Town-Wide Green Infrastructure Master Plan

Town of Foxborough, MA

JUNE 2022

PREPARED BY FUSS & O'NEILL

MVP
Municipal Vulnerability Preparedness

Financial assistance was provided by the Executive Office of Energy & Environmental Affairs (EEA) under the FY22 Municipal Vulnerability Preparedness (MVP) Grant Program. The MVP Action Grant offers financial resources to municipalities that are seeking to advance priority climate adaptation actions to address climate change impacts resulting from extreme weather, sea level rise, inland and coastal flooding, severe heat, and other climate impacts.

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Executive Summary

The purpose of this Town-Wide Green Infrastructure Master Plan is to identify opportunities to address stormwater-driven flooding hazards and improve water quality through nature-based, green infrastructure practices within the Town of Foxborough.

As precipitation events continue to become more intense and less predictable with climate change, undersized and aging stormwater infrastructure in Foxborough is expected to pose a greater threat of failure and flooding, such as already exists at the Cocasset Street underpass. Foxborough also sits on top of two EPA-designated Sole Source Aquifers, which means that the aquifer provides at least 50% of the drinking water for its service area, and that there are no other reasonably available alternative drinking water sources to fall back on.

Green infrastructure, also referred to as "green stormwater infrastructure" (GSI) and "low impact development" (LID), is an alternative approach to traditional stormwater management. It can be constructed in stages, as funding and resources become available and as roads or Town buildings undergo repaving, renovation, or other upgrades. Unlike traditional underground drainage that needs to be constructed in whole to provide any benefit, GSI solutions can provide incremental benefits as they are implemented, allowing them to be phased in over time.

GSI practices like those identified in this plan help protect our drinking water quality by promoting stormwater infiltration to replenish the aquifer and by treating stormwater pollutants before they make their way into groundwater.

In developing this Plan, Town-owned sites throughout Foxborough were screened for GSI opportunities and other nature-based solutions to increase flood resiliency and improve or protect water quality. Federal, State, and Local data sets were overlaid to identify locations where GSI may be most suitable. The list of potential sites was also examined relative to ongoing planning and capital projects in the Town to identify project sites where GSI could be incorporated in a cost-effective manner as part of a larger project (e.g., planned future redevelopment projects or repaving).

This plan identified nine sites with the best opportunities for near- and medium-term redevelopment projects.

- Payson Road Recreation Area – North Parking Lot
- Payson Road Recreation Area – South Parking Lot
- Payson Road Recreation Area – Ernie George Field
- Kersey Point Conservation Area
- Sunset Estates – Twilight Drive
- Sunset Estates – Sunrise Road
- Council on Aging
- Igo Elementary School
- Lane Homestead

Conceptual stormwater management designs were developed for these sites locations as part of the plan to support future implementation projects, along with standard engineering details.

Finally, the plan ends by identifyingidentifies a range of federal, state, and local funding sources that can help the Town in implementing these projects and making Foxborough a more resilient community in the face of a changing climate.

1 Introduction

The Town of Foxborough has developed this Town-Wide Green Infrastructure Master Plan using funding through the Executive Office of Energy and Environmental Affairs Municipal Vulnerability Preparedness (MVP) Action Grant program. The purpose of the plan is to identify opportunities to address stormwater-driven flooding hazards and improve water quality through nature-based, green infrastructure practices. This nature-based approach looks at “end of the pipe” problems such as nutrient-impaired waters, aquifer protection, and known problem areas at stormwater outfalls and seeks to create long-term solutions by providing improved stormwater management in the corresponding upgradient drainage areas. The proposed green infrastructure improvements encompass a range of parcel-specific practices, linear green infrastructure in the municipal right of way, and offer more decentralized approaches to manage stormwater, increase flood storage, and restore ecosystems on public lands.

Green infrastructure, also referred to as “green stormwater infrastructure” (GSI) and “low impact development” (LID), is an alternative approach to traditional stormwater management. The GSI approach encourages the infiltration of stormwater into the ground close to where precipitation falls, similar to what occurs naturally in undeveloped areas. By using natural materials including vegetation and soils, these practices restore groundwater recharge and filtration processes while reducing downstream flooding and protecting water quality. Additionally, GSI can be constructed in stages, as funding and resources become available and as roads or Town buildings undergo repaving, renovation, or other upgrades. Unlike traditional underground drainage that needs to be constructed in whole to provide any benefit, GSI solutions can provide incremental benefits as they are implemented, allowing them to be phased in over time.

In addition to reducing polluted runoff and improving water quality, GSI can improve flow conditions in streams and rivers. Infiltrating water into the ground has the dual effect of reducing peak flows during wet weather events and sustaining or increasing stream base flow during dry periods, which can be important for aquatic habitat, fisheries, and groundwater supplies. When applied throughout a watershed, GSI can help mitigate flood risk and increase flood resiliency. At a smaller scale, GSI can also reduce erosive velocities and streambank erosion. GSI and LID are the preferred approach for stormwater management in Massachusetts. Foxborough continues to undergo significant economic development and redevelopment, so there is an imminent need for sound, future-focused solutions to guide development in ways that consider future climate conditions, ongoing maintenance needs, and the needs of the Town’s climate vulnerable populations.

