did not exceed a specified amount. The predominant crash types within the study area are overtaking (20%), rear end (20%), and right angle (19%), which account for 59% of the total crashes. These results are typical of a congested urban environment where poor driving behavior and aggressive driving lead to contributing factors such as following too closely, unsafe lane changing, and failure to yield the right-of-way. Of the reported crashes, 63% occurred under clear weather conditions, 66% during daylight, and 55% between the hours of 10:00 AM and 7:00 PM, further supporting results typical of a congested urban environment. Study intersections that saw the majority of the 271 reported crashes include: Main Street and East Delavan Avenue (13%), Main Street and Jefferson Avenue (6%), East Delavan Avenue and Jefferson Avenue (6%), Jefferson Avenue and Northland Avenue (4%), East Ferry Street and Michigan Avenue (4%), East Ferry Street and Masten Avenue (5%), East Ferry Street and Jefferson Avenue (15%), and East Ferry Street and Main Street (8%). These eight intersections yielded 61% of all the crashes in the study area. Of the 271 reported crashes, only two (2) involved pedestrians or bicyclists, which represents less than 1% total crashes.

Traffic Volumes

Traffic volumes in the study area fluctuate seasonally; therefore, since traffic volumes were collected during the fall season, raw TMC data was adjusted based on seasonal factors to represent annual average traffic conditions during peak hours of adjacent street traffic. Peak-hour seasonal adjustment factors are determined based on NYSDOT continuous count site data from 2022. This data indicates that the traffic volumes are 7.7% higher in September than the annual average daily traffic (AADT). Therefore, the raw data collected was factored to represent annual average traffic conditions. The raw ATR data was seasonally adjusted to represent average conditions based on an automatic adjustment factor applied by the software program used to generate the ATR data collected.

Vehicle types collected in the study area included the full Federal Highway Administration (FHWA) thirteen (13) standard vehicle classes, but data has been presented to coincide with requirements for the noise analysis and were grouped into five (5) classes which include: motorcycles, automobiles, buses, medium trucks, and heavy trucks. The AADT traveling in each direction is highest on Main Street, with approximately 5,000 to 6,000 vehicles traveling in each direction. Approximately 2,000 vehicles were recorded along Jefferson Avenue in each direction with approximately 3,000 to 5,000 traveling west and east on East Ferry Street, respectively. The distribution of traffic between classifications is relatively consistent on each roadway, with most of the traffic attributed to automobiles. Heavy duty trucks represent the smallest component of vehicles, after motorcycles. The number of heavy-duty trucks on Main Street, Jefferson Street and East Ferry Street ranged from approximately thirty-five (35) trucks on Main Street and between then (10) and twenty-five (25) trucks on Jefferson Street and East Ferry Street. Recorded eight-fifth percentile speeds on these same roadways were approximately thirty-five (35) miles per hour (MPH), with slower speeds occurring on Florida Street (in the range of 15 to 20 MPH). The results of the TMC analysis for baseline conditions is presented in **Table 3-5** for the peak analysis hours of 7:30 AM to 8:30 AM and 4:00 PM to 5:00 PM.

Table 3-5: TMC Results for Study Area Intersections (Baseline Conditions)

Intersection	Description of TMC Results
Main St at Jefferson St	In general, traffic passes through this intersection and continues traveling in a northeast/southwest direction along Main Street – approximately 550 vehicles during the Peak Hours. The highest volume turns at this intersection were recorded to be the left turn from Main St onto Jefferson St and the right turn from Jefferson St onto Main St (on the order of 100 vehicles each). The least number of vehicles were recorded making right turns from Main St onto Jefferson St and left turns from Jefferson St onto Main St, approximately 5 to 10 vehicles in each case. In general, turn volumes are similar in the AM and PM Peak Hours for all turns, with the exception of the AM Peak Hour southbound through movements on Main St, which peaked at 694.
Main St at Delavan Ave	Traffic at this intersection generally travels either straight on Main St (with approximately 100 more vehicles traveling northeast than southwest) and across East Delavan Avenue (with approximately 100 more vehicles traveling east than west). The most common turn recorded at this intersection was the left hand turn from W Delavan Ave onto Main St (approximately 250 during the AM Peak Hour). A larger number of vehicles also turn right from Main St onto W Delavan Ave heading west (approximately 150 during the PM Peak Hour). The least common turn is from Main St left onto East Delavan Avenue (2 during the AM Peak).
Main St at Florida St	The majority of vehicles at this intersection travel through and continue along Main St – approximately 550 vehicles in each direction with closer to 500 vehicles traveling northeast on Main St during the AM Peak Hour. Turns onto and off of Florida St in all directions were recorded to be comparatively infrequent and on the order of 5 to 10 vehicles.
Main St at Masten Ave	Nearly all of the vehicles traveling north on Masten St turn right onto Main St (90 during the AM Peak Hour and 75 during the PM Peak Hour). 50 to 120 vehicles were recorded to turn left from Main St to travel south on Masten Ave during the AM and PM Peak Hours, respectively. The remainder of the 400 to 450 vehicles traveling through this intersection stayed on Main St.
Main St at Ferry St	Travel at this intersection is heavier across Main St (300 to 400 vehicles) as compared to Ferry St (150 to 250 vehicles). The most common turn recorded at this intersection was a left hand turn from W Ferry St onto Main St headed northeast (138 vehicles during the AM Peak Hour). The least number of cars turn right from E Ferry St onto Main St headed northeast (approximately 5).
Jefferson St at E Ferry St	Travel at this intersection is greatest on E Ferry St, with approximately 300 to 330 vehicles recorded traveling during the AM/PM Peak Hours. Traffic along Jefferson St was comparatively lighter at approximately 140 trips in the north and south directions during the AM/PM Peak Hours. Jefferson St does see a peak of approximately 250 northbound trips in the PM Peak Hour. The number of recorded turns at this intersection generally ranged between 20 to 50 turns in all directions, with the highest number of turns recorded being the lefthand turn from northbound Jefferson St to E Ferry St during the PM Peak Hour.
Jefferson St at Florida St	The majority of vehicles at this intersection traveled along Jefferson St during the PM Peak hour, which included approximately 220 northbound trips and 160 southbound trips. Traffic

Intersection	Description of TMC Results
	along Florida St was significantly lighter, rand was generally between approximately 5 and 20 trips during the AM/PM Peak Hours. The number of recorded turns at this intersection was relatively low and was generally approximately 10 turns or less during the Peak Hours.
Jefferson St at E Delavan St	Traffic at this intersection is heaviest in the east and west directions, with approximately 280 vehicles recorded traveling east along East Delavan Avenue in both the AM and PM Peak Hours. Approximately 265 and 155 vehicles were recorded traveling west along East Delavan Avenue in the AM and PM Peak Hours, respectively. Along Jefferson St, traffic is heaviest in the northbound direction, with approximately 85 vehicles recorded during the AM Peak Hour and approximately 107 vehicles recorded during the PM Peak Hour. The number of recorded turns at this intersection generally ranged between 30 to 60 turns in all directions with the exception of the southbound lefthand turn from Jefferson St to East Delavan Avenue, which was recorded to be approximately 15 turns in both the AM and PM Peak Hours.

Capacity/Level of Service Analysis

The baseline conditions LOS values are presented in **Table 3-6** for the AM and PM peak hours. The existing capacity analysis indicates that all study area intersections are expected to operate at LOS D (which means traffic is near capacity, with noticeable delays but still moving) or better during the AM and PM peak hours of adjacent street traffic. This implies that these intersections typically operate without substantial congestion and that reserve capacity exists on the local street network.

Table 3-6: Intersection Level of Service Summary (2024 Existing)

Intersection	Control Type	AM Peak Hour (07:30-08:30)		PM Peak Hour (4:00-5:00)	
		Exist. 2024		Exist. 2024	
		LOS	Delay (sec.)	LOS	Delay (sec.)
(1) Main St (NY 5) and W Delavan Ave/E Delavan Ave	Traffic Signal	D	47.2	B	18.9
W Delavan Ave EB (LT/TH)		F	125.5	D	45.1
W Delavan Ave EB (RT)		A	5.0	A	5.8
E Delavan Ave WB (LT/TH/RT)		C	23.8	C	21.9
Main St NB (LT)		A	9.1	A	9.2
Main St NB (TH)		B	11.2	B	12.0
Main St NB (RT)		A	2.7	A	2.5
Main St SB (LT)		A	8.0	A	8.6
Main St SB (TH)		B	11.3	B	10.1
Main St SB (RT)		A	2.4	A	2.3
(2) Main St (NY 5) and Florida St	TWSC[1]				
Florida St WB (LT/TH/RT)		C	19.6	C	15.8
(3) Main St (NY 5) and Masten Ave/Driveway	Traffic Signal	A	4.7	A	4.9
Driveway EB (LT/TH/RT)		A	0.3	A	0.3
Masten Ave NB (LT/TH/RT)		A	0.4	A	2.5
Main St NB (LT/TH/RT)		A	5.1	A	5.7
Main St SB (LT)		A	5.0	A	4.5
Main St SB (TH/RT)		A	5.2	A	4.6
(4) Main St (NY 5) and W Ferry St/E Ferry St	Traffic Signal	B	15.4	B	14.3
W Ferry St EB (LT/TH/RT)		C	23.4	B	17.0
E Ferry ST WB (LT/TH/RT)		B	16.9	B	16.8
Main St NB (LT)		B	10.1	B	11.0
Main St NB (TH)		B	13.9	B	16.6
Main St NB (RT)		A	3.6	A	3.7

Intersection	Control Type	AM Peak Hour (07:30-08:30)		PM Peak Hour (4:00-5:00)	
		Exist. 2024		Exist. 2024	
		LOS	Delay (sec.)	LOS	Delay (sec.)
Main St SB (LT)		A	9.6	A	9.9
Main St SB (TH/RT)		A	9.2	A	8.7
(5) Jefferson Ave and E Ferry St	Traffic Signal	B	16.1	B	17.4
E Ferry St EB (LT/TH/RT)		B	15.1	B	16.3
E Ferry St WB (LT/TH/RT)		B	18.7	C	20.3
Jefferson Ave NB (LT/TH/RT)		B	13.1	B	15.9
Jefferson Ave SB (LT/TH/RT)		B	13.5	B	14.4
(6) Jefferson Ave. and Florida St.	TWSC				
Florida St EB (LT/TH/RT)		B	10.1	B	11.2
Florida St WB (LT/TH/RT)		B	10.9	B	12.1
(7) Jefferson Ave and E Delavan Ave	Traffic Signal	B	19.4	B	18.0
E Delavan Ave EB (LT/TH/RT)		C	22.6	C	21.2
E Delavan Ave WB (LT/TH/RT)		C	21.6	B	17.1
Jefferson Ave NB (LT/TH/RT)		B	15.0	B	15.8
Jefferson Ave SB (LT/TH/RT)		B	10.2	B	12.9
(8) Main St (NY 5) and Jefferson Ave	Traffic Signal	A	8.6	B	10.9
Jefferson Ave NB (LT/TH/RT)		C	25.7	C	27.2
Main St NB (TH)		B	11.4	B	12.9
Main St NB (RT)		A	6.2	A	5.9
Main St SB (LT/TH)		A	4.5	A	5.3

1. TWSC represents a two-way stop-controlled intersection. A typical configuration for this type of intersection is at a four-way intersection where the major street is uncontrolled while the minor street is controlled by stop signs.

Multimodal Considerations

Pedestrian and bicycle counts conducted along the East Delavan Avenue and Spillman Place corridors indicate that the majority of crossings occurred within marked crosswalks at the intersections of East Delavan Avenue with Main Street, Spillman Place, and Jefferson Street. Although some midblock crossings were observed along East Delavan Avenue, these were far fewer than those at the intersections, suggesting that pedestrians and bicyclists primarily utilized designated crossing points. Midblock crossings of Spillman Place between East Delavan Avenue and Florida Street were negligible. The peak period for pedestrian and bicycle activity generally occurred between 11:00 AM and 12:00 PM. During this peak hour, the highest volumes were observed at the following locations: northbound and southbound crossings of the eastern leg of East Delavan Avenue at Main Street, westbound crossings of the southern leg of Spillman Place at East Delavan Avenue, and northbound crossings of the western leg of East Delavan Avenue at Jefferson Street. Total crossings at all intersection approaches were sixty-six (66) at Main Street, 103 at Spillman Place, and 154 at Jefferson Street during the peak hour. Midblock crossings of East Delavan Avenue were forty-nine (49) west of Spillman Place and thirty-nine (39) to the east. These midblock crossing numbers were higher than the AM and PM peak hours which is indicative of students traveling between campus buildings in the midst of a typical teaching day.

3.12.3 Future Without the Proposed Action (Alternative A)

As discussed above, the Future Without the Proposed Action traffic conditions were determined by projecting baseline 2024 traffic volumes to those anticipated to occur in the study area in the 2031 analysis year based on background growth rates and a seasonal adjustment factor.

As compared to baseline conditions, the total number of vehicles projected to be traveling on study area roadways in the Future Without the Proposed Action would increase. On Main Street this would result in approximately 5,800 to 7,000 vehicles, which represents 800 to 1,000 more vehicles than baseline conditions. Similarly, the AADT traveling in each direction on Jefferson Avenue and East Ferry Street would increase by a similar order of magnitude resulting in 3,000 vehicles along Jefferson Avenue and 3,600 to 5,800 vehicles along East Ferry Street. Heavy duty trucks and motorcycles would continue to represent the smallest component of traffic, with the number of heavy duty trucks on Main Street, Jefferson Street and East Ferry Street increasing to approximately forty (40) heavy duty trucks on Main Street, fifteen (15) to twenty (20) heavy duty trucks on Jefferson Street, and twenty (20) to thirty (30) heavy duty trucks on East Ferry Street. From an intersection and turn perspective, the number of vehicles passing through each intersection would increase in the Future Without the Proposed Action, but the distribution of turns would generally be anticipated to remain similar to baseline conditions.

The No-Action LOS results are presented in **Table 3-8** for the AM and PM peak hours of adjacent street traffic.

The No-Action capacity analysis indicates that all study area intersections are expected to operate at LOS C or better during the AM and PM peak hours of adjacent street traffic, with the exception of the intersection of Main Street and East/West Delavan Avenue, which would operate at LOS E. This implies that this intersection would typically operate with congestion and at, or very near, capacity. Average delay times are high, flow is unstable, and queues are increasing leading to frustrating driving conditions and high potential for stop-and-go gridlock. Much of this can be attributed specifically to the eastbound approach of West Delavan Avenue and the high volume of left-turning traffic. It is anticipated that bus, bicycle, and pedestrian traffic in the study area in 2031 would be similar to baseline conditions.

3.12.4 Future With the Proposed Action (Alternatives B and C)

Construction

Traffic Volumes

Traffic volumes and turning movement counts inclusive of rerouting due to the proposed detour were evaluated and **Table 3-7** describes the overall TMC volume redistribution and traffic assignment for this scenario and compares this scenario with the anticipated volumes under the Future Without the Proposed Action.[4]

Table 3-7 TMC Traffic Redistribution for Detour (2031 Analysis Year)

Intersection	Description of TMC Volume Redistribution and Traffic Assignment
Main St at Jefferson St	Traffic would pass through this intersection in similar patterns to the Future Without the Proposed Action (Alternative A) in the northeast/southwest directions along Main Street. In comparison with Alternative A, the volume of turns at this intersection would be heavier for the right turn from Main St onto Jefferson St and for the left turn from Jefferson St onto Main St, as described in greater detail below. • For the right turn from Main St onto Jefferson St, the volume would increase from 7 turns and 16 turns during the AM and PM Peak Hours, respectively, under Alternative A to 166 turns and 203 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action. • For the left turn from Jefferson St onto Main St., the volume would increase from 3 turns and 14 turns during the AM and PM Peak Hours, respectively, under Alternative A to 131 turns and 128 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action.
Main St at Delavan Ave	For vehicles traveling northeast and southwest on Main St, traffic patterns would be similar to volumes under Alternative A, with an increase of approximately 100 vehicles during the AM and PM Peak Hours for the Future With the Proposed Action anticipated. Due to the proposed detours, the volume of vehicles traveling west on E Delavan Ave and turning right on onto E Delavan Ave from Main St would be lower as compared to Alternative A. Turn volumes are anticipated to increase under the Future With the Proposed Action as compared to Alternative A for the right and left turns onto W Delavan Ave from Main St and for the right and left turns from W Delavan Ave onto Main St, as described

[4] Note that construction vehicle traffic is not included in the traffic volume and TMC modeling results as modeling was conducted to focus on the potential for impacts from the occurrence of detours in 2031 that could occur in conjunction with Alternative B. This represents the worst-case condition for traffic-related changes associated with the proposed action.