This Green Infrastructure Master Plan is intended to help our Town officials and other local decision-makers think more strategically about ways to utilize nature-based solutions to make our Town more resilient to future climate impacts—from flooding to extreme heat and drought—and to recognize key leverage points where projects can effectively benefit water quality and ecological health while simultaneously communicating proactive, climate resilient development strategies to residents.

The plan is the culmination of a year-long process of assessing potential GSI sites and project ideas throughout the Town. It includes:

- Prioritized site-specific and Town-wide recommendations,
- 10 Nine concept-level designs to support future implementation projects
- Standard engineering details for low-maintenance green infrastructureGSI stormwater controls tailored to the needs of Foxborough that could be implemented by the Town Department of Public Works (DPW) in a variety of locations
- Potential funding sources for design, permitting, and implementation of recommended projects

What is Green Infrastructure?

Green stormwater infrastructure refers to systems and practices that reduce stormwater runoff through use of vegetation, soils, and natural processes to manage water and create healthier urban and suburban environments. These practices capture, manage, and/or reuse rainfall close to where it falls, reducing stormwater runoff and keeping it out of drainage systems and receiving waters.

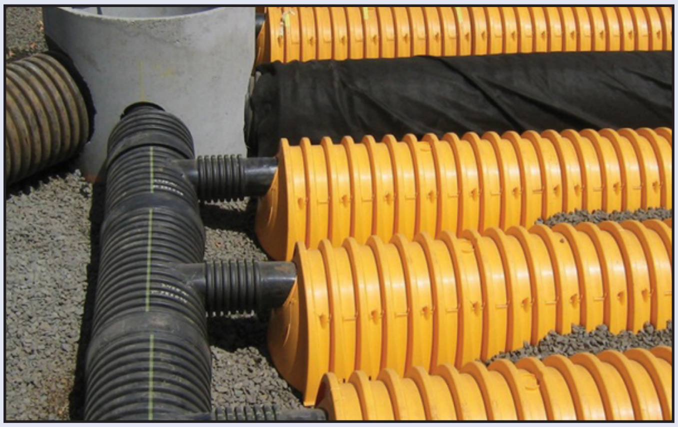
Green Infrastructure:

- Mitigates flooding & increases flood resiliency
- Reduces peak flows during storms
- Reduces pollutants in stormwater runoff, improving water quality
- Helps sustain stream flow during droughts
- Reduces streambank erosion
- Is more cost-effective than traditional drainage
- Improves air quality
- Sequesters carbon
- Helps reduce energy consumption
- Adds aesthetic interest
- Improves property values
- Contributes to overall economic vitality
- Promotes adaptation to climate change

Rain Gardens

Bioswale

Parking ROW Bioretention



Infiltration Chambers

2 Current Conditions

2.1 Undersized and Aging SW Infrastructure

The Town of Foxborough operates an extensive drainage network to collect and convey stormwater, consisting of over 2,200 catch basins (inlets from the roadway into the underground drainage system), 50 miles of drainage pipe, and nearly 300 outfalls where stormwater is ultimately conveyed to streams and wetlands. Much of this infrastructure is past its intended design lifespan, and was designed for smaller, less intense storms than are predicted to impact Foxborough under future climatic conditions. As precipitation events become more intense and less predictable, undersized and aging stormwater infrastructure is expected to pose a greater threat of failure and flooding. Catch basins can be overwhelmed, and even where drainage pipes are of adequate size, high volume stormwater flows can result in powerful erosive forces and scouring at outfalls, with corresponding impacts to natural streams.

High volumes of stormwater runoff also increase peak flows through downstream culverts and bridges, increasing the likelihood of road washouts or structural failure at inadequate or undersized road-stream crossing structures and significantly impacting the transportation system.

Cocasset Street Underpass

In tandem with the development of this plan, the Town's MVP grant also funded a more detailed feasibility assessment of GSI solutions for the Cocasset Street railroad underpass. The area draining to the Canoe River adjacent to the Cocasset Street railroad underpass frequently floods. It is undersized to handle rain storms greater than 1", and is likely undersized during smaller-scale storms (<0.5"). The feasibility assessment included siting of GSI practices, modeling of the drainage network, infiltration testing and conceptual designs to a level that will support permitting for a future phase of implementation.

2.2
Improving Stormwater Protects Valuable Resources

When rain falls from the sky, it is generally clean. However, as soon as a raindrop hits the ground and starts flowing across surfaces, it begins collecting other materials. Stormwater runoff picks up surface pollutants like bacteria, nutrients, and sediment, carrying them into natural waterbodies, often without an opportunity for effective treatment and/or filtration. This can lead to degraded water quality, also referred to as “impairments,” resulting from excessive levels of phosphorus, nitrogen, sediments and solids, salts, bacteria, and other pollutants.

The Massachusetts Department of Environmental Protection tracks water quality in streams, ponds, and lakes around the Commonwealth. Within Foxborough, the Neponset Reservoir is listed as impaired due to high levels of algae and elevated turbidity, resulting from both stormwater and historic industrial discharges. The Neponset River is listed as impaired due to high levels ofalso has several listed impairments. Listed impairments such as phosphorus, E. coli, nutrients and eutrophication all are attributable to stormwater pollution.

Foxborough also sits on top of the Head of the Neponset Aquifer, serving the communities of Foxborough, Walpole, Medfield, Westwood, and Dover, as well as the Canoe River Aquifer, which serves the communities of Sharon, Mansfield, Easton, and Norton. Both aquifers are designated by the U.S. Environmental Protection Agency as Sole Source Aquifers, which means that the aquifer supplies at least 50% of the drinking water for its service area, and that there are no other reasonably available alternative drinking water sources to fall back on should the aquifer become contaminated. Green infrastructure GSI practices like those identified in this plan help to protect the quality of our drinking water by promoting infiltration of stormwater to recharge the aquifer and by treating stormwater pollutants before they make their way into groundwater.

Common Groundwater Pollutants

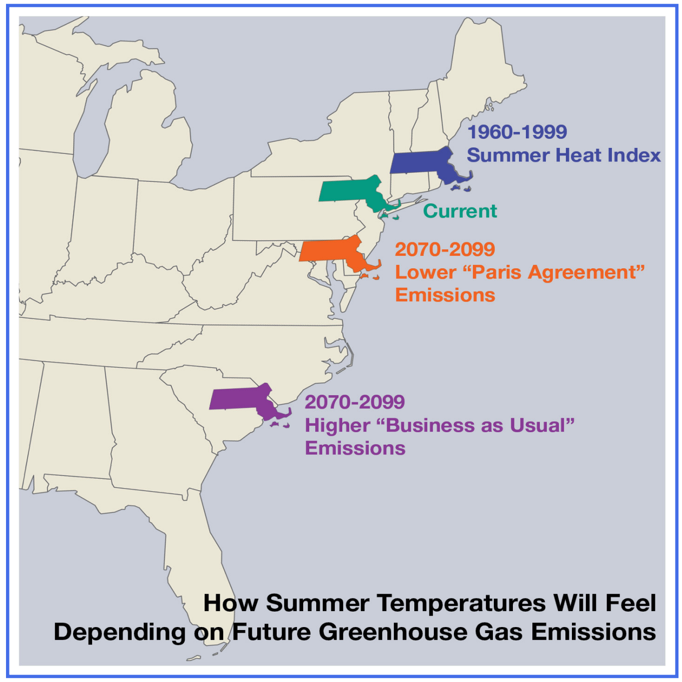
- Nitrogen
- Phosphorus
- Organic debris
    - *Leaves, lawn clippings*
- Sediment
    - *Sand and road grit*
- Pathogens
    - *Bacteria*
    - *Animal wastes*
- Metals
- Organic chemicals
    - *Pesticides, herbicides*

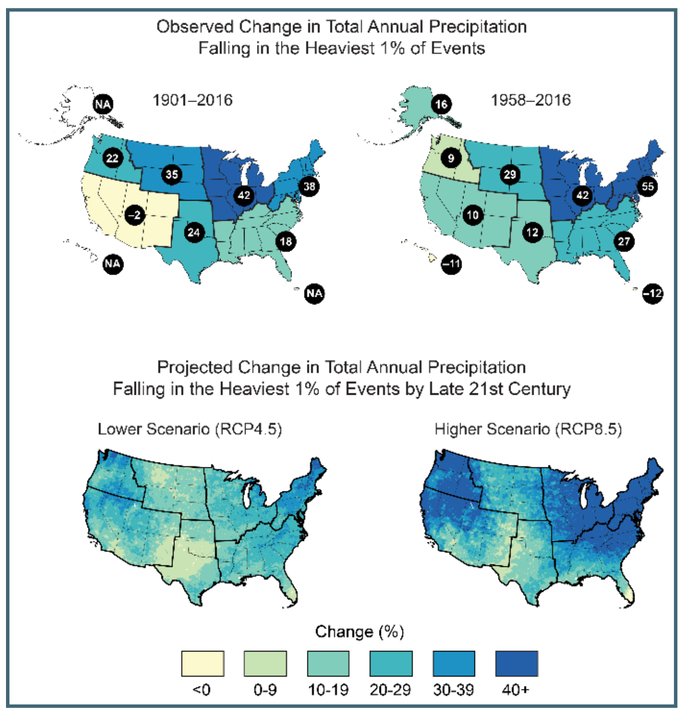
3 Climate Change Impacts to Foxborough

Both the acute and chronic impacts associated with extreme weather and natural and climate-related hazards are an increasing concern for the communities of Southeastern Massachusetts. When the Town conducted a Community Resilience Building (CRB) workshop as the first step in its climate resilience planning process, Town stakeholders identified flooding and severe storms as two of the top climate change-related hazards facing the Town. The threat from flooding has been growing with the increasing frequency of major storm events that deliver large amounts of precipitation over a short time period, and this threat is expected to continue to grow due to climate change. Here in Foxborough over the past 60 years, there has already been more than a doubling of heavy rainstorms.

As time goes on, Foxborough's climate will begin to look more like the climate in the mid-Atlantic. By the end of the century, our climate here in southeastern Massachusetts will feel like that of the Carolinas today - in other words, we're looking at a hotter, wetter future.

The Northeast Climate Adaptation Science Center at the University of Massachusetts Amherst projects that, given a medium to high future emissions scenario, Foxborough will see as much as 8 additional inches rainfall per year by the end of the century. More critically in terms of flood potential, the Town could see up to 4.7 additional days with precipitation over one inch. Similarly, the Massachusetts Department of Transportation (MassDOT)[1] projects that by 2070 the 100-year, 24-hr rainfall event in the Neponset River Basin, will increase up to 20% under a medium emissions scenario (RCP6.0) and up to 30% under a high emissions or business-as-usual scenario (RCP8.5). This is consistent with the broader findings of the 4th National Climate Change Assessment that identified a 55% increase in the total annual precipitation falling in the heaviest 1% of events in the period 1958 -2016 and anticipates an up to 40+% change by late century under a high emissions scenario. With higher annual temperatures and warmer winters, more precipitation will be falling in the form of rain, generating more runoff.