Intersection	Description of TMC Volume Redistribution and Traffic Assignment
	in greater detail below. • For the right turn onto W Delavan Ave from Main St, the volume would increase from 134 turns and 169 turns during the AM and PM Peak Hours, respectively, under Alternative A to 243 turns and 266 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action. • For the left turn onto W Delavan Ave from Main St, the volume would increase from 42 turns and 62 turns during the AM and PM Peak Hours, respectively, under Alternative A to 290 turns and 198 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action. • For the right turn onto Main St from W Delavan Ave, the volume would increase from 64 turns and 42 turns during the AM and PM Peak Hours, respectively, under Alternative A to 244 turns and 206 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action. • For the left turn onto Main St from W Delavan Ave, the volume would increase from 286 turns and 164 turns during the AM and PM Peak Hours, respectively, under Alternative A to 349 turns and 221 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action.
Main St at Florida St	For vehicles traveling northeast and southwest on Main St, the volume of vehicles would be between approximately 600 – 800 vehicles during the AM and PM Peak Hours for the Future With the Proposed Action, representing an increase of between approximately 15% - 30% as compared to Alternative A. The volume of right turns from Florida St onto Main St and left turns from Main St onto Florida St would increase by greater measure as compared to Alternative A, as described in greater detail below. • For the right turn from Florida St onto Main St, the volume would increase from 1 turns and 9 turns during the AM and PM Peak Hours, respectively, under Alternative A to 131 turns and 80 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action. • For the left turn from Main St onto Florida St, the volume would increase from 6 turns and 15 turns during the AM and PM Peak Hours, respectively, under Alternative A to 94 turns and 105 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action.
Main St at Masten Ave	The volume of vehicles traveling northeast and southeast along Main St under the Future With the Proposed Action would be between approximately 550 – 650 vehicles during the AM and PM Peak Hours, representing an increase of between approximately 15% - 35% as compared to Alternative A. Traffic patterns at this intersection are otherwise anticipated to be similar to Alternative A with no change in turning traffic to and from Main St.
Main St at Ferry St	The volume of left turns from Main St onto E Ferry St and right turns from E Ferry St onto Main St is anticipated to increase appreciably under the Future With the

Intersection	Description of TMC Volume Redistribution and Traffic Assignment
	Proposed Action as compared to Alternative A, as described in greater detail below. • For the left turn from Main St onto E Ferry St, the volume would increase from 9 turns and 19 turns during the AM and PM Peak Hours, respectively, under Alternative A to 145 turns and 155 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action. • For the right turn from E Ferry St onto Main St, the volume would increase from 4 turns and 6 turns during the AM and PM Peak Hours, respectively, under Alternative A to 165 turns and 94 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action. Traffic patterns at this intersection are otherwise anticipated to be similar to Alternative A.
Jefferson St at E Ferry St	The volume of southbound right turns from Jefferson St onto E Ferry St and eastbound left turns from E Ferry St onto Jefferson St is anticipated to increase appreciably under the Future With the Proposed Action as compared to Alternative A, as described in greater detail below. • For the southbound right turn from Jefferson St onto E Ferry St, the volume would increase from 19 turns and 11 turns during the AM and PM Peak Hours, respectively, under Alternative A to 180 turns and 99 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action. • For the eastbound left turn from E Ferry St onto Jefferson St, the volume would increase from 25 turns and 28 turns during the AM and PM Peak Hours, respectively, under Alternative A to 157 turns and 155 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action. Traffic patterns at this intersection are otherwise anticipated to be similar to Alternative A.
Jefferson St at Florida St	The volume of vehicles traveling north and south along Jefferson St under the Future With the Proposed Action would be between approximately 275 – 375 vehicles during the AM and PM Peak Hours, representing an increase of between approximately 45% - 65% as compared to Alternative A. The anticipated volume of southbound right turns from Jefferson St onto Florida St and eastbound left turns from Florida St onto Jefferson St is anticipated to increase appreciably under the Future With the Proposed Action as compared to Alternative A, as described in greater detail below. • For the southbound right turn from Jefferson St onto Florida St, the volume would increase from 2 turns and 5 turns during the AM and PM Peak Hours, respectively, under Alternative A to 132 turns and 76 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action. • For the eastbound left turn from Florida St onto Jefferson St, the volume would increase from 4 turns during both the AM and PM Peak Hours under Alternative A to 89 turns and 87 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action.

Intersection	Description of TMC Volume Redistribution and Traffic Assignment
Jefferson St at E Delavan St	Due to the proposed detours, all traffic entering and exiting the western portion of E Delavan Ave would be eliminated. All eastbound movements, the northbound left turn movement, the westbound through movement, and the southbound right turn movement would be diverted because of the road closure. The volume of vehicles traveling north along Jefferson St under the Future With the Proposed Action would be between approximately 400 – 450 vehicles during the AM and PM Peak Hours, effectively doubling the traffic as compared to Alternative A. The volume of vehicles traveling south along Jefferson St under the Future With the Proposed Action would be approximately 300 vehicles in the AM and PM Peak Hour. This also represents an increase of double the traffic as compared to Alternative A. The anticipated volume of right and left turns from Jefferson St onto E Delavan Ave in the eastbound direction is anticipated to increase appreciably under the Future With the Proposed Action as compared to Alternative A, as described in greater detail below. • For the right turn from Jefferson St onto E Delavan Ave St in the northbound direction, the volume would increase from 34 turns and 48 turns during the AM and PM Peak Hours, respectively, under Alternative A to 251 turns and 258 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action. • For the southbound left turn from Jefferson St onto E Delavan Ave St, the volume would increase from 15 turns and 17 turns during the AM and PM Peak Hours, respectively, under Alternative A to 172 turns and 198 turns during the AM and PM Peak Hours, respectively, under the Future With the Proposed Action.

Capacity/Level of Service Analysis

The proposed action LOS results are presented in **Table 3-8** for the AM and PM peak hours of adjacent street traffic.

Table 3-8: Intersection Level of Service Summary (2031 Analysis Year)

Intersection	Control Type	AM Peak Hour (07:30 – 08:30)				PM Peak Hour (4:00 – 5:00)			
		No-Action 2031		Proposed Action 2031 (Detour)		No-Action 2031		Proposed Action 2031 (Detour)	
		LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)
(1) Main St (NY 5) and W Delavan Ave/E Delavan Ave	Traffic Signal	**E**	**78.1**	C	28.9	C	27.8	B	12.4
W Delavan Ave EB (LT/TH)		**F**	**214.0**	**F**	**92.1**	**E**	**76.3**	C	27.8
W Delavan Ave EB (RT)		A	5.4	A	4.7	A	5.5	A	4.4
E Delavan Ave WB (LT/TH/RT)		D	51.4	B	14.0	C	31.7	B	14.7
Main St NB (LT)		A	9.6	D	42.2	A	9.6	B	13.5
Main St NB (TH)		B	11.9	B	13.3	B	13.3	B	14.5
Main St NB (RT)		A	2.6	A	1.8	A	2.7	A	1.0
Main St SB (LT)		A	8.0	A	8.8	A	8.8	A	9.0
Main St SB (TH)		B	12.0	B	11.9	B	10.7	B	10.1
Main St SB (RT)		A	2.3	A	2.2	A	2.3	A	2.2
(2) Main St (NY 5) and Florida St	TWSC[1]								
Florida St WB (LT/TH/RT)		C	23.3	C	22.1	C	17.9	C	20.4
(3) Main St (NY 5) and Masten Ave/Driveway	Traffic Signal	A	5.2	A	6.5	A	5.5	A	6.4
Driveway EB (LT/TH/RT)		A	0.3	A	0.3	A	0.3	A	0.3
Masten Ave NB (LT/TH/RT)		A	0.5	A	0.5	A	3.5	A	3.5
Main St NB (LT/TH/RT)		A	5.6	A	7.0	A	6.4	A	7.3
Main St SB (LT)		A	5.4	A	6.5	A	4.9	A	5.3
Main St SB (TH/RT)		A	5.7	A	6.9	A	5.0	A	5.9
(4) Main St (NY 5) and W Ferry St/E Ferry St	Traffic Signal	B	19.3	C	31.3	B	15.7	B	17.7
W Ferry St EB (LT/TH/RT)		C	34.5	**E**	**77.8**	C	20.6	C	25.4
E Ferry ST WB (LT/TH/RT)		B	19.1	C	28.5	B	18.4	C	21.5
Main St NB (LT)		B	10.4	B	10.4	B	11.5	B	11.5
Main St NB (TH)		B	15.0	B	15.0	B	18.8	B	18.8

Intersection	Control Type	AM Peak Hour (07:30 – 08:30)				PM Peak Hour (4:00 – 5:00)			
		No-Action 2031		Proposed Action 2031 (Detour)		No-Action 2031		Proposed Action 2031 (Detour)	
		LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)
Main St NB (RT)		A	3.9	A	3.9	A	3.6	A	3.6
Main St SB (LT)		A	9.7	B	14.5	B	10.2	B	17.7
Main St SB (TH/RT)		A	9.7	A	9.7	A	8.4	A	8.4
(5) Jefferson Ave and E Ferry St	Traffic Signal	B	17.3	C	27.5	B	19.0	D	39.5
E Ferry St EB (LT/TH/RT)		B	16.0	D	51.0	B	17.4	**F**	**84.7**
E Ferry St WB (LT/TH/RT)		C	20.5	C	20.7	C	22.8	C	23.4
Jefferson Ave NB (LT/TH/RT)		B	13.6	B	13.8	B	17.0	B	17.3
Jefferson Ave SB (LT/TH/RT)		B	14.0	B	12.9	B	14.7	B	14.6
(6) Jefferson Ave. and Florida St.	TWSC								
Florida St EB (LT/TH/RT)		B	10.3	C	22.0	B	11.5	D	25.1
Florida St WB (LT/TH/RT)		B	11.3	C	16.4	B	12.9	C	16.9
(7) Jefferson Ave and E Delavan Ave	Traffic Signal	C	21.6	C	34.0	B	19.5	C	34.5
E Delavan Ave EB (LT/TH/RT)		C	25.7	A	0.0	C	23.7	A	0.0
E Delavan Ave WB (LT/TH/RT)		C	24.1	C	28.1	B	17.9	B	17.3
Jefferson Ave NB (LT/TH/RT)		B	15.7	B	15.5	B	16.6	B	17.1
Jefferson Ave SB (LT/TH/RT)		B	11.2	**E**	**65.0**	B	13.4	E	71.2
(8) Main St (NY 5) and Jefferson Ave	Traffic Signal	A	9.3	B	12.9	B	11.7	B	13.8
Jefferson Ave NB (LT/TH/RT)		C	26.1	C	29.3	C	27.8	C	30.3
Main St NB (TH)		B	12.3	B	16.1	B	14.1	B	16.5
Main St NB (RT)		A	6.3	A	3.5	A	6.0	A	3.6
Main St SB (LT/TH)		A	5.1	A	7.9	A	5.9	A	7.6

1. TWSC represents a two-way stop-controlled intersection. A typical configuration of this type of intersection is at a four-way intersection where the major street is controlled while ethe minor street is controlled by stop signs.

The proposed action capacity analysis indicates that all study area intersections are expected to operate at LOS D or better during the AM and PM peak hours of adjacent street traffic. This implies that these intersections typically operate without substantial congestion and that reserve capacity exists on the local street network. It should be noted that the LOS for the intersection of Main St and East/West Delavan Avenue actually improves with the proposed action. This is because the critical approach driving the overall LOS for the intersection (eastbound West Delavan Avenue) has more gaps and clearance time due to reduced traffic flow westbound from East Delavan Avenue from the closure and detour.

Most intersections, outlined **Table 3-9** would experience a drop in LOS from the Future Without to the Future With the Proposed Action conditions; however, the drop in LOS and increase in delay is considered minimal at these intersections; therefore, no proposed improvements are required.

Table 3-9: Intersection Level of Service Summary (Minor Changes)

Intersection	Control Type	AM Peak Hour (07:30 – 08:30)				PM Peak Hour (4:00 – 5:00)			
		No-Action 2031		Proposed Action 2031 (Detour)		No-Action 2031		Proposed Action 2031 (Detour)	
		LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)
(1) Main St (NY 5) and W Delavan Ave/E Delavan Ave	Traffic Signal	E	78.1	C	28.9	C	27.8	B	12.4
(2) Main St (NY 5) and Florida St	TWSC								
Florida St WB (LT/TH/RT)		C	23.3	C	22.1	C	17.9	C	20.4
(3) Main St (NY 5) and Masten Ave/Driveway	Traffic Signal	A	5.2	A	6.5	A	5.5	A	6.4
(4) Main St (NY 5) and W Ferry St/E Ferry St	Traffic Signal	B	19.3	C	31.3	B	15.7	B	17.7
(5) Jefferson Ave and E Ferry St	Traffic Signal	B	17.3	C	27.5	B	19.0	D	39.5
(6) Jefferson Ave. and Florida St.	TWSC								
Florida St EB (LT/TH/RT)		B	10.3	C	22.0	B	11.5	D	25.1
Florida St WB (LT/TH/RT)		B	11.3	C	16.4	B	12.9	C	16.9
(7) Jefferson Ave and E Delavan Ave	Traffic Signal	C	21.6	C	34.0	B	19.5	C	34.5
(8) Main St (NY 5) and Jefferson Ave	Traffic Signal	A	9.3	B	12.9	B	11.7	B	13.8

The greatest impacts from the proposed action are seen at the intersections of Jefferson Avenue at East Ferry Street and Jefferson Avenue at Florida Street. Jefferson Avenue at East Ferry Street drops from LOS B to D, as well as the eastbound approach of Florida Street at Jefferson Avenue. These drops in LOS are expected due to the rerouting of traffic for the proposed detour; however, all LOS is within acceptable levels.

However, Buffalo Sewer plans to coordinate with the City of Buffalo to develop revised timing plans for the signalized intersections, particularly at Main Street with East/West Delavan Avenue, Jefferson Avenue with East Delavan Avenue, and Jefferson Avenue with East Ferry Street. These optimized timing and/or phasing plans would be temporary to accommodate the traffic pattern changes from the detour, and while not necessary to mitigate failing operations, would help to reduce the slight increase in delays and travel times associated with the detour.

Multimodal Consideration for Proposed Action

Multimodal considerations for the East Delavan Avenue road closure include maintaining safe and accessible routes for pedestrians and bicyclists through the use of signed sidewalk and crossing detours. These detours would be designed to guide users along alternative paths that connect to existing crosswalks and sidewalks outside the closure limits. In addition, fencing or other physical barriers would be installed to clearly delineate closed areas and prevent pedestrians and bicyclists from entering active construction zones, enhancing overall safety, and minimizing potential conflicts with work activities or equipment. The fencing would also be utilized to discourage midblock crossings along East Delavan Avenue. Crossings of East Delavan Avenue must be maintained at Main Street and Jefferson Avenue, and a temporary crossing could be considered just west of the closure on East Delavan Avenue at the M&T Bank access road. Coordination with the NFTA would also be conducted to identify impacted bus routes and stops within the closure area. Temporary bus stop relocations and route detours would be established, as needed, to maintain service continuity and minimize disruption for transit users.

Operation

After construction, both Alternatives B and C would have above- and below-grade structures that would require regular access and maintenance by Buffalo Sewer, up to a few visits per week at the facility's location on Canisus property.

3.13 Air Quality, Greenhouse Gas Emissions, and Odor

3.13.1 Introduction and Methodology

This section assesses the potential effects of the proposed action on existing air quality and whether the proposed action would impact greenhouse gas emissions and/or odor. Air quality impacts can result from emissions generated by stationary sources, such as emissions from on-site fuel combustion for heat and hot water systems, generators and use of processing equipment, or indirect sources, such as off-site emissions from on-road vehicle trips generated by a project or other changes to future traffic conditions from a project. Greenhouse gases (GHGs) include carbon dioxide, methane, nitrous oxide, and certain synthetic compounds, which can trap heat in Earth's atmosphere. The construction equipment associated with the proposed action would emit greenhouse gases.