Observed and Predicted Extreme Precipitation (4th National Climate Assessment; https://nca2018.globalchange.gov/chapter/2/)

[1] *https://gis.massdot.state.ma.us/cpws/*

3.1
What Climate Change Means for Stormwater

As precipitation events become more intense and less predictable, undersized and aging stormwater infrastructure is expected to pose a greater threat of failure and flooding. Over the past decade, high intensity rain events have increasingly caused roadway flooding at the Cocasset Street underpass, Chestnut Street, and at the Public Works facility. Increased precipitation intensity means catch basins and undersized pipes will be increasingly overwhelmed, leading to more frequent roadway flooding. Even where drainage pipes are of adequate size, high volume stormwater flows can result in powerful erosive forces and scouring at outfalls, with corresponding impacts to natural streams. Areas with large amounts of impervious cover, including parking lots, roof tops, roadways, driveways, and patios, that don't allow stormwater to infiltrate into the ground, generate high volumes of stormwater runoff. High volumes of stormwater runoff also increase peak flows through downstream culverts and bridges, increasing the likelihood of road washouts or structural failure at inadequate or undersized road-stream crossing structures and significantly impacting the transportation system both within and downstream of Foxborough.

Flooding at the Foxborough Highway Department facility

3.2
Water Quality and Climate Change

As noted above, stormwater runoff carries sediment, bacteria, and nutrients like phosphorus and nitrogen into surface water bodies. As climate change progresses, the Iincreased frequency and intensity of precipitation events that lead to greater stormwater runoff volumes are also expected to increases nutrient pollutant loads loads in delivered to Foxborough's lakes and riversstormwater runoff. Increased storm intensity leads to greater erosion potential of nutrient-laden soils and sediment, and delivery of more bacteria from animal and human waste. Higher temperatures predicted with climate change, coupled with increased nutrient levels in stormwater runoff, can further worsen water quality in Foxborough's water bodies. The Neponset and Taunton River Basins are expected to see increases in days over 90° of up to 77 additional days by the 2090s, and consecutive dry days between rain events are estimated to increase to 17 days annually by the end of the century.[2]

Pollutant sources and stormwater
Credit: Metropolitan North Georgia Water Planning District

Algae blooms can lead to fish kills
Credit: Tom Archer

Together with increased pollutant loads, this creates conditions for cyanobacteria to grow and reproduce to potentially dangerous levels, as they did in 2020 at Lake Mirimichi. These harmful algal blooms and other public health advisories are expected to become increasingly frequent as climate change leads to more extreme heat conditions and drought periods. A nationwide screening-level assessment of climate impacts on cyanobacteria harmful algal bloom prevalence determined that the largest increases in harmful algal bloom occurrence were likely to occur in the Northeast.[3] Algal bloom die offs in turn reduce dissolved oxygen levels in lakes and rivers, leading to fish kills.

[2] Northeast Climate Adaptation Science Center and Resilient MA Climate Data Clearinghouse

[3] Chapra, SC et al. 2017. Climate change impacts on harmful algal blooms in US freshwaters: a screening-level assessment. Environmental Science and Technology 51: 8933-8943.

4 Prioritized Green Infrastructure Concepts

4.1 Site Selection and Assessment Process

Sites throughout Foxborough were screened for GSI opportunities or other nature-based solutions to increase flood resiliency and improve or protect water quality. A desktop screening process was initially performed using geographic data layers to identify locations with the greatest risk from flooding and potential for water quality benefits from GSI retrofits. This screening-level review considered the following factors:

- Municipal ownership (parcels and right of ways)
- Flood-prone areas
- Water quality impairments
- Soil infiltration capacity
- Open space priorities
- Aquifer and wellhead protection areas
- Utility information (particularly existing drainage infrastructure)
- MS4 regulated areas

Initial sites identified in the screening-level review were presented to and reviewed by the Steering Committee to incorporate information and institutional knowledge from Town staff and other stakeholders. The list of potential sites was also examined relative to ongoing planning and capital projects in the Town to identify project sites where GSI could be incorporated in a cost-effective manner as part of a larger project (e.g., planned future redevelopment projects or repaving). Sites with the highest potential for cost-effective GSI retrofits were selected by the Steering Committee for field inventories.