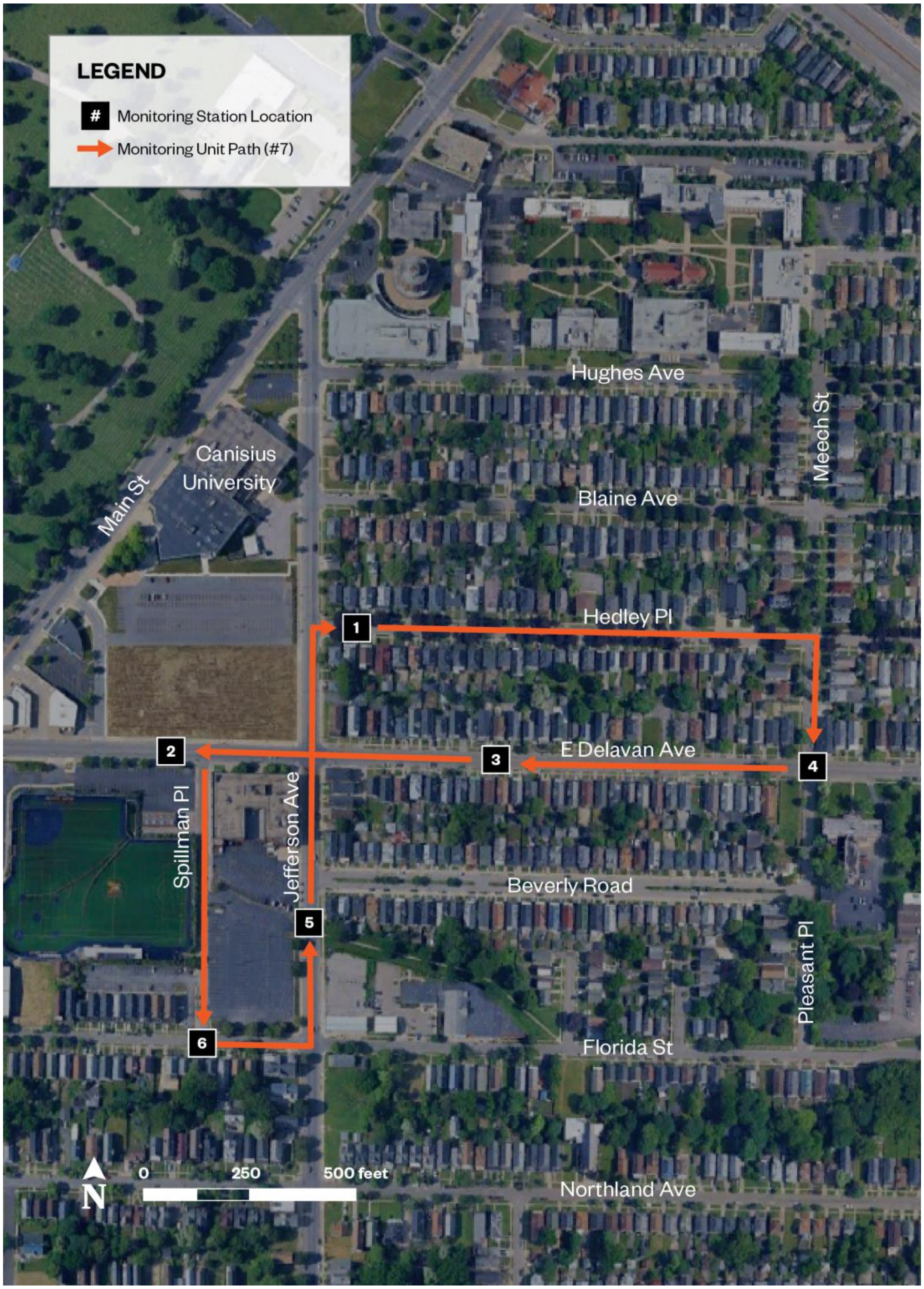
The potential for the proposed action to emit odors is also evaluated within this section, since emissions from the construction activities associated with the proposed action or its operation could generate noticeable odors within the community.

Carbon monoxide (CO), particulate matter (PM), volatile organic compounds (VOCs) and nitrogen oxides (including nitrogen dioxide [NO_2]) are emitted from the combustion of gasoline and diesel. Fine PM can also form from emissions of nitrogen oxides, sulfur oxides (including sulfur dioxide [SO_2]), ammonia, and organic compounds condense in the atmosphere. While VOCs are not listed in the National Ambient Air Quality Standards (NAAQS) table from USEPA, they are still pollutants to be monitored when considering air quality. Odors from the proposed action could be caused by hydrogen sulfide (H_2S), a colorless gas with a distinct, pungent odor.

The project location is within the City of Buffalo and is part of NYSDEC Region 9, but NYSDEC Air Quality Health Region 8 – Western New York. Within Region 8, the NYSDEC has continuous monitoring stations in Buffalo, Amherst, Tonawanda, Middleport, and Dunkirk. Data from the closest monitoring stations to the project site were used to define the existing air quality levels, or background concentrations, at the project site. Background concentrations include ambient pollution levels from stationary and mobile sources.

Air quality monitoring was performed within the project site on October 18, 2024, to determine instantaneous and eight (8)-hour time-weighted average (TWA) concentrations for H_2S, CO and VOCs for comparison to applicable regulatory levels, including the short-term exposure limit (STEL). Six stationary monitors and one mobile monitor collected data for eight hours, as shown in **Figure 3-16**.

Figure 3-16: Air Quality Monitoring Location Map



3.13.2 Baseline Conditions

The Clean Air Act (CAA) establishes primary and secondary NAAQS in Title 40, Part 50 of the Code of Federal Regulations (CFR) (40 CFR Part 50) for six (6) specific pollutants:

- Carbon Monoxide (CO)
- Lead (Pb)
- Nitrogen Dioxide (NO_2)
- Ozone (O_3)
- Particulate Matter (PM 2.5 and PM 10)
- Sulfur Dioxide (SO_2)

Primary standards represent levels that are requisite to protect the public health, allowing an adequate margin of safety. Secondary standards are intended to protect the nation's welfare, and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the environment. The primary standards are generally the same as, or more restrictive than, the secondary standards. The NAAQS for each pollutant is listed in **Table 3-10.**

The CAA defines nonattainment areas as geographic regions that have been designated as not meeting one or more of the NAAQS. When the USEPA designates an area as a nonattainment, the State is required to develop and implement a State Implementation Plan (SIP), which is a specific plan to attain the NAAQS for the nonattainment area. The project site is located in the City of Buffalo, Erie County, New York. Erie County is not classified as nonattainment or maintenance status for any criteria pollutants, meaning the project site currently meets the NAAQS. The closest area with any designation in the State is Onondaga County under maintenance status for CO.

Table 3-10: National Ambient Air Quality Standards

Pollutant		Primary/ Secondary	Average Time	Level	Form
Carbon Monoxide		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead		primary and secondary	rolling 3-month average	0.15 μg/m³	Not be exceeded
Nitrogen Dioxide		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb	Annual mean
Ozone		primary and secondary	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution	PM2.5	primary	1 year	9.0 μg/m³	Annual mean, averaged over 3 years
		secondary	1 year	15.0 μg/m³	Annual mean, averaged over 3 years
		primary and secondary	24 hours	35 μg/m³	98th percentile, averaged over 3 years

Pollutant		Primary/ Secondary	Average Time	Level	Form
	PM10	primary and secondary	24 hours	150 μg/m³	Not to be exceeded more than once per year on average, over 3 years
Sulfur Dioxide		primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	1 year	10 ppb	Annual mean, averaged over 3 years

Air Quality Data from NYSDEC Monitoring Stations

For SO_2, the closest monitoring station is located in Buffalo. The annual average in 2023 was 0.10 parts per billion (ppb), which is below the NAAQS of 30 ppb. In addition, the 99th percentile of 1-hour daily maximum concentrations, averaged over three years, was 6.23 ppb, well below the NAAQS of 75 ppb.

The most recent NYSDEC monitoring data indicates the closest carbon monoxide (CO) monitoring station to the Project Site is the "Buffalo Near Road" station. The 2023 maximum one-hour average and eight-hour average CO concentrations at this monitoring station are 1.56 and 1.4 parts per million (ppm), respectively. The "Buffalo" monitoring station is also nearby the project site and had maximum one-hour average and eight-hour average CO concentrations of 1.70 and 1.4 ppm, respectively for 2023. Carbon monoxide levels at both the "Buffalo Near Road" and the "Buffalo" stations are below the NAAQS levels in 2023.

The closest monitoring site for O_3 is the "Amherst" monitoring station. The fourth highest daily maximum 8-hour average for 2023 was 0.067 ppm. This value is just below the NAAQS of 0.070 ppm. During the two previous years, 2022 and 2021, the values were also below the NAAQS at 0.067 ppm and 0.066 ppm, respectively.

For Particulates (PM 2.5), the closest monitoring station is "Buffalo Near Road." The annual average over three years was 8.1 micrograms per cubic meter ($\mu g/m^3$). The NAAQS for this requirement is 9.0 $\mu g/m^3$. In addition, the 98th percentile of 24-hour concentrations, averaged over three years, was 21.7 $\mu g/m^3$, below the NAAQS of 35 $\mu g/m^3$. For PM 10, Rochester in Monroe County was the closest monitoring station. The 2023 maximum three (3)-month rolling average concentration of Particle Pollution (PM 10) was 0.002 $\mu g/m^3$. This is also under the NAAQS of 150 $\mu g/m^3$.

For nitrogen dioxide (NO_2), the closest monitoring station is "Buffalo Near Road." The 12-month average for 2023 was 10.20 ppb, well below the maximum NAAQS of 53 ppb. In addition, the 98th percentile of one-hour daily maximum concentrations averaged over the previous three years for the monitoring station was 42.33 ppb. This result is considerably below the NAAQS of 100 ppb.

There is no monitoring station within Region 8 for lead (Pb). The closet station monitoring for lead is "IS 52" in Bronx County (Air Quality Region 2). The maximum three-month rolling average for the monitoring station in 2023 was 0.0027 $\mu g/m^3$, which is well below the maximum NAAQS of 0.15 $\mu g/m^3$.

Air Quality Monitoring within Project Site

As shown in **Table 3-11**, H_2S has an Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL) of 20 ppm for general industry and 10-minute maximum peak of 50 ppm. The National Institute for Occupational Safety and Health (NIOSH) recommends a 10-minute ceiling limit of 10 ppm for H_2S and does not have a TWA for H_2S. The odor threshold for humans for H_2S is approximately 0.10 ppm.

Concentrations of H_2S and CO measured are well below the limits of concern for exposure during the 2024 monitoring period. The concentration of VOCs is negligible and is not of concern. While some of the stationary monitoring units detected low levels of carbon monoxide and/or VOCs, these levels can be attributed to vehicle exhaust emissions and are representative of background concentrations for these chemicals due to vehicle exhaust from nearby roadways. No unusual or offensive odors were observed during the monitoring period.

Table 3-11: 2024 Air Quality Monitoring Results

Pollutant	Time	Occupational Safety and Health Administration (OSHA) Limit	National Institute for Occupational Safety and Health (NIOSH) Limit	Monitoring Test Result	Results Within OSHA and NIOSH Air Quality Limits?
		ppm	ppm	ppm	
Hydrogen Sulfide (H_2S)	Short-Term Exposure Limit (STEL)	50	10	Less than 0.1	Yes
	Time Weighted-Average (TWA) (8-hour)	20	--	Less than 0.1	Yes
Carbon Monoxide (CO)	STEL	200	200	0.16	Yes
	TWA (8-hour)	50	30	Less than 1	Yes
Volatile Organic Compound (VOC)	STEL	--	--	0.8	Not Applicable
	TWA (8-hour)	--	--	0.39	Not Applicable

3.13.3 Future Without the Proposed Action (Alternative A)

Absent the proposed action, the project site would remain unchanged, and no air quality, greenhouse gas emissions, and odor impacts associated with operation of Buffalo Sewer's infrastructure in the project location would be anticipated to occur.

3.13.4 Future With the Proposed Action (Alternatives B and C)

Construction

The proposed project would generate construction vehicle trips during site preparation and construction activities. While vehicles and equipment would be operating onsite during workdays, these activities would be temporary and intermittent during the construction period and would occur during normal working hours. Construction activities are not expected to have a significant adverse impact on air quality. Dust may be periodically generated during construction. However, the Contractor would be required to develop and comply with a dust mitigation plan to limit the release of dust from the project site.

Since no concentration of hydrogen sulfide was observed above 0.1 ppm, which is well below OSHA and NIOSH limits, it is anticipated that there would be no significant adverse impacts to air. Although odors originating from bedrock excavation and groundwater management may sporadically occur in the community during the construction period, Community Air Monitoring would be conducted as necessary to verify that levels of H_2S do not represent a concern for public health and safety. Potential impacts to air quality for construction personnel may occur during construction due to bedrock properties in the project site. Disturbance of the bedrock could lead to release of H_2S in the breathing zone for construction workers and would require health and safety measures to be implemented by the Contractor during construction to protect the workers during construction activities. As described further in Section 3.5, “Geology and Groundwater,” it is anticipated that excavation that could extend into the lower bedrock zone within the project location would be more likely to encounter higher rates of groundwater inflow and higher levels of hydrogen sulfide.

In the Future With the Proposed Action, significant adverse air quality impacts are not anticipated to occur as a result of the proposed project.

Operation

After construction, there would be no vehicles and equipment regularly operating onsite; therefore, there would be no ongoing activities that would impact air quality, greenhouse gas, and odor. As described in Section 3.5, “Geology and Groundwater,” once operational, additional impacts to geology, soils or groundwater at the project sites would not be necessary. During a CSO event, there would be the potential for stored combined sewage to release an odor. However, the project would be designed to limit or eliminate the release of odors from the CSO storage facility when in use. Therefore, it is anticipated that during operations, the Future With the Proposed Action, would not have any significant adverse impacts to air quality, greenhouse gas emissions, and odor.

3.14 Noise

3.14.1 Introduction and Methodology

This section focuses on evaluating potential noise impacts associated with construction and operation of the proposed action. The noise assessment addresses the following three types of noise sources: traffic-related noise during the construction period, non-road construction noise during the construction period, and operational noise associated with operation of the proposed CSO storage facility following construction. The construction-related noise assessments were conducted due to the duration of construction activities associated with the proposed action, which are anticipated to be up to four to five years, depending on the project alternative. The operational noise assessment was conducted to determine the potential for significant adverse noise effects resulting from exterior noise sources associated with operation of the proposed action, which would include various minor, exterior mechanical equipment and travel to and from the project site for maintenance.

The traffic-related noise assessment focuses on the potential for impacts from construction detours and designated truck haul routes, and it was conducted to both support SEQR review and inform decision-making, as changes in vehicular activity can influence community noise levels. This assessment follows the Federal Highway Administration's (FHWA) 23 CFR 772 and the NYSDOT's Noise Policy (TEM Section 4.4.18) for traffic-related noise, and NYSDEC's Assessing and Mitigating Noise Impacts (DEP-00-1) for non-road construction noise. The purpose of this analysis is to identify noise level changes anticipated during construction that may affect the surrounding community. The study area utilized to evaluate both construction-related noise and vibration impacts encompasses streets with predicted changes in traffic patterns due to the proposed roadway detour that would be in place for several months to construct the proposed action (Section 3.12, "Transportation"), and is shown in **Figure 3-17**. Based on guidance provided in FHWA's "Highway Traffic Noise: Analysis and Abatement Guidance," the study area for the traffic-related noise assessment was defined as 200 feet from local roadways that would be altered as a result of changing traffic patterns associated with construction of the proposed action. The study area for the traffic-related noise assessment also incorporates the portion of the neighborhood within 300 feet of proposed construction activities and is shown in **Figure 3-17** as well. These study area distances from proposed construction activities were confirmed to be appropriate based on the results of the final analysis; no additional area was needed to capture additional potential project impacts.

Figure 3-17: Noise and Vibration Study Area

Noise Fundamentals

Noise is generally defined as unwanted sound. The level of noise perceived at a receiver depends on numerous variables, including the noise level at the source, the distance from the noise source to the receiver, physical barriers that may attenuate or block the noise reaching the receiver, and the sensitivity of the receiver.

Certain critical factors affect noise and the way it is perceived by the human ear. These include the (1) intensity; (2) frequency; and (3) time-varying nature of the noise.

1. Intensity is a measure of the magnitude or energy of the sound and is directly related to the sound pressure level. Sound pressure levels are expressed in terms of a logarithmic scale, with units called decibels (dB) that correspond to the way that the human ear senses noise. As the intensity of a noise increases, it is judged to be more less acceptable.

2. Frequency is a measure of the total qualities of sound. People are most sensitive to mid- to high-frequency sounds, which is why higher frequencies can lead to increased annoyance. Noise levels are measured in A-weighted decibels (dB(A)), a metric that measures both the intensity and frequency of sound. The greater the dB(A), the more perceptible it is to the human ear. **Table 3-12** below describes common noise levels with sensitivity to the human ear.

3. Environmental noise varies over time; therefore, it is necessary to use a method of measuring noise that will account for fluctuations. The equivalent continuous sound level (L_{eq}) can be used to describe varying noise by evaluating average noise levels over the same period of time. L_{eq} is typically used for highway noise analysis and is used in the traffic and construction noise analyses performed for the proposed project. The higher the L_{eq}, the greater the average sound energy over a period of time.

Table 3-12: Common Noise Levels

Sound Source	(dB(A))
Military jet, air raid siren	130
Amplified rock music	110
Jet takeoff at 500 meters	100
Freight train at 30 meters	95
Train horn at 30 meters	90
Heavy truck at 15 meters	80–90
Busy city street, loud shout	80
Busy traffic intersection	70–80
Highway traffic at 15 meters, train	70
Predominantly industrial area	60
Light car traffic at 15 meters, city or commercial areas, or residential areas close to industry	50–60
Background noise in an office	50
Suburban areas with medium-density transportation	40–50
Public library	40
Soft whisper at 5 meters	30
Threshold of hearing	0

Note: A 10 dB(A) increase in level appears to double the loudness, and a 10 dB(A) decrease halves the apparent loudness.

Sources:

Cowan, James P. Handbook of Environmental Acoustics, Van Nostrand Reinhold, New York, 1994. Egan, M. David, Architectural Acoustics. McGraw-Hill Book Company, 1988.