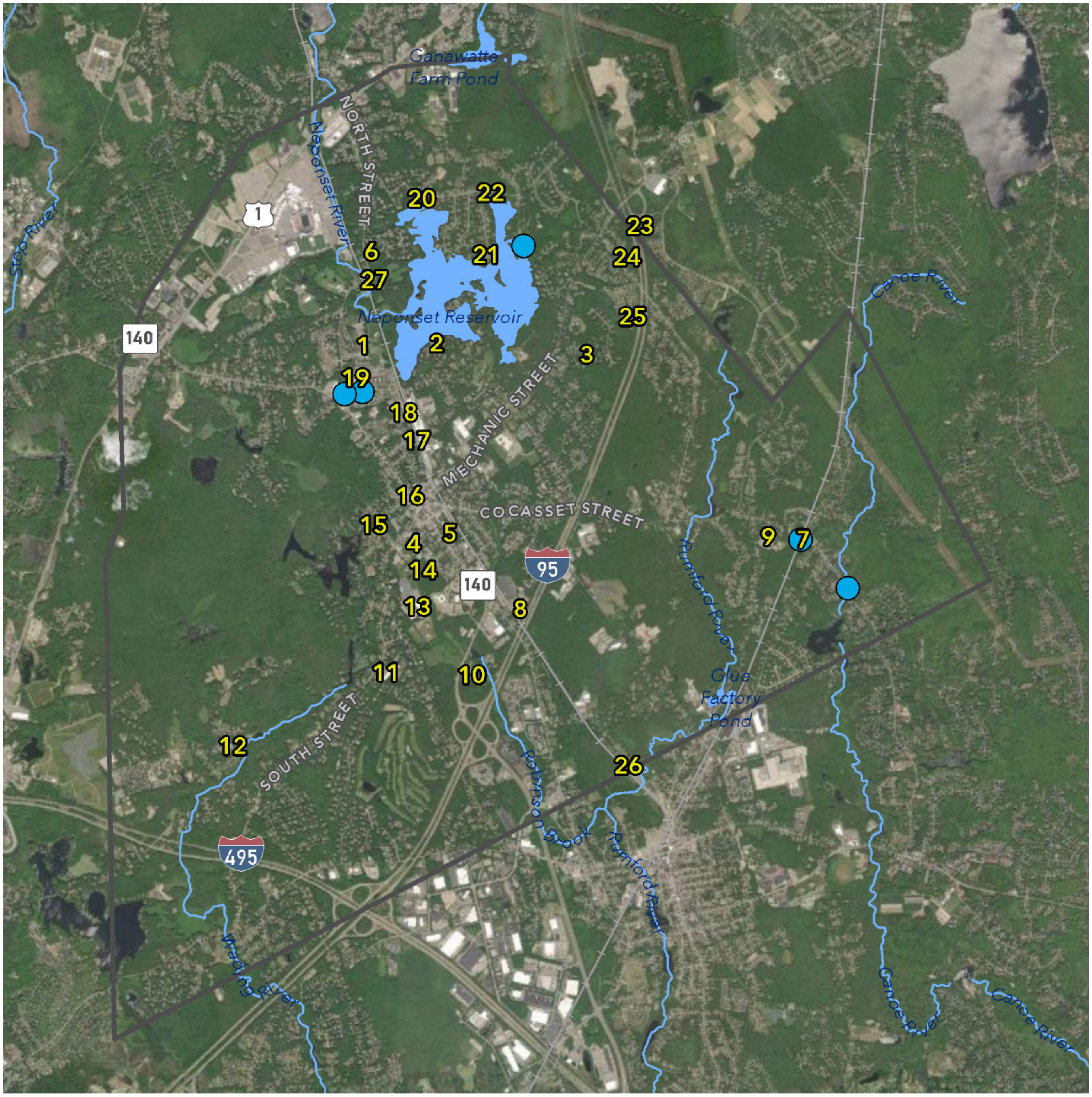
Field inventories were then performed at selected sites to further evaluate the feasibility of implementing GSI retrofits or nature-based solutions at each location. Field assessments focused on adjacent land use and development characteristics, areas of impervious surfaces, drainage patterns and approximate drainage areas, the presence and locations of utilities, locations for potential stormwater retrofits, and site constraints such as evidence of shallow groundwater or bedrock that could limit the feasibility of infiltration-based practices.

The GSI concepts presented in this master plan were reviewed and selected by the Steering Committee as the most promising candidates for GSI improvements that would yield significant benefits in terms of flooding and climate resilience as well as improved water quality. Many of the selected sites are also priority areas for either DPW or Planning for future improvements within the next several years.

Each concept includes calculations of the volume and depth of stormwater runoff that could be captured by the proposed GSI practices. Calculations of potential pollutant load reductions for total suspended solids (sand, grit, etc.), nutrients (phosphorus and nitrogen) and bacteria were calculated for each practice based on GSI performance curves published by the University of New Hampshire Stormwater Center and the U.S. Environmental Protection Agency.[4] Order of magnitude costs were also developed based on the calculated volume of water to be treated at each site and typical unit costs for constructing GSI practices. A more detailed summary of cost calculations and assumptions is provided after the concepts.

[4] *https://www.unh.edu/unhsc/sites/default/files/media/ms4_permit_nomographs_sheet_final_2020.pdf*

https://www.epa.gov/sites/production/files/2020-01/documents/tisbury-subtask-4d-tm.pdf