Noise Data Collection and Analysis

To support the assessment, field noise measurements were collected in general accordance with the NYSDOT's "Field Measurement of Existing Noise Levels" manual. The location of each noise measurement is shown in **Figure 3-17**. Long-term measurements were collected at two locations, for a minimum of 24 hours, to understand background noise levels in the area. Noise measurements were collected in units of L_{eq}. One long-term measurement was located on East Delavan Avenue near Jefferson Avenue, and one long-term measurement was located on Florida Street near Jefferson Avenue. Four short-term field noise data collection points were also placed within the study area. Noise measurement equipment for the-short term noise measurements was stationed on a tripod approximately 5.5 feet from ground level. Two short-term (15-25 minute) field noise measurements were collected at each of the four identified short-term field measurement receiver locations shown on **Figure 3-18** and the results of the field noise measurements are shown in **Table 3-13**, below. The short-term field noise measurements were used to validate the noise models. The measurement locations were chosen to allow for geographic coverage of the study area. Traffic counts, speed observations, and vehicle classification categories consistent with the transportation assessment data were collected during the short-term field noise measurements.

The traffic-related noise analysis was performed using the FHWA Traffic Noise Model (TNM) version 3.2 and the non-road construction noise analysis was performed using the calculations contained within the FHWA Roadway Construction Noise Model (RCNM) Version 1.1. The model requires the selection of "receivers" or locations where noise can be projected. A noise receiver is defined as a point where highway traffic noise levels are measured and/or modeled. A noise receptor is defined as a discrete or representative location of a noise sensitive area(s).

To conduct the modeling required to estimate projected changes in noise levels associated with construction of the proposed action, a total of seventy-eight (78) representative receiver locations were utilized within the models. These receiver locations include the six (6) field measurement locations and seventy-two (72) additional locations where field measurements were not collected, referred to in this section as "model-only locations." The location of each receiver is shown in **Figure 3-17**. The receivers are meant to cover representative exterior areas of frequent human use. Receiver modeling locations were chosen to group areas that experience common noise environments. Model-only receivers were placed to analyze noise conditions for areas of noise sensitive land uses, such as residences, parkland, schools, and places of worship. Sensitive receptors within the study area were identified and categorized by land use categories as defined below in **Table 3-14**.To validate the noise model developed for the proposed action, noise models (reflecting site-specific conditions, geometry, traffic volumes, vehicle distributions, and speeds observed during the field noise measurements) were developed for each short-term field measurement receiver site.

The calculated noise levels from the validation modeling were then compared with the field-measured noise levels to see how well they match; see **Table 3-13** for comparison. A project's noise model is considered valid if the modeled noise levels are within three (3) dB(A) of the measured noise levels. For the proposed action, the modeled noise levels were all within three (3) dB(A) of the measured noise levels; thus, the noise model developed for the proposed action was considered valid for use in predicting traffic noise levels in this area.

Table 3-13: Field and Model Validation Noise Levels (L_{eq})

Measurement Site	Major Source(s) of Noise	Start Time	Date	**Field Measured 2024 (dBA)**	Field Verification Model* 2024 (dBA)
166 East Ferry: Front yards of residential houses with along East Ferry Street.	East Ferry	8:21 am 9:27 am	10/09/2024 10/10/2024	**67** **65**	65 ----
1552 Jefferson Ave: Front yards of residential houses with along East Ferry Street.	Jefferson Avenue	9:48 am 7:00 am	10/09/2024 10/10/2024	**61** **61**	60 ----
1707 Main Street: Front yard of residential building along Main Street.	Main Street	7:03 am 12:13 pm	10/09/2024 10/09/2024	**64** **63**	63 ----
257 East Delavan: Front yards of residential houses with along East Delavan Street.	East Delavan	11:16am 7:47am	10/09/2024 10/10/2024	**63** **65**	---- 63

Notes:
---- These measurements were not modeled.
* Model Validation sound levels are considered accurate if they are within ±3 dBA of field sound levels (see Section 4.0).
Note, all noise levels are averaged to a whole number.

In accordance with FHWA's *Highway Traffic Noise Analysis and Abatement Policy and Guidance*, a noise level change of three (3) dB(A) or less is generally imperceptible to the human ear. In evaluating the analysis results, an increase of over 3 dB(A) from the baseline conditions to the proposed action at a receiver was used to assist in identifying receivers that would experience perceptible noise increases during construction of the proposed action. Perceptible increases in noise warrant further investigation to determine if these increases would affect the quality of the human environment. The NYSDEC Noise Policy also indicates that noise level increases ranging from zero (0) to three (3) dB(A) should have no appreciable effect on receptors. Increases from three (3) dB(A) to six (6) dB(A) may have potential for adverse noise impacts only in cases where the most sensitive of receptors are present. Sound pressure increases of more than 6 dB(A) may require a closer analysis of impact potential depending on existing sound pressure levels (SPLs) and the character of surrounding land use and receptors. SPL increases approaching 10 dB(A) deserve consideration of avoidance and mitigation measures in most cases. The above thresholds as indicators of impact potential should be viewed as guidelines subject to adjustment as appropriate for the specific circumstances one encounters.

Table 3-14: Noise Study Land Use Categories

Land Use Category	Interior or Exterior	Land Use Description
A	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[1]	Exterior	Residential
C[1]	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[1]	Exterior	Hotels, motels, offices, restaurants/bars and other developed lands, properties or activities not included in A-D or F.
F	Either	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	Either	Undeveloped lands that are not permitted.

Notes:
1. Includes undeveloped lands permitted for this Category.

Traffic-Related Noise

The traffic-related noise assessment considered the potential changes in noise due to detours associated with the Proposed Action. Both Alternative B and Alternative C would involve construction of up to five and four years, respectively, and detours of up to several months. The detours would be the same for both alternatives. Therefore, traffic noise effects were assessed qualitatively and quantitatively for both Alternatives B and C at the same time and using the same parameters.

Potential traffic-related effects on the area during construction of Alternatives B and C would involve detours, haul trucks, and construction worker vehicle trips (e.g., project workers cars and pickup trucks). The paths of each detour and haul route are displayed on **Figure 3-17**. The detours would include a detour route for general through traffic and a separate truck detour route for heavy trucks passing through the area, as shown on **Figure 3-17**. While the detours would be temporary, they would affect traffic patterns during the entire time that they would be in place (day and night). Therefore, all 24-hours of the day were assessed for potential changes in traffic generated noise on study area roadways, either quantitatively or qualitatively. This was conducted to identify: (1) maximum noise levels; and (2) perceptible (i.e., 3 dB(A)) changes in noise levels. Maximum noise levels were assessed during the peak noise hour when vehicle volumes are the highest, and changes in traffic noise levels were assessed throughout the off-peak quieter hours of the day.

Given the commuter-driven nature of the surrounding roadway network, the peak noise hour was determined to be the AM peak hour when vehicle volumes are the highest. Quiet hours are generally more sensitive to noise increases. To assess the off-peak quiet hours, the 24-hour noise measurements were utilized in comparison to the traffic volume increases from the detours. This comparison identified the most sensitive hours of the day and their associated traffic changes. The most sensitive hours of the day for noise increases were determined to be at night and in the early morning. In accordance with FHWA's *Highway Traffic Noise Analysis and Abatement Policy and Guidance*, when traffic volumes increase by at least 100 percent, a perceptible increase in noise levels (an increase of more than three (3) dB(A)) can be expected in the surrounding area. Assessment of all off-peak day and night hours was undertaken to determine if the percentage change in traffic volumes was 100 percent or greater.

Non-Road Construction Noise

Non-road construction noise was also modeled and refers to noise emanating from the construction site due to on-site construction activities. Non-road construction noise differs from traffic noise in the following ways:

- Non-road construction activities are generally short-term;
- Non-road construction activities are usually limited to daytime hours when most human activity takes place; and
- Non-road construction noise is intermittent and depends on the type of equipment in use.

Construction activities associated with the proposed action would include demolition, excavation, rock-blasting, sub-base preparation, roadway/tunnel construction, and other miscellaneous work. The levels of noise would vary, depending on the construction activities undertaken and the anticipated duration of the activity. The parameters that determine the nature and magnitude of construction noise include the type, age, and condition of construction equipment; operation cycles; the number of pieces of construction equipment operating simultaneously; and the distance between the construction activities and receivers. Temporary construction noise from these activities and equipment could affect nearby receivers. Many of these parameters would not be fully defined until final design plans and specifications have been prepared and, in some cases, until the Contractor has been selected. However, representative construction scenarios based on typical construction procedures have been identified for the proposed action and were used to assess potential effects on noise levels in the study area.

To evaluate potential noise levels as a result of construction activities associated with the proposed action at the project site, the formulas, and calculations within the RCNM Version 1.1, developed by the FHWA, were employed. No version of RCNM is required to be used for SEQR assessment; however, this model is a screening tool that can be used for the prediction of construction noise during the various stages of project development and construction. The anticipated types of construction equipment and distances to the center of the construction area were analyzed through the use of RCNM methodology. The construction noise analysis was performed in iterations to predict noise levels for twenty-six (26) of the loudest construction scenarios during construction of the project (twelve (12) scenarios for Alternative B and fourteen (14) scenarios for Alternative C). These scenarios were analyzed at six (6) representative distances (50, 100, 150, 200, 250, and 300 feet) from the construction zones. These model iterations allow for estimation of noise levels along the length of the corridor at different distances for each construction scenario. Reference noise levels used for each piece of construction equipment are shown in **Table 3-15.**

Table 3-15: Construction Equipment Planned for the Proposed Action Alternatives

Equipment Description	Impact Device (Y or N)	Acoustical Usage Factor (%)*	L_{max} at 50 feet (dB(A))
Blasting	Yes	1	94
Compactor (ground)	No	20	83.2
Concrete Mixer Truck	No	40	78.8
Concrete Pump Truck	No	20	81.4
Crane	No	16	80.6
Dump Truck	No	40	76.5
Excavator	No	40	80.7
Front End Loader	No	40	79.1
Generator 100 percent	No	100	80.6
MTBM	No	90	85
Pickup Truck	No	40	75
Pneumatic Tools	No	50	85.2
Pumps 100 Percent	No	100	80.9
Rock Drill	No	20	81
Slurry Plant	No	100	78
Ventilation Fan	No	100	78.9

Notes:
L_{max} is the maximum sound level of the loudest single piece of equipment.
Construction equipment identified above corresponds to the types of construction equipment expected to be used on this Project.
*Acoustical Usage Factor is an estimate of the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.
Source: Acoustical usage factor percentages and L_{max} values are from FHWA Roadway Construction Noise Model User's Guide, FHWA-HEP-05-054, DOT-VNTSC-FHWA-05-01 (Final Report, January 2006).

The RCNM software refers to total L_{eq} and total L_{max} as follows:

- Total L_{eq} is the "equivalent continuous sound level" and is defined in the RCNM manual as the level of a steady sound, which, in a stated time period and at a stated location, has the same sound energy as the time-varying sound. In general, it is the average sound pressure level during a period of time.
- Total L_{max} is the value for the loudest single piece of equipment.

The NYSDOT Noise Policy states that, for urban projects, a construction noise impact will not normally occur at levels under L_{eq}=80 dB(A) as analyzed under the following conditions:

1. Unadjusted Noise Level Totals – These are the total noise levels that would be anticipated if there were no intervening buildings or other barriers. Note that these conditions are somewhat rare within the corridor as most locations have intervening barriers at some distances within 300 feet (e.g., buildings or residences) that would affect noise levels.
2. At-Grade Adjusted Noise Level Totals – These are total noise levels that have been adjusted for distances of 200 ft or greater where it was assumed that intervening buildings are present that would block the receiver's line-of-sight to the construction equipment.

3.14.2 Baseline Conditions

The project is set in an urban area with urban sounds associated with construction or landscaping/lawn equipment, emergency vehicle sirens, air traffic, intermittent music, and passing conversations; however, the main generator of noise in the study area is traffic. The results of the 24-hour noise measurements indicate that noise levels in the area are somewhat consistent throughout the day and much quieter at night with less traffic and lower urban noises. In general, noise levels generally become progressively quieter the further the receiver is from the busy roadways. A summary of the long-term monitoring locations is as follows:

- East Delavan Avenue Long-Term Measurement: The noise range at this location during the work hours associated with construction of the proposed action (7:00 AM to 3:00 PM) was between sixty-six (66) dB(A) and sixty-eight (68) dB(A). These results indicate that noise levels in the area are generally consistent throughout the proposed work hours. During these work hours, the quietest noise hour (66 dB(A)) was determined to be between 1:00 PM – 1:59 PM and the loudest (68 dB(A)) noise hour was determined to be between 8:00 AM – 8:59 AM and 11:00 AM – 11:59 AM.

  The noise across a 24-hour period ranged from fifty-six (56) dB(A) to sixty-eight (68) dB(A). During that 24-hour period, the quietest noise hours (56 dB(A)) were determined to be between 2:00 AM – 3:59 AM and the loudest (68 dB(A)) noise hours were determined to be between 8:00 AM – 8:59 AM and 11:00 AM – 11:59 AM.

- Florida Street Long-Term Measurement: The noise range during the proposed work hours of 7:00 AM to 3:00 PM was between fifty-three (53) dB(A) and fifty-nine (59) dB(A). During these work hours, the quietest noise hours (53 dB(A)) were determined to be between 7:00 AM – 7:59 AM and 12:00 PM – 12:59 PM, while the loudest noise hours (59 dB(A)) were determined to be between 9:00 AM – 9:59 AM, 11:00 AM – 11:59 AM, and 2:00 PM – 2:59 PM.

  The noise range for a 24-hour period ranged from thirty-eight (38) dB(A) to fifty-nine (59) dB(A). During that 24-hour period, the quietest noise hour (38 dB(A)) was determined to be between 3:00 AM – 3:59 AM and the loudest (59 dB(A)) noise hours were determined to be between 9:00 AM – 9:59 AM, 11:00 AM – 11:59 AM, and 2:00 PM – 2:59 PM.

The 24-hour monitoring results for each site are presented in **Table 3-16**.

Table 3-16: 24-Hour Noise Monitoring Summary

Hour	Begin	End	Noise Level at East Delavan Avenue Site 10/17/24 (dB(A) L_{eq})	Noise Level at Florida Street Site 10/15/24 (dB(A) L_{eq})	Notes
Hour 1	12:00 AM	12:59 AM	60	50	
Hour 2	1:00 AM	1:59 AM	57	43	
Hour 3	2:00 AM	2:59 AM	56[2]	40	
Hour 4	3:00 AM	3:59 AM	56[2]	38[2]	
Hour 5	4:00 AM	4:59 AM	57	39	
Hour 6	5:00 AM	5:59 AM	61	42	
Hour 7	6:00 AM	6:59 AM	67	49	
Hour 8	7:00 AM	7:59 AM	67	53[1]	Work Hours
Hour 9	8:00 AM	8:59 AM	68[3]	55	
Hour 10	9:00 AM	9:59 AM	67	59[3]	
Hour 11	10:00 AM	10:59 AM	67	56	
Hour 12	11:00 AM	11:59 AM	68[3]	59[3]	
Hour 13	12:00 PM	12:59 PM	67	53[1]	
Hour 14	1:00 PM	1:59 PM	66[1]	56	
Hour 15	2:00 PM	2:59 PM	67	59[3]	
Hour 16	3:00 PM	3:59 PM	67	56	
Hour 17	4:00 PM	4:59 PM	67*	56	
Hour 18	5:00 PM	5:59 PM	67	55	
Hour 19	6:00 PM	6:59 PM	65	55	
Hour 20	7:00 PM	7:59 PM	65	49	
Hour 21	8:00 PM	8:59 PM	64*	49	
Hour 22	9:00 PM	9:59 PM	64	51	
Hour 23	10:00 PM	10:59 PM	62	51	
Hour 24	11:00 PM	11:59 PM	62*	49	

Notes:
1: Quietest hours during work hours of 7am-3pm.
2: Loudest hours overall for the 24-hour period.
3: Quietest hours overall for 24-hour period.
* A small portion of the field data for this interval was out of range for traffic noise. Analysis of the raw data showed anomalous data for a duration of less than 1 minute that skewed the entire hour of measurement data. The anomalous data was considered inconsistent with average conditions and, therefore, removed from the calculation to obtain a more accurate average. All hours with anomalies were outside of working hours when traffic detours are the only potential project related noise concern under review. Corrected hourly measurements are shown.

3.14.3 Future Without the Proposed Action (Alternative A)

Under the Future Without the Proposed Action, no construction would be required and no changes associated with the proposed action would be made to the area. Alternative A noise levels were predicted as a baseline to represent conditions in 2031, the analysis year selected to represent when the proposed action would be operational, without construction related noise (see Section 3.12, "Transportation"). Predicted noise levels without construction are used for comparison to noise levels predicted under construction conditions.

Alternative A traffic noise levels (i.e., without the detours or proposed addition of construction haul trucks to the study area) were predicted at the field-measured receiver locations as well as the model-only receiver locations within the study area. Noise modeling was performed using the validated TNM computer model discussed above. The predicted noise levels for all receivers ranged from forty-four (44) dB(A) to sixty-eight (68) dB(A). The louder noise levels are generally closer to busy streets and the quieter noise levels are in backyards or on streets with little traffic. Predicted future Alternative A noise levels are shown in comparison to the future predicted Alternatives B and C noise levels on **Table 3-17.**

3.14.4 Future With the Proposed Action (Alternatives B and C)

Traffic-Related Noise

With respect to haul trucks and worker vehicles, it is estimated that the project related haul trucks would be at a maximum level of fifteen (15) trucks per hour during the peak construction quarter and worker vehicles would be less than fifty-five (55) vehicles an hour (see Section 3.12, "Transportation"). With respect to detour traffic, Alternatives B and C would involve construction detours due to the closure of Delavan Avenue from Main Street to Jefferson Avenue for up to nine months. While the addition of construction-related haul trucks and worker vehicles is not anticipated to directly result in significant adverse noise impacts, the roadway detours that are anticipated to be required during construction would involve changes in traffic patterns that could potentially result in significant adverse noise impacts. Therefore, the assessment of traffic-related noise for the proposed action focuses on potential noise impacts associated with changes in the distribution of traffic on local roadways. In most cases, the change in traffic volumes on nearby roadways was less than 100%. For the roadways that are anticipated to have a less than 100% increase in traffic volumes, it is not anticipated that a noticeable increase would occur during the off-peak quiet hours or otherwise. The only roadways that have a predicted traffic volume increase of greater than 100% are Florida Street (from Jefferson Avenue to Main Street) and a small segment of Jefferson Avenue (Florida Street to East Delavan Avenue). These roadway segments had predicted increases of greater than 100% for some of the off-peak traffic hours when volumes were already quite low. Hours with substantial increases over 100% were assessed in detail to identify the potential worst-case hour. The worst-case hour was then analyzed to determine the largest noise level increase that can be expected from the detours.

Throughout the roadway network, the only predicted detour traffic volume which had an increase greater than 100% was Florida Street (from Jefferson Avenue to Main Street) and a small segment of Jefferson Avenue. Increases in traffic volumes above 100% ranged from just above 100% to much higher. The individual hours with the largest increases were further assessed in detail to determine the worst-case hour. Assessment of the hours involved identification of the 24-hour background noise levels in comparison to the potential noise increases from the additional traffic volumes. Since the hour between 5:00 AM to 6:00 AM showed the highest increase in traffic volume, and corresponding highest anticipated increase in noise above background, this hour was chosen as the worst-case noise increase for quantitative analysis.

Therefore, quantitative noise analysis was performed for the following:

- Peak Noise Hour (AM peak hour) – A quantitative analysis was performed for the peak noise hour (AM peak hour) throughout the study area including detour-related traffic. Haul truck traffic was included in the quantitative analysis as well to allow for an assessment of worst-case conditions.
- Off-Peak Hour (5:00 AM to 6:00 AM) – A quantitative noise analysis was performed along Florida Street (from Jefferson Avenue to Main Street) and the small segment of Jefferson Avenue (from Florida Street to Delavan Avenue) for the hour between 5:00 AM to 6:00 AM.

Peak Noise Hour (AM Peak Hour) Analysis Results

The range of noise levels was the same for both alternatives (44 dB(A) to 68 dB(A)). Predicted peak noise hour noise levels are presented in **Table 3-17**. Most increases in noise levels were under 3 dB(A) with the exception of Florida Street (from Jefferson Avenue to Main Street) and the small segment of Jefferson Avenue (from Florida Street to Delavan Avenue). Perceptible noise level increases of above 3 dB(A) are expected only on Florida Street (from Jefferson Avenue to Main Street) and Jefferson Avenue (from Florida Street to Delavan Avenue). Noise level increases in these limited locations range from 4 dB(A) to 10 dB(A) above the noise levels predicted without the proposed action. Volume increases in both of these identified areas are related to drivers who know the area and elect to cut through on Florida Street instead of following the signed detour. Receiver locations and the locations of receivers in areas predicted to have perceptible increases in traffic noise levels are shown in **Figure 3-18.**

- Florida Street (from Jefferson Avenue to Main Street) – Worst-case predicted noise level increases for AM Peak Noise Hour within the front yards along this block would range between four (4) dB(A) to ten (10) dB(A) and the back yards would range from two (2) dB(A) to four (4) dB(A). Minimum front yard noise levels without the detour were predicted at fifty (50) dB(A) and maximum noise levels with the detour were predicted at sixty (60) dB(A). Back yard noise levels without the detour were predicted at forty-four (44) dB(A) and maximum noise levels with the detour were predicted at forty-eight (48) dB(A). As indicated in **Table 3-17**, backyard noise levels are still rather quiet at forty-eight (48) dB(A) even with the increase of four (4) dB(A). However, the increase in front yard noise levels predicted for the detour traffic would be quite noticeable at ten (10) dB(A). Therefore, it can be said that noise levels along this block of Florida Street would be noticeably louder with the detour than without the detour.

- Jefferson Avenue (from Florida Street to Delavan Avenue) – Worst-case predicted noise level increases for the AM peak hour within the front yards along these two blocks of Jefferson Avenue would be approximately four (4) dB(A). Therefore, it can be said that the increase in noise levels along these two blocks of Jefferson Avenue would be somewhat noticeable with the detour.

Off-Peak Noise Hour (5:00 AM to 6:00 AM) Analysis Results

Off-peak hour (5:00 AM to 6:00 AM) noise levels are predicted to increase to a perceptible extent within the two areas anticipated to have an increase in traffic volumes of greater than 100%. Similarly to the AM peak hour, volume increases in both of these identified areas are related to drivers who know the area and elect to cut through on Florida Street instead of following the signed detour. Predicted off-peak hour noise levels for the limited area of analysis are presented in **Table 3-18**.

- Florida Street (from Jefferson Avenue to Main Street) – Worst-case predicted noise level increases for the hour between 5:00 AM to 6:00 AM within the front yards along this block would range between eleven (11) dB(A) to thirteen (13) dB(A) and the back yards would be five (5) dB(A). Minimum front yard noise levels without the detour were predicted at forty (40) dB(A) and maximum noise levels with the detour were predicted at fifty-three (53) dB(A). Back yard noise levels without the detour were predicted at thirty-four (34) dB(A) and maximum noise levels with the detour were predicted at thirty-nine (39) dB(A). As indicated in **Table 3-18** backyard noise levels are still rather quiet at thirty-nine (39) dB(A) even with the increase of five (5) dB(A). However, the increase in front yard noise levels predicted for the detour traffic would be quite noticeable, especially on a summer night with front windows open. Therefore, it can be said that nighttime and early morning noise levels along this block of Florida Street would be noticeably louder with the detour than without the detour.

- Jefferson Avenue (from Florida Street to Delavan Avenue) – Worst-case predicted noise level increases for the hour between 5:00 AM to 6:00 AM within the front yards along these two blocks of Jefferson Avenue. would be approximately four (4) dB(A). Minimum noise levels without the detour were predicted at forty (40) dB(A) and maximum noise levels with the detour were predicted at fifty-three (53) dB(A). Therefore, it can be said that the increase in nighttime and early morning noise levels along these two blocks of Jefferson Avenue would be somewhat noticeable with the detour.

Given the predicted increase in peak and off-peak noise levels along the abovementioned segments of Florida Street and Jefferson Avenue, measures would be taken to reduce the potential for these noise level increases to be realized as further described in the construction noise abatement discussion below. These measures include the placement of partial barriers and signage to indicate that Florida Street is closed to through traffic. Closing Florida Street to through traffic is expected to reduce noise levels, to some extent, by reducing the number of vehicles cutting through this area while the detour is in place.

Figure 3-18: Traffic Noise Study Receivers

Table 3-17: Peak Noise Hour (AM Peak Hour) Traffic Noise Model Results (L_{eq})

Address	Land Use Category	2031 Alternative A (No-Detour) (dB(A))	2031 Alternatives B&C (With Detour and Haul Trucks) (dB(A))	Noise Increase from No-Detour to With Detour and Haul Trucks 2031 (dB(A))
73 Alexander Pl	B	49	51	2
1 Beverly Rd	B	61	65	4
52 Beverly Rd	B	51	51	0
1 Blaine Ave	B	60	62	2
17 Blaine Ave	B	50	51	1
18 Brunswick Blvd	B	52	53	1
19 Brunswick Blvd	B	56	56	0
45 Daisy Pl	B	50	50	0
257 Delavan East	B	63	63	0
106 East Delavan Ave	B	66	66	0
125 East Delavan Ave	B	62	62	0
150 East Delavan Ave	B	64	64	0
165 East Delavan Ave	B	62	62	0
192 East Delavan Ave	B	66	66	0
217 East Delavan Ave	C	55	55	0
228 East Delavan Ave	B	64	64	0
288 East Delavan Ave	B	64	64	0
314 East Delavan Ave	B	52	52	0
329 East Delavan Ave	B	61	61	0
112 E Ferry St	B	67	68	1
141 E Ferry St	B	63	64	1
179 E Ferry St	C	61	63	2
224 E Ferry St	B	66	67	1
280 E Ferry St	B	64	66	2
51 E Ferry St-1	C	63	64	1
51 E Ferry St-2	C	56	58	2
51 E Ferry St-3	C	61	61	0
166 Ferry East	B	65	67	2
43 Florida St	B	50	58	8
90 Florida St	B	50	60	10
19 Harlow Pl	B	51	53	2
45 Harvard Pl	B	51	52	1
1 Hedley Pl	B	62	64	2
65 Hedley Pl	B	51	51	0
167 Hedley Pl	B	51	51	0

Address	Land Use Category	2031 Alternative A (No-Detour) (dB(A))	2031 Alternatives B&C (With Detour and Haul Trucks) (dB(A))	Noise Increase from No-Detour to With Detour and Haul Trucks 2031 (dB(A))
1 Hughes Ave	B	61	63	2
1481 Jefferson Ave	C	51	53	2
1500 Jefferson Ave	B	63	66	3
1527 Jefferson Ave	B	60	63	3
1552 Jefferson Ave	B	62	65	3
1599 Jefferson Ave	B	62	65	3
1632 Jefferson Ave	B	64	66	2
1709 Jefferson Ave	B	65	68	3
1035 Lafayette Ave	B	58	59	1
1526 Main St	B	68	68	0
1542 Main St	B	68	69	1
1661 Main St	B	58	59	1
1707 Main St	B	62	63	1
1727 Main St	B	65	66	1
1738 Main St	C	63	64	1
1800 Main St	C	54	56	2
1975 Main St	C	64	66	2
2003 Main St	C	56	58	2
2062 Main St	C	64	66	2
1829 Main St-1	C	59	60	1
1901 Main St-1	C	59	61	2
1829 Main St-2	C	54	56	2
1901 Main St-2	C	58	60	2
495 Masten Ave	B	52	53	1
645 Masten Ave	C	61	61	0
1547 Michigan Ave	C	65	66	1
16 Northland Ave	C	63	63	0
48 Northland Ave	B	46	48	2
100 Northland Ave	B	44	48	4
139 Northland Ave	B	50	53	3
178 Northland Ave	B	51	54	3
183 Northland Ave	B	49	51	2
23 Oakgrove Ave	B	49	49	0
61 Otis Pl	B	49	51	2
73 Otis Pl	B	60	61	1
132 Verplanck St	B	51	53	2

Address	Land Use Category	2031 Alternative A (No-Detour) (dB(A))	2031 Alternatives B&C (With Detour and Haul Trucks) (dB(A))	Noise Increase from No-Detour to With Detour and Haul Trucks 2031 (dB(A))
16 Viola Park	B	49	49	0
9 W Balcom St	B	61	61	0
30 W Balcom St	B	51	52	1
125 Walker St	B	55	56	1
86 Waverly St	B	47	49	2

Notes:
1. Land Use Category is defined in **Table 3-14** above.
2. Noise levels are shown in dB(A) L_{eq} and rounded to the nearest whole number.
3. Green highlight indicates that the noise increase is predicted to be perceptible (i.e., >3 dB(A)). According to FHWA's *Highway Traffic Noise Analysis and Abatement Policy and Guidance*, a noise level change of 3 dB(A) or less is generally imperceptible to the human ear.

Table 3-18: Off-Peak Noise Hour (5:00 AM to 6:00 AM) Traffic Noise Model Results (L_{eq})

Address	Land Use Category	2031 Alternative A (No-Detour) (dB(A))	2031 Alternatives B&C (With Detour) (dB(A))	Noise Increase from No-Detour to With Detour 2031 (dB(A))
1 Beverly Rd	B	53	57	4
43 Florida St	B	40	51	11
90 Florida St	B	40	53	13
1709 Jefferson Ave	B	56	60	4
100 Northland Ave	B	34	39	5

Notes:
1. Land Use Category is defined in Table 3.1.14-2 above.
2. Noise levels are shown in dB(A) L_{eq} and rounded to the nearest whole number.
3. Green highlight indicates that the noise increase is predicted to be perceptible (i.e., >3 dB(A)). According to FHWA's *Highway Traffic Noise Analysis and Abatement Policy and Guidance*, a noise level change of 3 dB(A) or less is generally imperceptible to the human ear. Due to the limited area of more than a 100% increase in traffic volumes at night, only perceptible noise level increases are shown in this table.

Non-Road Construction Noise
The RCNM analysis yielded L_{eq} and total L_{max} results for all twenty-six (26) construction scenarios within the six (6) chosen distances. The RCNM results indicate that all scenarios studied would have L_{eq} and L_{max} noise levels of ≥ eighty (80) dB(A) at distances of 100 feet to 150 feet or less during construction of the proposed action. **Table 3-19** and **Table 3-20** show L_{eq} and L_{max} noise levels for each scenario and at each analyzed distance under the conditions of Unadjusted Noise Level Totals and At-Grade Adjusted Noise Level Totals as indicated in the methodology section above. The results of the twenty-six (26) modeled construction scenarios are listed within **Table 3-19** and **Table 3-20**. The results in these tables are compiled into ranges per distance and analysis conditions.

The use of impact-related construction equipment (impact devices) is planned in eleven (11) of the twenty-six (26) construction scenarios. Impact construction equipment is equipment that generates short-duration (generally less than one second), high-intensity, and abrupt impulsive noise. For this project, the anticipated impact noises are related to blasting.

While the noise level for impact devices is below eighty (80) dB(A) for many of the receiver distances, impact noises can be more noticeable due to the abrupt changes in noise levels. Therefore, even the represented locations with L_{max} noise levels below eighty (80) dB(A) could experience construction noise effects. This is especially true in the quieter local roadway areas. The implementation of noise abatement measures during construction (as discussed below) would lessen these effects.

The RCNM results indicated that average noise levels and maximum noise levels would be considered disruptive to nearby receivers within a range of approximately 150 feet and closer. The worst-case analysis results indicated that noise levels within 150 feet would occasionally be above eighty (80) dB(A), the NYSDOT threshold above which impacts may occur. In addition, these locations would occasionally experience a more than ten (10) dB(A) increase above the field-measured 24-hour background noise levels, the NYSDEC threshold for mitigation consideration. The six distances used in the analysis assume construction is occurring directly in front of the receiver in question; however, realistically, given the mobile nature of a large construction site, the distances between the construction activities and receivers would change as the construction operations move around within the construction site. In addition, construction operations are in constant flux, and the equipment and operations would not always be at the worst-case levels predicted herein.

Table 3-19: Alternative B Deep Storage Tunnel
RCNM 1.1 Construction Noise Calculations - Compilation of Results Tables

Distance from Center of Construction (ft)	Noise Level L_{eq} (dB(A))	Noise Level L_{max} (dB(A))	Building Row Adjusted Noise Level L_{eq} (dB(A))	Building Row Adjusted Noise Level L_{max} (dB(A))
50	86-87	81-82	86-87	81-82
100	80-81	75-76	80-81	75-76
150	76-77	71-73	76-77	71-73
200	74-75	69-74	64-65	59-64
250	72-73	67-72	62-63	57-62
300	70-72	65-70	60-62	55-60

Notes:
Per RCNM User's Guide, partially enclosed areas (e.g., within excavation) should be reduced by 5 dB(A) (per equipment piece in table). For aeras shielded by buildings, reduced by 15 dB(A); however, we assumed partial shielding of 10 dB(A) for distances of 200 feet or greater.

Table 3-20: Alternative C Deep Storage Tank
RCNM 1.1 Construction Noise Calculations - Compilation of Results Tables

Distance from Center of Construction (ft)	Noise Level L_{eq} (dB(A))	Noise Level L_{max} (dB(A))	Building Row Adjusted Noise Level L_{eq} (dB(A))	Building Row Adjusted Noise Level L_{max} (dB(A))
50	86-91	81-86	86-91	81-86
100	80-85	75-80	80-85	75-80
150	77-81	71-76	77-81	71-76
200	75-79	69-74	65-69	59-65
250	72-77	67-72	62-67	57-62
300	70-75	65-70	61-65	55-60

Notes:
Per RCNM User's Guide, partially enclosed areas (e.g., within excavation) should be reduced by 5 dB(A) (per equipment piece in table). For areas shielded by buildings, reduced by 15 dB(A); however, we assumed partial shielding of 10 dB(A)for distances of 200 feet or greater.