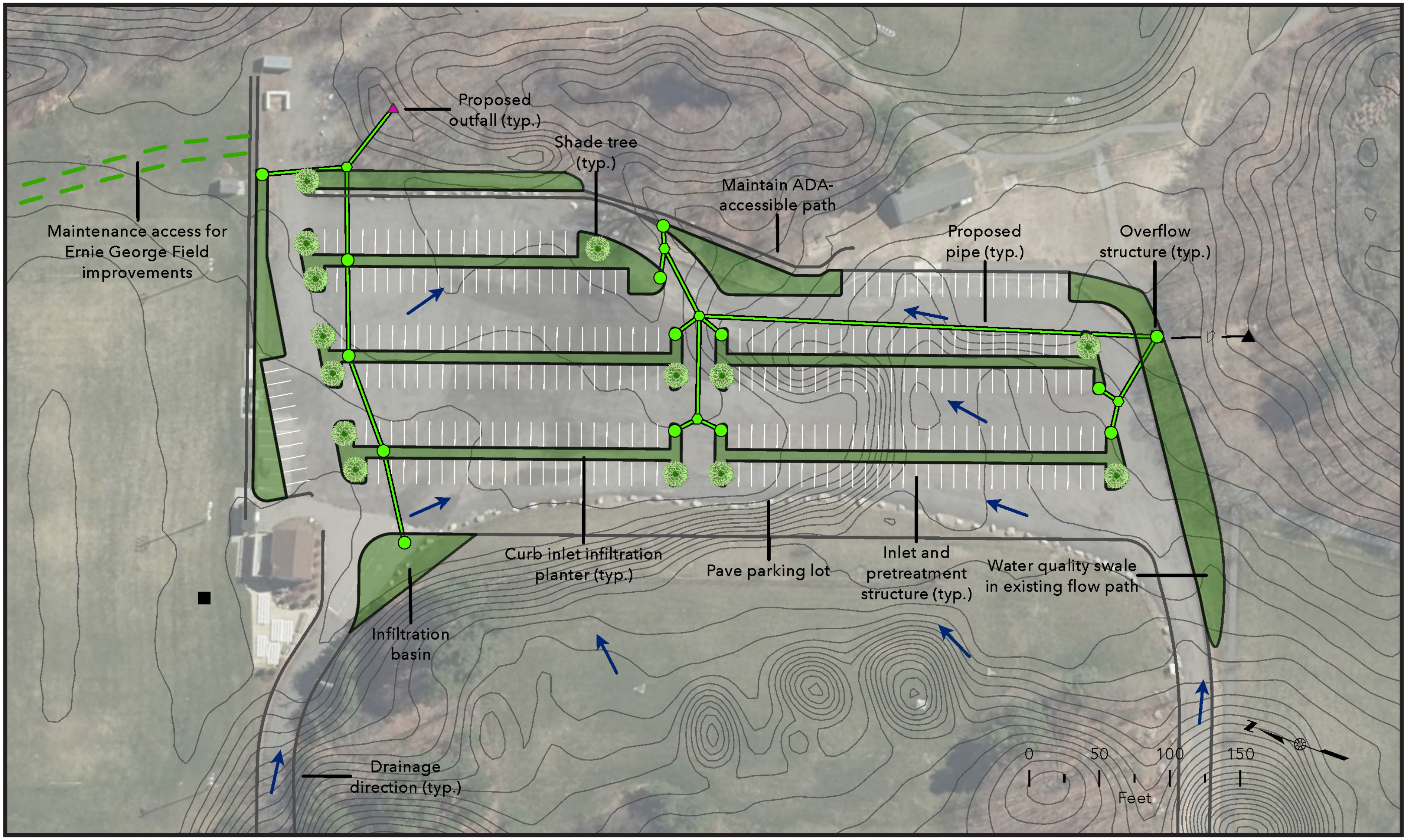


1 **Payson Road Recreation Complex (3)**	11 Taylor Elementary School	21 Shoreline Drive
2 **Kersey Point Conservation Area**	12 Cocasset River Park	22 Edwards Road
3 **Sunset Estates (2)**	13 High School	23 Reynolds Dr
4 **Igo Elementary School**	14 Booth Playground	24 Louise Drive
5 **Council on Aging**	15 Centennial Court	25 Walden Farms Road
6 **Lane Homestead**	16 Downtown Parking	26 Commuter Rail Parking
7 Cocasset Street Underpass	17 Railroad Avenue	27 McKenzie Lane
8 Dept. of Public Works	18 N. Carl Annon Court	
9 Burrell Elementary School	19 Social Hall, State Hospital	
10 Walnut Street	20 Young Road	

Bold sites indicate conceptual design

Known Flooding Areas

4.1.1
Payson Road Athletic Complex – North Parking Lot



Site Description

The Payson Road Athletic Complex provides space for Foxborough residents to participate in football, baseball, soccer, basketball, and lacrosse. The existing, compacted-gravel north parking lot at the Payson Road Athletic Complex does not have stormwater infrastructure presently. As a result, stormwater has eroded a channel from the parking lot into nearby wetlands. The Town paints lines onto the existing gravel parking area to guide facility users, yielding approximately 275 parking spaces. Soils in the area generally support infiltration-based practices with high pollutant removal potential. Infiltration testing would need to be done prior to final design to determine actual infiltration rates, or if insufficient, determine if the design needs to be modified to incorporate underdrains.

Proposed Green Infrastructure Concept:

- Reconfigure the parking lot to include longer parking bays, with curb-inlet infiltration practices between parking rows.
- Formalize parking lot with curbing and pavement to aid directing water to predetermined locations where pretreatment will occur removing sediment.
- Reconfiguring parking lot layout to formalize traffic patterns and provide up to an additional 18 parking spaces over the existing layout
- Install an infiltration basin along both the north and south entrance roads of the parking lot to capture runoff from the two entrances
- Improve the existing connection between fields along the eastern edge of the parking lot by constructing an ADA-accessible path
- Provide informational signage along the path to educate facility users about the infiltration practices and the Town's commitment to addressing vulnerability to climate-related hazards.

Site Data

Impervious Area Treated:	3.5 acres*
Design Storage Volume:	26,800 ft^3
Runoff Capture Depth:	2.0 inches

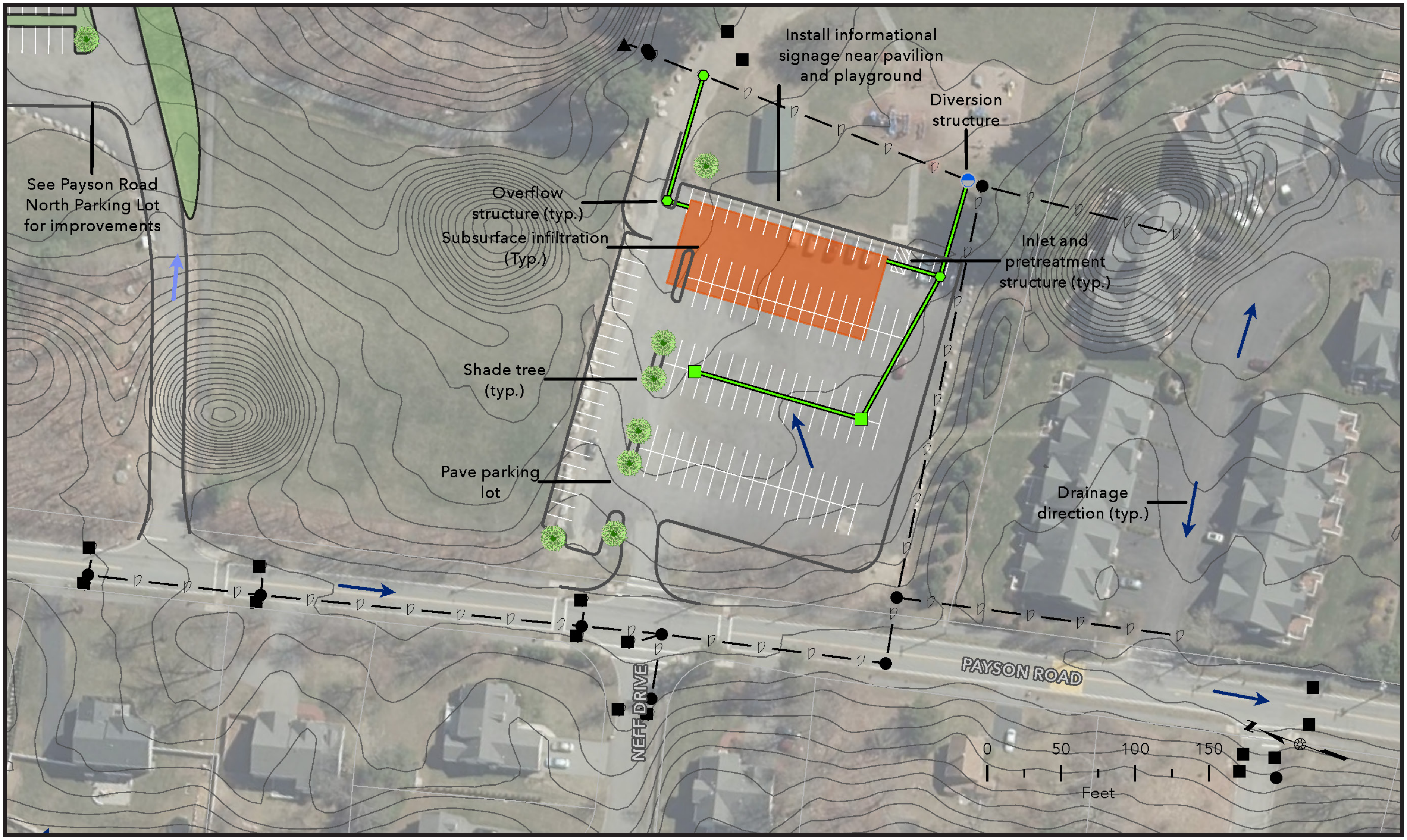
Estimated Cost:
$525,000 Drainage improvements
$675,000 Parking lot improvements

Pollutant Removal:

Total Suspended Solids	Phosphorus	Nitrogen	Bacteria
100	100	100	99

* If all practices are installed

4.1.2
Payson Road Athletic Complex – South Parking Lot



Site Description

The south parking lot of the Payson Road Athletic Complex is a compacted-gravel parking lot. The Town paints lines onto the existing parking area to guide Complex users, yielding approximately 125 parking spaces. In addition, the parking lot does not have stormwater infrastructure. As a result, untreated stormwater currently flows into a channel from the parking lot into nearby wetlands. Additional runoff from the surrounding neighborhoods of Payson Road, Neff Drive, and Capone Road are conveyed in pipes around the parking lot, discharging to the wetlands and Crackrock Pond. This piped stormwater network is more challenging to treat but could increase the amount of stormwater that is able to be treated here significantly. Soils in the area should generally support infiltration-based practices with high pollutant removal potential. Infiltration testing will be an important next step to determine the best locations for GSI.

Proposed Green Infrastructure Concept:

- Install subsurface infiltration chambers under the parking lot, with a diversion structure (e.g. weir) from the existing storm drain to convey flow from Payson Road, Neff Drive, and Capone Road.
- Formalize the parking layout with pavement, curbing, and catch basins. Direct water from the catch basins to the subsurface infiltration chambers. Plant shade trees in the curbed beds at the end of the parking rows.
  - *Underground infiltration treats the greatest volume of stormwater while maintaining the existing level of parking.*
- Provide informational signage near the playground and pavilion to educate Complex users about the location and function of the subsurface infiltration chambers, as well as the hazards posed by climate change and the Town's commitment to reducing climate vulnerability.