Construction Noise Abatement and Effects

Buffalo Sewer would require the Contractor to implement the following construction protocols and practices to minimize construction noise. This includes the development of a Construction Noise Mitigation Plan during final design that would include the following components:

- Implementation of a construction noise monitoring program. The construction noise monitoring program would be prepared with input from the community and allow for modification of methodologies in consideration of public input received throughout construction. The public would also have the opportunity to discuss any questions or concerns with the community liaison designated for the project.
- Coordination of work operation to coincide with time periods that would least affect neighboring residences and businesses to the extent practicable. Normal work hours would be scheduled between 7:00 AM and 3:00 PM per the City of Buffalo's noise ordinance.
- Implementation of temporary construction noise abatement measures, such as shrouds or other noise curtains, acoustic fabric, physical barriers, and/or enclosures to reduce noise from compressors, generators, pumps, and other equipment when practicable.
- Ensuring the staging of noisy operations as far away from noise-sensitive land uses as feasible.
- Requirement of motorized construction equipment to be equipped with an appropriate well-maintained muffler and requirement of silencers to be installed on both air intakes and air exhaust when practicable.
- Requirement of all construction devices with internal combustion engines to be operated with engine doors closed and with noise-insulating material mounted on the engine housing that does not interfere with the manufacture guidelines.
- Requirement of the Contractor to transport construction equipment and vehicles carrying rock, concrete, or other materials along designated routes.
- Requirement of self-adjusting or manual audible back-up alarms or broadband alarms in lieu of pure tone alarms for vehicles and equipment used in areas adjacent to sensitive noise receivers.
- No use of impact or vibratory pile driving will be required.
- Placing additional signage at side streets along the truck detour route to keep trucks from straying from the designated truck detour route. The intention of this additional signage is to keep trucks off the quieter and lower-volume side streets.
- Placing signs and partial barriers along Florida Street indicating that the road is closed to through traffic.

Even with these construction noise abatement techniques in place, construction of the proposed action would result in potential temporary significant adverse noise effects associated with both traffic-related and non-road sources. The worst-case predicted noise level increases resulting from construction detours would range between eleven (11) dB(A) to thirteen (13) dB(A) within front yards for receptors analyzed on Florida Street from Jefferson Avenue to Main Street during both the AM Peak Noise Hour and the Off-Peak Noise Hour (5:00 AM to 6:00 AM). Additionally, the worst-case predicated noise levels resulting from non-road construction noise activities would periodically be above eighty (80) dB(A) and exceed background noise levels by more than 10 dB(A) for locations within approximately 150 feet of the proposed action.

The noise from the construction activities would adhere to the City of Buffalo Noise Ordinance and would be limited to daytime construction hours. To mitigate impacts at Florida Street, Buffalo Sewer would work with the City to place barriers or signage indicating that the road is not open for through traffic in an effort to deter drivers from selecting the roadway to complete or initiate their planned detour.

Operational Noise

After construction is complete, operation of the CSO storage facility is not expected to produce noise levels above the limits identified within the City of Buffalo Noise Ordinance. The amount of equipment needed to run the facility is minimal and would be largely enclosed within above-ground structures. It is not anticipated that there would be any changes in traffic that could alter traffic-related noise in the study area once construction is complete. Therefore, operation of the proposed action is not anticipated to result in changed noise levels in the study area.

3.15 Vibration

3.15.1 Introduction and Methodology

In general, the amount of vibration felt within a specific location depends on how strong the source of vibration is and the distance between the source and receptor. This is also dependent on the type of construction equipment being utilized and how it is used. The proposed action would not be anticipated to cause vibrations once operational. Therefore, the vibration analysis focuses on the construction period specifically associated with continuous vibration from equipment and intermittent vibration from controlled blasting. The construction vibration assessment for the proposed action considers two types of vibration:

- Mechanical equipment, which tends to be more continuous; and
- Blast vibration, which is brief and episodic.

For each type of vibration, two types of effects are considered: (1) the potential for cosmetic damage to structures (threshold damage); and (2) the potential annoyance effects of vibration on building occupants. Vibration levels below the potential for threshold damage can still be perceptible. First, a desktop exercise was conducted to identify vibration sensitive equipment (e.g., electron microscopes) or land uses (e.g., hospitals) within the study area **(Figure 3-17)**. None were found; therefore, additional analysis of construction vibration effects on sensitive equipment was not warranted. There are no specific City of Buffalo or New York State guidelines for analyzing mechanical equipment vibration; therefore, the construction vibration prediction methodologies provided by the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* were used for the proposed action.[5]

Mechanical Vibration Methodology

Figure 3-17 shows vibration reference levels at twenty-five (25)-feet for typical mechanical construction equipment. The equipment vibration levels were projected to various distances in relation to the proposed work areas to determine the level of vibration for various construction activities. To determine expected vibration levels at distances other than twenty-five (25) feet, the following equation from the FTA Guidance Manual was used:

$$PPV = PPVref \times \left(\frac{25}{D}\right)^{1.5}$$

Based on these calculations, distances of concern were calculated to identify the minimum distance from operations that would have the potential to cause threshold damage or annoyance. The vibration levels associated with threshold damage and annoyance are based on land use and are shown in **Table 3-21**.

Blasting Vibration Methodology

Vibration from blasting has been shown to adhere to the following power law calculation from the International Society of Explosive Engineers “Blasters’ Handbook”: [6]

[5] Federal Transit Administration. (2018). Transit noise and vibration impact assessment manual (FTA Report No. 0123) (A. Quagliata, M. Ahearn, E. Boeker, C. Roof, L. Meister, & H. Singleton [Eds.]). U.S. Department of Transportation.
[6] International Society of Explosives Engineers. (n.d.). The Blaster’s Handbook. Retrieved June 29, 2025, from International Society of Explosives Engineers website: https://isee.org/resources/publications/the-blasters-handbook

$$PPV = 242\left(\frac{D}{\sqrt{W}}\right)^{-1.6}$$

D is the distance in feet of the receptor from the closest point of the blast, and *W* is the charge weight of explosive detonated in each delay period. The details of the proposed blasting for excavation would be determined during final design; however, the following can be stated at this time based upon the above calculation, with the generic constants:

- If the closest structure is thirty-three (33) feet from the closest blast, the charge weight should be less than 2.5 pounds per delay.
- If the closest structure is greater than thirty-three (33) feet, then charge weight can be increased accordingly.
- Charge weight is determined by:
    - Diameter of the borehole
    - Length of the borehole
    - Number of charges in the borehole.

3.15.2 Baseline Conditions

Due to the lack of significant industrial activity within the project vicinity, the primary source of vibration is vehicular traffic. However, due to the use of rubber tires, traffic vibration levels tend to be relatively low. Therefore, the baseline vibration in the area would be considered low and background vibration levels would not need to be added to the vibration calculations for the vibration assessment further discussed below.

3.15.3 Future Without the Proposed Action (Alternative A)

In the Future Without the Proposed Action, no construction would be required. Therefore, it is anticipated conditions would remain unchanged with respect to background vibration.

3.15.4 Future With the Proposed Action (Alternatives B and C)

The proposed project is not expected to create a noticeable amount of vibration while in operation nor change roadway alignments or post-construction traffic patterns. Additionally, rubber-tired vehicles do not normally cause vibration concerns in an urban environment unless there are roadway inconsistencies. Therefore, this vibration study is focused on construction-related vibration impacts.

Construction Vibration from Mechanical Equipment

Most of the equipment anticipated to be used for the proposed action has a low vibration transmission potential. Since the MTBM process would be taking place fifty (50) feet underground, it is anticipated that the vibration level from the MTBM would be far below the threshold for structural damage and would likely not be perceptible to pedestrian activity above. Consequently, this analysis is focused on the types of mechanical equipment expected to be used during construction that generate the highest vibration levels. **Table 3-21** identifies vibration source levels for example pieces of construction equipment, some of which may be used on this project. For this project, the pieces of equipment with the worst-case or highest vibration levels that would reasonably be expected to be used on-site would be a vibratory roller and a large bulldozer. While it is unlikely these two pieces of equipment would be used regularly on the project site, there is a possibility that the Contractor would employ these pieces of machinery at some point during construction. Therefore, these two pieces of equipment were used as the basis for a conservative or worst-case prediction of vibration levels. The distance at which potential building damage and annoyance effects could occur was predicted and compared to the distances of the closest structures to the locations of construction activity.

Table 3-21: Vibration Source Levels for Construction Equipment

Equipment		PPV ref at 25 feet (in/sec)	Approximate Lv at 25 feet (VdB)*
Pile Driver (impact)	Upper Range	1.518	112
	Typical	0.644	104
Pile Driver (sonic/vibratory)	Upper Range	0.734	105
	Typical	0.17	93
Clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	In soil	0.008	66
	In rock	0.017	75
Vibratory roller		0.210	94
Hoe Ram		0.089	87
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58
Source: Transit Noise and Vibration Impact Assessment, FTA-VA-90-1003-06, May 2006. * RMS velocity in decibels, VdB re 1 micro-in/sec			

Potential Building Damage Effects from Mechanical Equipment

Based on the type of structures in the study area shown on **Figure 3-17**, the potential building damage threshold is 0.20 inches per second peak particle velocity. The operation of a vibratory roller would exceed this threshold at distances of less than twenty-six (26) feet between the equipment and a structure. The operation of a large bulldozer would exceed this threshold at distances of less than fifteen (15) feet between the equipment and a structure. The closest structure is thirty-three (33) feet from construction operations. Therefore, no buildings are expected to experience vibration from mechanical equipment that could cause damage.

Underground utilities in the area (including waterlines and sewers) are within twenty-six (26) feet of potential vibratory roller operations. However, underground utilities are generally not as sensitive to vibration as aboveground structures since underground structures do not tend to resonate vibration like above-ground structures. By design, blasting-related vibration levels would be below criteria recommended for protection of underground pipelines.[7] Therefore, damage to underground utilities is not anticipated.

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7 Siskind, G. W. (1994). Surface mine blasting near pressurized transmission pipelines (U.S. Bureau of Mines Report of Investigation No. RI 9523). U.S. Bureau of Mines. Retrieved from https://files.dep.state.pa.us/mining/BureauOfMiningPrograms/BMPPortalFiles/Blasting_Research_Papers/RI%209523%20Blasting%20near%20Pipelines%201994%20(No.1).pdf

Potential Annoyance Effects from Mechanical Equipment

For residential structures, the applicable annoyance threshold is seventy-two (72) vibration decibels (VdB) referenced to one (1) micro-inch/second.[8] **Table 3-22** below shows the vibration criteria for vibration analysis. The vibratory roller is the type of equipment with the highest potential for annoyance effects, and the vibration analysis showed this type of equipment could generate perceptible vibration levels of seventy-two (72) VdB or greater at distances of 135 feet or less between a building and the construction activity. This distance would generally include the first row of residences along City streets that may require vibratory rolling. However, vibratory rolling would only occur for limited periods of time at limited locations within the construction footprint. The vibration level at a particular residence would increase as the work progresses closer to a residence, then decrease as it moves farther from the residence. High vibration construction activities would progress around the project site past the residences at different rates. It is expected that the maximum duration that any receiver would experience perceptible/annoying levels of vibration at a time from the vibratory roller would be a few hours at a time, or less. Annoyance effects would be minimized through the mitigation commitments described below, which include vibration monitoring, avoiding high-vibration activities at night, and community outreach during construction. Therefore, significant adverse effects related to building occupant annoyance are not anticipated.

Table 3-22: Interpretation of Vibration Criteria for Vibration Analysis

Criterion Curve	Max Lv,* VdB	Description of Use
Workshop (ISO)	90	Vibration that is distinctly felt. Appropriate for workshops and similar areas not as sensitive to vibration.
Office (ISO)	84	Vibration that can be felt. Appropriate for offices and similar areas not as sensitive to vibration.
Residential Day (ISO)	78	Vibration that is barely felt. Adequate for computer equipment and low-power optical microscopes (up to 20X).
Residential Night, Operating Rooms (ISO)	72	Vibration is not felt, but ground-borne noise may be audible inside quiet rooms. Suitable for medium-power optical microscopes (100X) and other equipment of low sensitivity.
VC-A	66	Adequate for medium-to high-power optical microscopes (400X), microbalances, optical balances, and similar specialized equipment.
VC-B	60	Adequate for high-power optical microscopes (1000X) and inspection and lithography equipment to 3-micron line widths.
VC-C	54	Appropriate for most lithography and inspection equipment to 1-micron detail size.
VC-D	48	Suitable in most instances for the most demanding equipment, including electron microscopes operating to the limits of their capabilities.
VC-E	42	The most demanding criterion for extremely vibration-sensitive equipment.
Notes: 1. Vibration Classifications (VC) from the Institute of Environmental Sciences and Technology, “Considerations in Clean Room Design,” RR-CC012.1, 1993. 2. As measured in 1/3-octave bands of frequency over the frequency range 8 Hz to 80 Hz. **Source**: FTA *Transit Noise and Vibration Impact Assessment Manual*, 2006.		

[8] The FTA vibration annoyance threshold is based on studies of the response of people to long-term exposure to transit vibration and is therefore a conservative basis for considering potential construction-related vibration effects. For additional context, 65 VdB is the approximate threshold of perception for many humans; 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible vibration and many people find transit vibration at this level annoying; and 85 VdB is distinctly perceptible and can result in strong annoyance.

Construction Vibration from Blasting

Potential Building Damage Effects from Blasting

No threshold damage to buildings (i.e., cracking of plaster or drywall) is expected at any properties within the study area shown on **Figure 3-17**, regardless of distance from the proposed blasting. Since the closest buildings to the blasting operations are at thirty-three (33) feet or more, it is not anticipated that threshold damage would occur as a result of blasting. In addition, the potential for building damage would be avoided through the design of the blasting program, which would consider the distance and condition of the closest structure (among other factors) in determining the appropriate amount of explosive set off at once.[9] The specifications for the proposed project would mandate criteria that were developed by the US Bureau of Mines to avoid such damage due to blasting. Furthermore, test blasting would be used to develop blast designs, including appropriate amounts of explosives, which are consistent with maintenance of those criteria. Vibration criteria in the specifications would include both Caution and Alert levels, where Alert is the level not to be exceeded, and Caution is a slightly lower level at which blast practices must be reviewed by the Buffalo Sewer Authority and the Contractor.

Regardless, infrequent blasting vibration would be perceptible. Therefore, pre- and post-construction building condition surveys would be implemented for an area up to approximately 300 feet of the proposed blasting locations (this estimated distance for the surveys would be refined during final design, as appropriate). It is important to note that the pre- and post-construction survey area of up to 300 feet does not mean that damage to buildings is expected within 300 feet of blasting. As described above, no damage to buildings is anticipated through the design of the blasting program.

Potential Annoyance Effects from Blasting

The public would be notified of the times and dates blasting would occur in advance. Although the vibration would be perceptible, it is not considered an adverse effect in terms of building occupant annoyance effects due to the short and infrequent nature of blasting.

Construction Vibration Abatement

A Construction Vibration Abatement Plan would be developed during final design and would include the following components:

- Implementation of a construction vibration monitoring program that includes public outreach as part of the EPPP that would be in place throughout the construction period. The construction vibration monitoring program would be prepared with input from the community. Further, the community liaison would be available to accept vibration-related comments from the public, which would be assessed by Buffalo Sewer for any appropriate action. If at any time it is determined that vibration levels are unacceptable, the problematic construction operations would be suspended until a plan to mitigate the vibration issues has been approved by Buffalo Sewer.
- Construction activities would be conducted during daytime hours. Proposed normal work hours are 7:00 AM to 3:00 PM.
- No use of impact or vibratory pile driving would be required.
- Notification of the public in advance of the times and dates of blasting.

[9] International Society of Explosives Engineers. (n.d.). The Blaster's Handbook (18th ed., 5th printing). Retrieved June 29, 2025, from https://isee.org/resources/publications/the-blasters-handbook

- Requiring the Contractor to develop and implement a blasting program designed to avoid the potential for damage to structures.
- Although no threshold damage is expected, any unanticipated damage to buildings or utilities found by Buffalo Sewer to be attributable to the construction would be repaired. Pre- and post-construction surveys of building conditions would be conducted for those properties in close proximity to blasting activities.

With the use of these construction vibration abatement techniques, it is not anticipated that vibration generated by construction of the proposed action would result in a significant adverse impact. The vibration from the construction activities would be intermittently perceptible but would mainly be limited to daytime construction hours and would not have any significant adverse impacts.

Operation
Since the proposed action is not expected to create a noticeable amount of vibration while in operation or change roadway alignments or post-construction traffic patterns, it is anticipated that the post-construction vibration would be unchanged and not result in any significant adverse impacts to the community.

3.16 Public Health

3.16.1 Introduction and Methodology

This section focuses on assessing the potential for impacts to public health resulting from the proposed action. Public health encompasses protecting communities by preventing the spread of disease, promoting healthier lifestyles, and protecting against hazards at home, work, and in the environment.[10] The goal of a public health assessment is to determine if those environmental changes resulting from a proposed action would result in significant adverse public health impacts and, if so, to identify measures to mitigate such impacts.

3.16.2 Baseline Conditions

As discussed in previous sections, the community where the proposed action is located consists of a mix of residential, educational, and open space uses. Several community facilities and services such as schools, child-care facilities, and community resource hubs are located in the area, as outlined in Section 3.3, "Community Facilities and Services." The project location also includes roadways that provide access to the rest of the City and other neighborhoods. East Delavan Avenue links to other residential areas; Main Street, which is a multimodal corridor that provides access to downtown Buffalo; Canisius University; the University of Buffalo; Jefferson Avenue, which is a significant corridor for local commerce, civic institutions, and religious centers; and, expressways that connect regional commuters with downtown Buffalo, such as Humboldt Parkway and Kensington Expressway. As described in Section 3.9, "Hazardous Materials," there are several properties in and near the project location with a concern for contamination including chemical storage tanks, former gas stations, auto-repair facilities, dry cleaners, and funeral homes. There were no emergency spill or site remediation sites identified near the project location, and the site of the proposed action is not subject to an institutional control limiting the use of the property. In addition, the proposed action is not near any sites used for the disposal or processing of solid waste.

3.16.3 Future Without the Proposed Action (Alternative A)

Absent the proposed action, it is expected that there would be no impacts to public health and conditions would remain as they currently exist.

3.16.4 Future With the Proposed Action (Alternatives B and C)

Construction

As discussed in the previous sections, construction of the proposed action would not result in significant adverse impacts on transportation, air quality, greenhouse gas emissions, odor, or water and sewer infrastructure. Although the proposed action is near community facilities and services, the proposed action would not result in potential exposure to hazardous materials at these locations since there would

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[10] New York State Department of Health. (2008, February). What is public health?

be measures in place to properly identify, handle, transport and dispose all potentially hazardous wastes, as discussed in Section 3.9, “Hazardous Materials.” The proposed action would be an overall community benefit and support public health by reducing the number and volume of CSO activations to Scajaquada Creek. Therefore, it is anticipated that construction of the proposed action would not have any significant adverse impacts on public health.

Operation

Similarly, operation of the proposed action would not result in significant adverse impacts on transportation, air quality, greenhouse gas emissions, odor, water and sewer infrastructure and hazardous materials. Following construction, any areas affected by the proposed action would be either restored to their natural state or improved through project-related enhancements. Operation of the proposed action would not generate solid or hazardous waste. Therefore, it is anticipated that operation of the proposed project would not have any significant adverse impacts on public health.

3.17 Environmental Justice

3.17.1 Introduction and Methodology

This section assesses the potential environmental justice impacts that the proposed action may have within the quarter-mile study area of the project location. NYSDEC defines environmental justice as, "the fair treatment and meaningful involvement of all people regardless of race, color, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies" (Department of Environmental Conservation, n.d.).

This section examines mapping data made available by NYSDEC to determine whether the proposed action is in or near a potential environmental justice area (PEJA) or a disadvantaged community (DAC). Under the Environmental Justice Siting Law (EJ Siting Law), provisions of which are currently proposed to be incorporated into an amended SEQRA, lead agencies are required to consider whether a proposed development or discretionary action may cause or contribute to a disproportionate pollution burden on a DAC. While the proposed SEQRA amendments have not been formally adopted at the time of publication of this DEIS, NYSDEC has provided interim guidance when evaluating potential impacts of actions to DACs.[11] NYSDEC states that a PEJA means "a minority or low-income community that may bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies," while DACs refer to, "communities that bear burdens of negative public health effects, environmental pollution, or impacts of climate change, and possess certain socioeconomic criteria, or comprise high concentrations of low- and moderate-income households" (Department of Environmental Conservation, n.d.). Demographic and socioeconomic data is included to inform the PEJA and DAC determinations.

As guided by Commissioner Policy 29 (CP-29), *Environmental Justice and Permitting*, a public outreach and participation component of the proposed action was established in order to more comprehensively assess environmental justice considerations. CP-29 serves as a framework aiming to incorporate and address environmental justice concerns into NYSDEC environmental permit review process. The public participation process of the proposed action led to the development of the *East Delavan Sewer Project Preliminary Community Sentiment Report* (Clementine Gold Group, 2024) and the *Buffalo Sewer Authority Enhanced Public Participation Plan* (Hazen, March 2024).

3.17.2 Baseline Conditions

The environmental justice study area established for the proposed action is generally located between an area south of Forest Lawn Cemetery west of Main Street on its western edge, Humboldt Parkway to the north and east, and Brunswick Boulevard to the south, as shown in **Figure 3-19**. To determine if the work and operations associated with the proposed action fall within, or within the vicinity of, a PEJA, a desktop

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[11] *Environmental Justice Site Law Interim Guidance.* New York State Department of Environmental Conservation, January 2025.

analysis of the NYSDEC PEJA database was conducted. According to NYSDEC, a PEJA is established for “U.S. Census block groups of 250 to 500 households each that, per the Census, had populations that met or exceeded at least one of the following statistical thresholds: (1) at least 52.42% of the population in an urban area reported themselves to be members of minority groups; or (2) at least 26.28% of the population in a rural area reported themselves to be members of minority groups; or (3) at least 22.82% of the population in an urban or rural area had household incomes below the federal poverty level” (Department of Environmental Conservation, n.d.).

As shown in **Figure 3-19**, the quarter-mile study area assessed for environmental justice is composed entirely of PEJA communities established by NYSDEC. The study area includes ten census block groups (CBG) designated as PEJA communities, identified on **Figure 3-19** and described in **Table 3-23**.

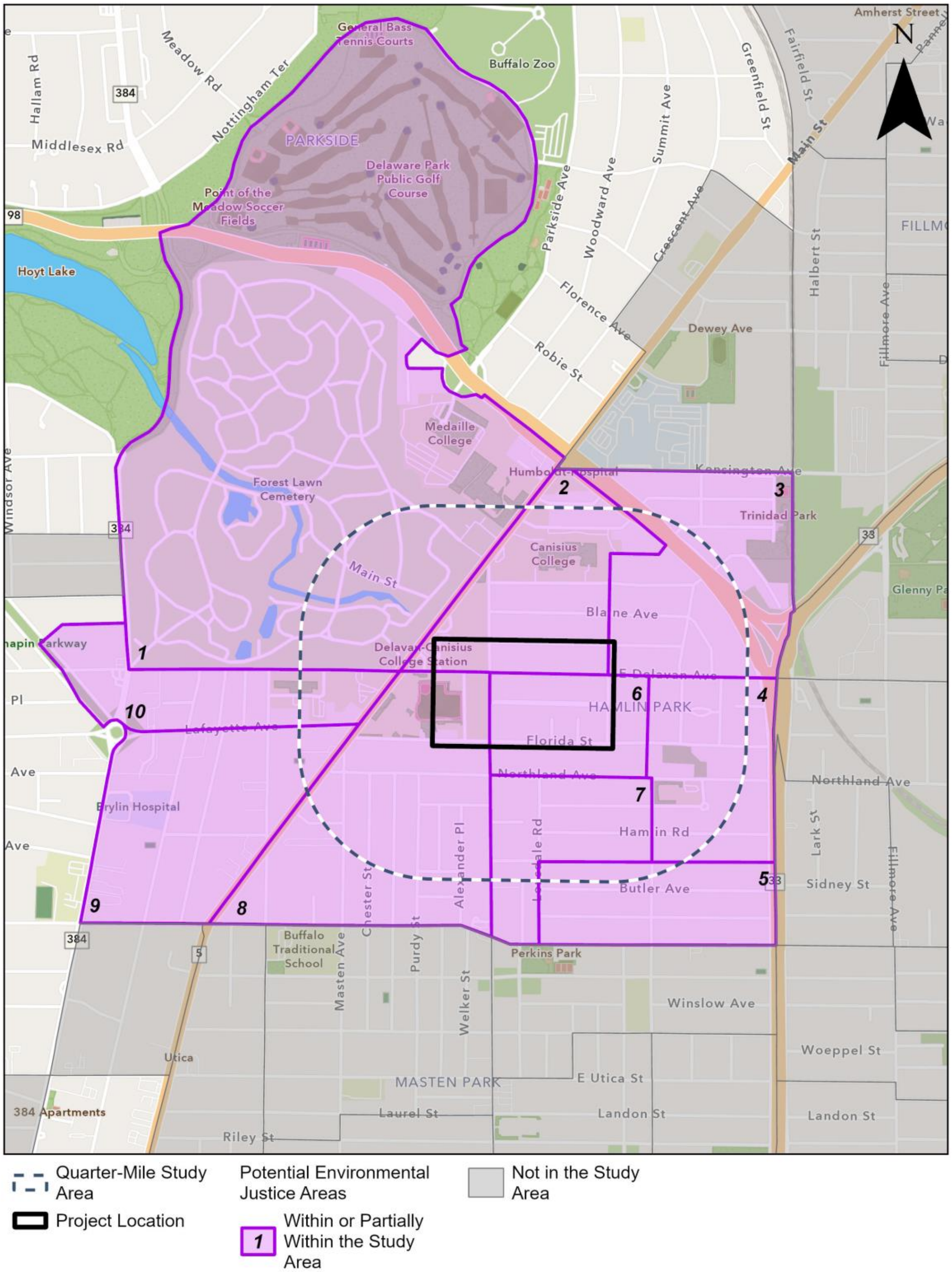

Figure 3-19: Environmental Justice Study Area and NYSDEC Potential Environmental Justice Areas (PEJAs)

Table 3-23: PEJA Demographic Data

Census Block Group Label	Census Block Group Number	Land Type	Percentage Below Poverty Level	Percentage Minority Population	Total Population
1	15000US360290053002	Urban	36.8%	58.5%	557
2	15000US360290052021	Urban	48%	52.3%	980
3	15000US360290052022	Urban	28.9%	72.4%	978
4	15000US360290033012	Urban	39.2%	97.3%	762
5	15000US360290033013	Urban	27.5%	97.7%	1,509
6	15000US360290033011	Urban	26.9%	73.1%	463
7	15000US360290033014	Urban	54%	100%	697
8	15000US360290168003	Urban	39.8%	96.1%	768
9	15000US360290169003	Urban	22.8%	55.7%	520
10	15000US360290169004	Urban	57.1%	48.2%	564

DACs are established at the census tract level and are "based on geographic, public health, environmental hazard/risk, and socioeconomic criteria, including: (1) areas burdened by cumulative environmental pollution and other hazards that can lead to negative public health effects; (2) areas with concentrations of people that are of low income, high unemployment, high rent burden, low levels of home ownership, low levels of educational attainment, or members of groups that have historically experienced discrimination based on race or ethnicity; and (3) areas vulnerable to the impacts of climate change." NYSDEC, other State officials, and environmental justice advocates assessed approximately forty-five (45) indicators related to climate change risks and demographics to identify DACs. Indicators that were examined include a census tract's proximity to power generation facilities and remediation sites, vehicle traffic density, heat projections, unemployment rates, income data, and racial demographics.[12] As shown in **Figure 3-20**, the quarter-mile study area assessed for environmental justice includes three census tracts designated as DACs. **Table 3-24** includes environmental burden and population vulnerability percentiles relative to all census tracts across New York State.

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[12] New York State Department of Environmental Conservation & New York State Climate Justice Working Group. (2023). Disadvantaged communities criteria final report. New York State Department of Environmental Conservation.

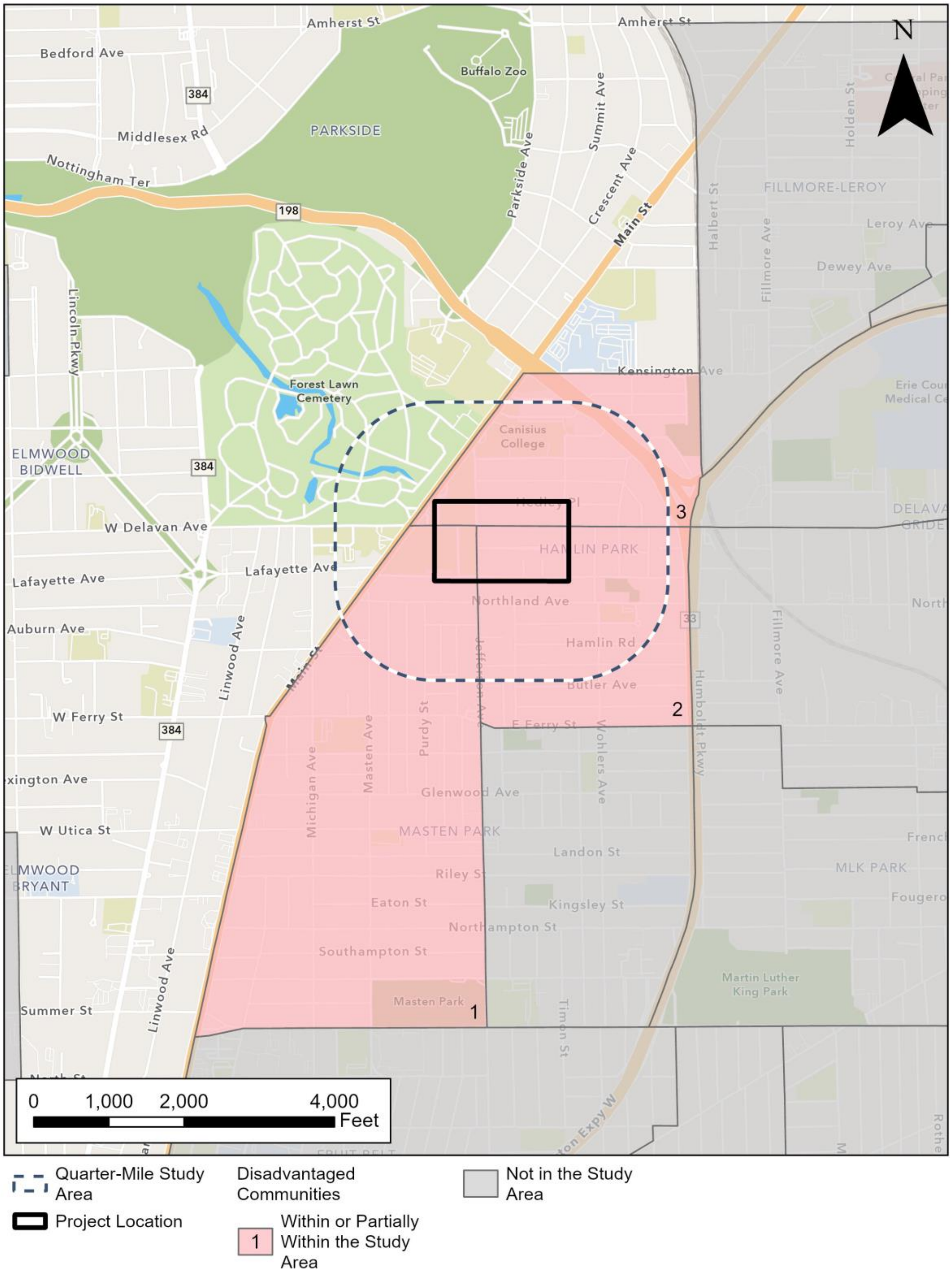

Figure 3-20: **Environmental Justice Study Area and Disadvantaged Communities (DACs)**

Table 3-24: Environmental Justice Study Area DAC Risk Data

Census Tract Label	Census Tract Number	Environmental Burden Percentile*	Population Vulnerability Percentile*	Total Population
1	36029005202	47%	75%	3,085
2	36029003301	31%	88%	3,326
3	36029016800	10%	95%	3,385

**Relative to and higher than Census Tracts statewide*

3.17.3 Future Without the Proposed Action (Alternative A)

In the Future Without the Proposed Action condition, no new environmental justice impacts within the project study area are anticipated. Absent the proposed action, it is expected that there would be no new impacts to the existing demographics within the project study area, and therefore baseline conditions related to environmental justice are expected to remain.

3.17.4 Future With the Proposed Action (Alternatives B and C)

Construction

In the Future With the Proposed Action condition, temporary disturbances to the project site and surrounding area would occur during construction. As described above, construction of Alternative B is anticipated to take approximately five years, and construction of the Preferred Alternative (Alternative C) is expected to take approximately four years. Construction of both alternatives evaluated requires drilling and blasting within and below roadways, resulting in temporary increases in noise, vibrations, roadway closures, vehicle and pedestrian traffic detours, and truck traffic needed to bring equipment and workers to and from the project site, as described in Section 3.12, "Transportation," Section 3.14, "Noise," and Section 3.15, "Vibration." Though limited to periods of construction activities, these impacts would predominately affect populations of concern for environmental justice, given the demographics of the PEJA communities and DACs identified by NYCEDC as shown in **Figure 3-19**.

As identified in the *Community Sentiment Report*, residents and other local stakeholders expressed concern about the above-listed adverse impacts from construction activities associated with the proposed action. During the public participation process, residents requested ample notice be given prior to construction. In addition, and as discussed in Section 3.13.1, "Noise," and Section 3.15, "Vibration", selection of Alternative C, the Deep Storage Tank, as the Preferred Alternative would reduce the number of residences and businesses that would experience increased noise and vibration during construction as compared to Alternative B, the Storage Tunnel. The total duration of construction for Alternative C is also shorter as compared to Alternative B. Therefore, while there would be temporary disruption to the study area during construction of either alternative, information gathered during development of the *Community Sentiment Report* and through the EPPP indicated that the community prefers Alternative C, partly due to the smaller extent of noise and vibrations that would be felt and observed in the study area. It is therefore concluded that construction of the proposed action would not result in any significant adverse impacts to environmental justice in the study area.

Operation

Following completion of construction activities, project site conditions would generally be anticipated to return to baseline conditions for areas other than those improved with structures or equipment associated with the operation of the proposed action. Because the proposed action would primarily be located below grade and operations would not involve significant noise, vibration, air quality, public health, or socioeconomic impacts that could be considered significant negative environmental effects or otherwise cause any disruption to daily living, residents within the project study area would not bear a disproportionate share of negative environmental consequences due to operation of the proposed action.

To ensure equitable treatment and meaningful involvement of the impacted environmental justice communities, an EPPP was developed in support of CP-29. The EPPP documents the methods used by Buffalo Sewer to discuss project information with the public and receive valuable feedback from the community concerning project needs, design, and implementation. As part of the EPPP, Buffalo Sewer has committed to a community benefit project associated with the implementation of the proposed action. Community benefit initiatives may include new, fully paved roadways in areas impacted by the project site and permanent educational materials located on site. Therefore, no significant adverse impacts to environmental justice associated with the operation of the proposed action are anticipated.

4. Alternatives

SEQR requires a Lead Agency to consider and evaluate various alternatives for a proposed action. Often, those alternatives are considered separately, within this section of an EIS. However, since the evaluation of the proposed action included review of all three project alternatives – the No Action and two alternatives for the proposed action, the Storage Tunnel and Deep Storage Tank – this section instead summarizes the findings presented above (**Table 4-1**). As discussed in Section 2, "Project Description," Buffalo Sewer selected Alternative C, the Deep Storage Tank, as the preferred alternative for implementing the proposed action following extensive community outreach and engagement activities aimed at gathering public feedback on both alternatives.

Table 4-1: Summary of Alternatives

Land Use, Zoning, and Public Policy	
Alternative A - No Action Alternative	Absent the proposed action, any anticipated changes to land use would be due to existing land use trends and development patterns, zoning would remain as existing, and there are no known proposals that would affect or conflict with public policy in the study area and conditions would remain as existing.
Alternative B - Storage Tunnel Alternative C - Deep Storage Tank	With the addition of the proposed action, any area that is disturbed would be disturbed temporarily, and no changes to land use, zoning, nor public policy are anticipated.
Socioeconomic Conditions	
Alternative A - No Action Alternative	Absent the proposed action, no impacts on socioeconomic conditions are anticipated and conditions would remain as existing.
Alternative B - Storage Tunnel Alternative C - Deep Storage Tank	Overall, it is anticipated that the proposed action would not result in any significant adverse impacts to the socioeconomic conditions evaluated within the study area during construction, which includes not having any impacts on residential markets or rents.
Community Facilities and Services	
Alternative A - No Action Alternative	Absent the proposed action, there would be no impacts on community facilities and services, and existing conditions would remain unchanged.
Alternative B - Storage Tunnel Alternative C - Deep Storage Tank	The proposed action would not have any significant adverse impacts on community facilities and services. Direct impacts or displacement that could preclude the use of community facilities in the study area would not occur.
Open Space and Recreation	
Alternative A - No Action Alternative	Absent the proposed action, there would be no impacts to open space and recreation, and existing conditions would remain unchanged.
Alternative B - Storage Tunnel Alternative C - Deep Storage Tank	Direct impacts or displacement that could preclude the use of open space and recreational resources in the study area would not occur. Temporary increases in noise levels may occur during construction for those resources closest to the project site. Once the proposed action is operational, there would be no anticipated increases in noise levels in the project area or surrounding open space and recreational resources.

Geology and Groundwater	
Alternative A - No Action Alternative	Absent the proposed action, no impacts to geology and groundwater conditions are anticipated and conditions would remain as existing.
Alternative B - Storage Tunnel	While the proposed action would involve site clearing and excavation, appropriate monitoring, response plans, and measures for the proper storage, handling, treatment, and disposal of excavated materials, waste, and groundwater would be implemented during construction. Therefore, significant adverse impacts to geology and groundwater are not anticipated as a result of the proposed action.
Alternative C - Deep Storage Tank	
Archaeological, Historic, and Cultural Resources	
Alternative A - No Action Alternative	Absent the proposed action it is anticipated that there would be no impacts to archaeological, historical, and cultural resources in the study area and conditions would remain as existing.
Alternative B - Storage Tunnel	The proposed action would not create any potential impacts to archaeological resources during construction since excavation would be localized to the project site of each alternative and not within a historic or cultural resource area.
Alternative C - Deep Storage Tank	
Visual Resources and Community Character	
Alternative A - No Action Alternative	Absent the proposed action, no impacts to visual resources and community character are anticipated, and conditions are expected to remain as existing.
Alternative B - Storage Tunnel	The proposed action would not significantly alter visual resources or community character, as it would be primarily located underground.
Alternative C - Deep Storage Tank	
Natural Resources	
Alternative A - No Action Alternative	Absent the proposed action it is anticipated that there would be no impacts to natural resources and conditions would remain as existing.
Alternative B - Storage Tunnel	Construction of the proposed action would require the removal of six trees due to their condition and conflicts with the proposed action. These trees would be replaced, which would cause temporary impacts to natural resources such as grass and trees; however, any temporarily disturbed natural resources would be restored to baseline conditions.
Alternative C - Deep Storage Tank	
Hazardous Materials	
Alternative A - No Action Alternative	Absent the proposed action, it is anticipated that there would be no impacts to hazardous materials in the study area and conditions would remain as existing.
Alternative B - Storage Tunnel	Any construction-related disturbed areas as a result of the proposed action would be restored to existing conditions or enhanced as part of the project, thus reducing the potential for exposure to hazardous materials in disturbed areas in the future. Therefore, it is anticipated that the proposed action would not result in any significant adverse impacts to hazardous materials.
Alternative C - Deep Storage Tank	

Water and Sewer Infrastructure	
Alternative A - No Action Alternative	Absent the proposed action it is anticipated that there would be no impacts to water and sewer infrastructure in the study area and conditions would remain as existing.
Alternative B - Storage Tunnel	The proposed action would result in soil disturbance exceeding one acre and may require groundwater dewatering; however, stormwater would be appropriately managed. The proposed action would not reduce the volume or frequency of combined sewer overflow events, nor would the proposed action create new or increased demand for potable water service or sewer capacity. Therefore, the proposed action is not anticipated to result in any significant adverse impacts on water or sewer infrastructure.
Alternative C - Deep Storage Tank	
Energy	
Alternative A - No Action Alternative	Absent the proposed action, there would be no impacts to energy, and existing conditions would remain unchanged.
Alternative B - Storage Tunnel	The proposed action would generate additional energy demand due to electricity which would be needed to power construction equipment such as power tools; however, it is anticipated that the proposed action would not result in any significant adverse impacts to energy use during construction.
Alternative C - Deep Storage Tank	
Transportation	
Alternative A - No Action Alternative	Absent the proposed action, there would be no impacts on transportation, and existing conditions would remain unchanged.
Alternative B - Storage Tunnel	Temporary traffic impacts may occur at the intersections of Jefferson Ave and E Ferry St and Jefferson Ave and Florida St, where levels of service (LOS) may degrade, particularly at Jefferson Ave & E Ferry St (from LOS B to D). Buffalo Sewer would coordinate with the City of Buffalo to adjust signal timing and help offset these impacts.
Alternative C - Deep Storage Tank	
Air Quality, Greenhouse Gas Emissions, and Odor	
Alternative A - No Action Alternative	Absent the proposed action, there would be no impacts on air quality, GHG emissions and odor, and existing conditions would remain unchanged.
Alternative B - Storage Tunnel	The proposed project would generate construction vehicle trips during site preparation and construction activities, and vehicles and equipment would be operating onsite during workdays; however, these activities would be temporary and intermittent during the construction process and would occur during normal working hours and are not expected to have a significant adverse impact on air quality, greenhouse gas emissions, or odor.
Alternative C - Deep Storage Tank	
Noise	
Alternative A - No Action Alternative	Absent the proposed action, no impacts to noise are anticipated and would remain unchanged from baseline conditions.
Alternative B - Storage Tunnel	Temporary significant noise impacts are expected from both traffic detours and construction activities, even with noise reduction measures in place. Noise impacts are not anticipated once construction is complete.
Alternative C - Deep Storage Tank	

<table>
<tr><th colspan="2">Vibrations</th></tr>
<tr><td>Alternative A - No Action Alternative</td><td>Absent the proposed action, no impacts to vibrations are anticipated and vibrations in the project area would remain unchanged from baseline conditions.</td></tr>
<tr><td>Alternative B - Storage Tunnel</td><td rowspan="2">Most of the construction equipment that would be used for the proposed action would produce low intermittent vibrations and is not expected to create a noticeable amount of vibration while in operation.</td></tr>
<tr><td>Alternative C - Deep Storage Tank</td></tr>
<tr><th colspan="2">Public Health</th></tr>
<tr><td>Alternative A - No Action Alternative</td><td>Absent the proposed action, no impacts to public health are anticipated and conditions would remain as existing.</td></tr>
<tr><td>Alternative B - Storage Tunnel</td><td rowspan="2">During construction, temporary significant adverse noise impacts would occur. Project related air emissions would not alter air quality in the project area. Any potential hazardous materials encountered during construction would be handled in accordance with all applicable regulations. After construction, affected areas would be restored or improved, and the project would not generate solid or hazardous waste. Operation of the proposed action would not cause significant impacts to transportation, air quality, greenhouse gases, odor, water and sewer systems, hazardous materials, or public health.</td></tr>
<tr><td>Alternative C - Deep Storage Tank</td></tr>
<tr><th colspan="2">Environmental Justice</th></tr>
<tr><td>Alternative A - No Action Alternative</td><td>Absent the proposed action it is anticipated that there would be no impacts to environmental justice and conditions would remain as existing.</td></tr>
<tr><td>Alternative B - Storage Tunnel</td><td rowspan="2">The proposed action would result in temporary disturbances to the project site and surrounding areas during construction but is not anticipated to result in any significant adverse impacts on environmental justice within the study area. Upon completion of construction, conditions are expected to return to baseline, with additional benefits associated with community commitment initiatives as part of the EPPP.</td></tr>
<tr><td>Alternative C - Deep Storage Tank</td></tr>
</table>

5. Cumulative Impacts

In accordance with SEQR, cumulative impacts can occur when multiple actions affect the same resource(s). It is expected that the proposed action, when considered with other projects in the study area occurring in the past, present, and within the reasonably foreseeable future, would not have the potential to result in significant adverse cumulative impacts.

Table 5-1 summarizes the evaluation of the potential effects that the proposed action may have on other known or reasonably foreseeable projects that are expected to be constructed or become operational within a similar timeframe. This analysis was completed through coordination and consultations with the City of Buffalo as well as through research of news articles. In addition, six projects within 0.5 miles of the proposed action from the Open Data Buffalo database were considered within the analysis; however, they were not included in the table below because they are primarily small-scale projects associated with residential and mixed-use development and demolition activities, and they would not be expected to be impacted by the proposed action. Projects considered in this analysis are presented in the table.

Table 5-1: Projects Occurring in the Vicinity of the Proposed Action on a Similar Timescale

Project Name	Address	Project Description	Status	Construction Start Date	Construction End Date	Cumulative Impact Considerations
Middle Main Street Streetscape Project	Goodell Street to Kensington Avenue - crosses Delavan Ave	Street revamp - new pavement, new pavement markings, new sidewalks, enhanced bike lanes, traffic signals, and lighting	The final design has been selected, and the design team is finalizing details.	Summer 2025	2028	Overlap with traffic detours
Jefferson Avenue Streetscape Project	Jefferson Ave between Main St and Best St	Streetscape project to upgrade sidewalks, lighting, trees, pavement, striping, signals, water, sewer, electric, and utilities	Currently in detailed design phase	Phase 1 - Spring/Summer 2025	Phase 1 - Fall 2026	Overlap with traffic detours
NYS Route 33, Kensington Expressway	Route 33 (Kensington Expwy) and Humboldt Pkwy between Best St to Sidney St	To reconnect the community surrounding the defined transportation corridor and improve the compatibility of the corridor with the adjacent land uses, while addressing the geometric, infrastructure, and multi-modal needs within the corridor in its current location.	Currently undergoing an Environmental Impact Statement (EIS)	Anticipated December 2024 - Postponed to complete EIS	Anticipated June 2029 - Delayed	Traffic, noise, air quality
LaSalle Equitable Transit-Oriented Development	LaSalle Station which includes the NFTA-Metro Rail Station and the adjacent Park-and-Ride lot	Building an equitable transit-oriented development (ETOD), with affordable and/or mixed-income housing units, an activated 1st floor, and vibrant streetscapes and public spaces	Reviewing RFQs (closed 9/3/24)	TBD	TBD	Overlap with traffic detours

Project Name	Address	Project Description	Status	Construction Start Date	Construction End Date	Cumulative Impact Considerations
Downtown Waterfront Improvements Plan (8 Projects)	The central portion of the waterfront between the Peace Bridge and Chicago Street	Will advance the recent streetscape and placemaking improvements, prioritize traffic calming, pedestrian- and bicycle friendly activity, promote public transit usage, ridesharing, micromobility, and the continuation of Cars Sharing Main Street	City of Buffalo Downtown Waterfront Improvements Plan was published June 2024 and outlined 8 projects. Construction yet to be determined.	TBD	TBD	No Impacts Expected
Envision: Grant Street Corridor Plan	Grant Street from Forest Avenue to the North and Hampshire Street to the South	Improvement of infrastructure, beautification, and to provide support to business owners and the surrounding community	Planning Phase	TBD	TBD	No Impacts Expected
Reimagined Scajaquada Parkway	Scajaquada Parkway	Separate interior roadway to carry through traffic, Separate frontage/carriage, roadway to serve homes, maintain buffer between carriage, road and through road, Bike paths in buffer area, Maintain sidewalk and parking on carriage roads, No parking on middle thru road	Planning - study to be completed in 2027	TBD	TBD	Overlap with traffic detours

As described in Section 3.14, “Noise,” the proposed action is anticipated to result in temporary significant adverse impacts associated with noise during construction. The proposed action is otherwise not anticipated to result in significant adverse direct or indirect impacts to any of the environmental resource areas assessed in the DEIS. In addition, as described in Section 3.12, “Transportation,” construction activities associated with the proposed action would include detours and may coincide with detours associated with projects identified in **Table 5-1**. To minimize potential disruptions to traffic conditions in the area associated with concurrent detours or construction traffic, coordination between Buffalo Sewer and the City of Buffalo would occur in advance of construction as additional details become available for projects with potentially overlapping construction activities. As needed, traffic control measures would be utilized to minimize the potential for significant adverse cumulative impacts, and permits would be obtained as required.

6. Other Impacts

6.1.1 Unavoidable Adverse Impacts

As described for each of the resource categories above, construction and operation of the proposed action would not result in significant adverse impacts for most of the environmental resource areas However, even with the implementation of construction noise abatement measures, the proposed action would result in temporary significant adverse noise impacts from both traffic-related detours and non-road construction activities.

As described in Section 3.12, “Transportation,” the proposed action would change the LOS from B to D at the intersection of Jefferson Ave/E Ferry St and on the eastbound approach at Florida Street/Jefferson Avenue to detour traffic. However, all intersections would still operate within acceptable limits. Buffalo Sewer would work with the City to implement temporary signal timing adjustments at key intersections to help reduce delays during the detour.

For the other environmental resource areas evaluated, while temporary changes or impacts may occur during construction, these would not create an unavoidable adverse impact on the surrounding resources or community.

6.1.2 Growth-Inducing Aspects of the Proposed Action

The term ‘growth-inducing aspects’ generally refers to the potential for a project to trigger additional development in areas outside of the project location (i.e., outside the directly affected area) that would not experience such development without the project. Although the proposed action would include the construction of new sewer infrastructure, it would not result in an expansion of the sewer infrastructure capacity. The area that would be served by the proposed project is a long-developed part of the City of Buffalo that contains primarily commercial and residential uses, and which is served by the existing combined sewer system. Therefore, the proposed action would not result in induced development through new sewer service.

6.1.3 Irreversible and Irretrievable Commitment of Resources

This section summarizes the potential impacts on the loss of environmental resources, both in the immediate future and long term, associated with construction and operation of the proposed action. Certain resources would be irreversible and irretrievably committed to the proposed action, such as land occupied by the proposed action; building materials used to construct the proposed action; energy in the form of fuel and electricity used in construction and operation of the proposed action; and the human effort (time and labor) required for the development, construction and operation of the proposed action. As shown in **Figure 1-4** and **Figure 1-5**, the amount of land that the proposed action would occupy is the minimal amount needed to construct a CSO Storage Facility in accordance with the City’s QCCW Initiative. Once constructed, the facility would be largely automated and not require permanent staffing. As discussed in Section 3.11, “Energy,” the proposed action would not create a significant new demand for energy. Therefore, the proposed action would result in a negligible commitment of resources such as land, labor, and energy.

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