Site Data

Impervious Area Treated:	1.2 acres parking lot 2.3 acres neighborhood
Design Storage Volume:	19,500 ft^3
Runoff Capture Depth:	1.2 inches

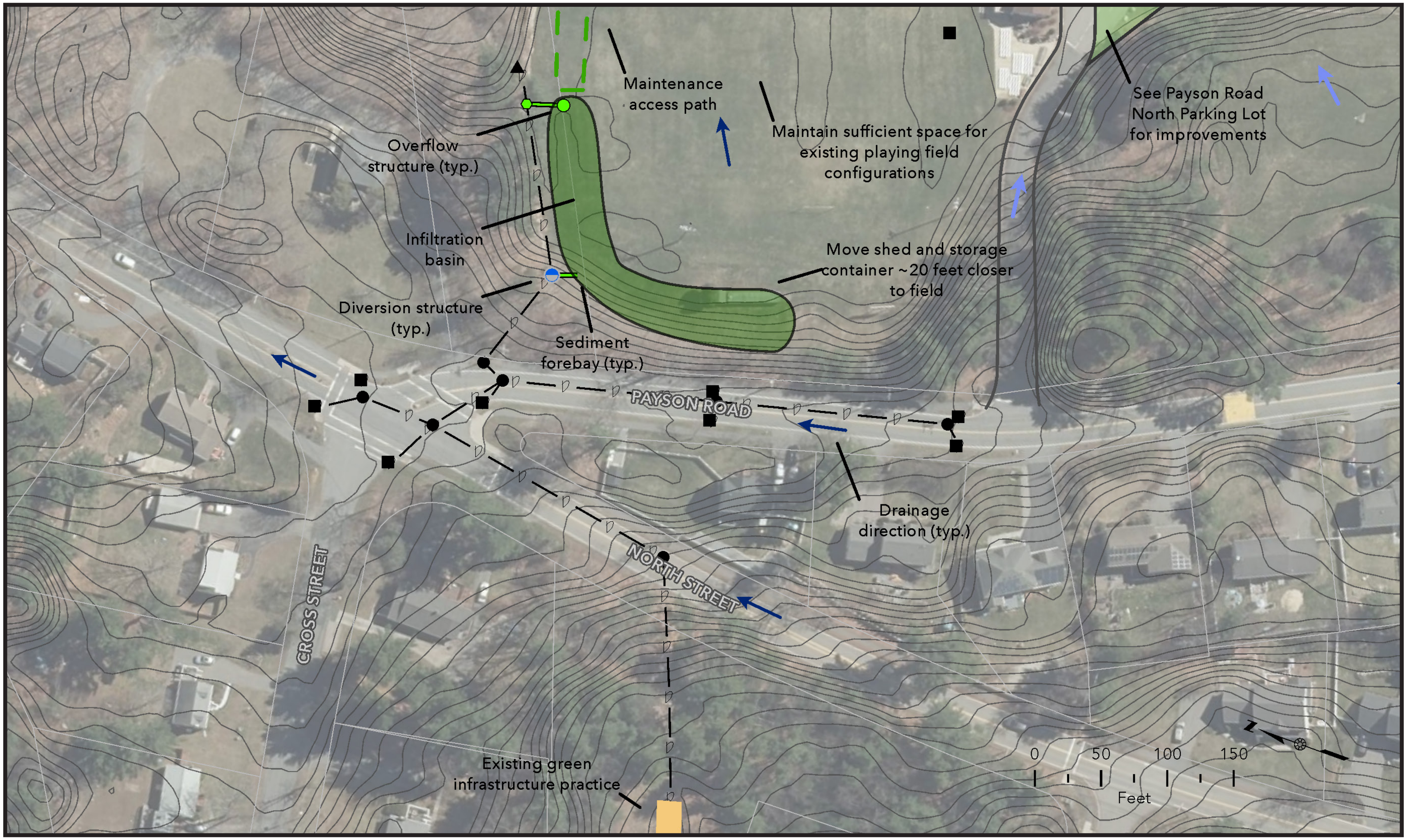
Pollutant Removal:

Total Suspended Solids	Phosphorus	Nitrogen	Bacteria
100	100	100	99

Estimated Cost:

$1,600,000 Drainage improvements
$250,000 Parking lot improvements

4.1.3
Payson Road Athletic Complex – Ernie George Field



Site Description

Located at the north end of the Payson Road Athletic Complex, Ernie George Field provides space for football and lacrosse fields. The field features stadium lighting and an electronic scoreboard. Runoff from the North Road and Payson Road collects in catch basins and is conveyed under Ernie George Field by an existing stormwater pipe. Stormwater currently discharges directly into Crackrock Pond, which currently faces nutrient-related algal blooms and the Neponset River, which is impaired for bacteria. The field is a terrace between Payson Road above and the wetland below. Soils in the area generally support infiltration-based practices with high pollutant removal potential.

Proposed Green Infrastructure Concept:

- Construct an infiltration basin in the open space between Payson Road and the football field to infiltrate the water quality volume. Retrofit the existing junction manhole near the northwest corner of the field to a weir or similar diversion structure to divert the design volume to the basin.

Site Data

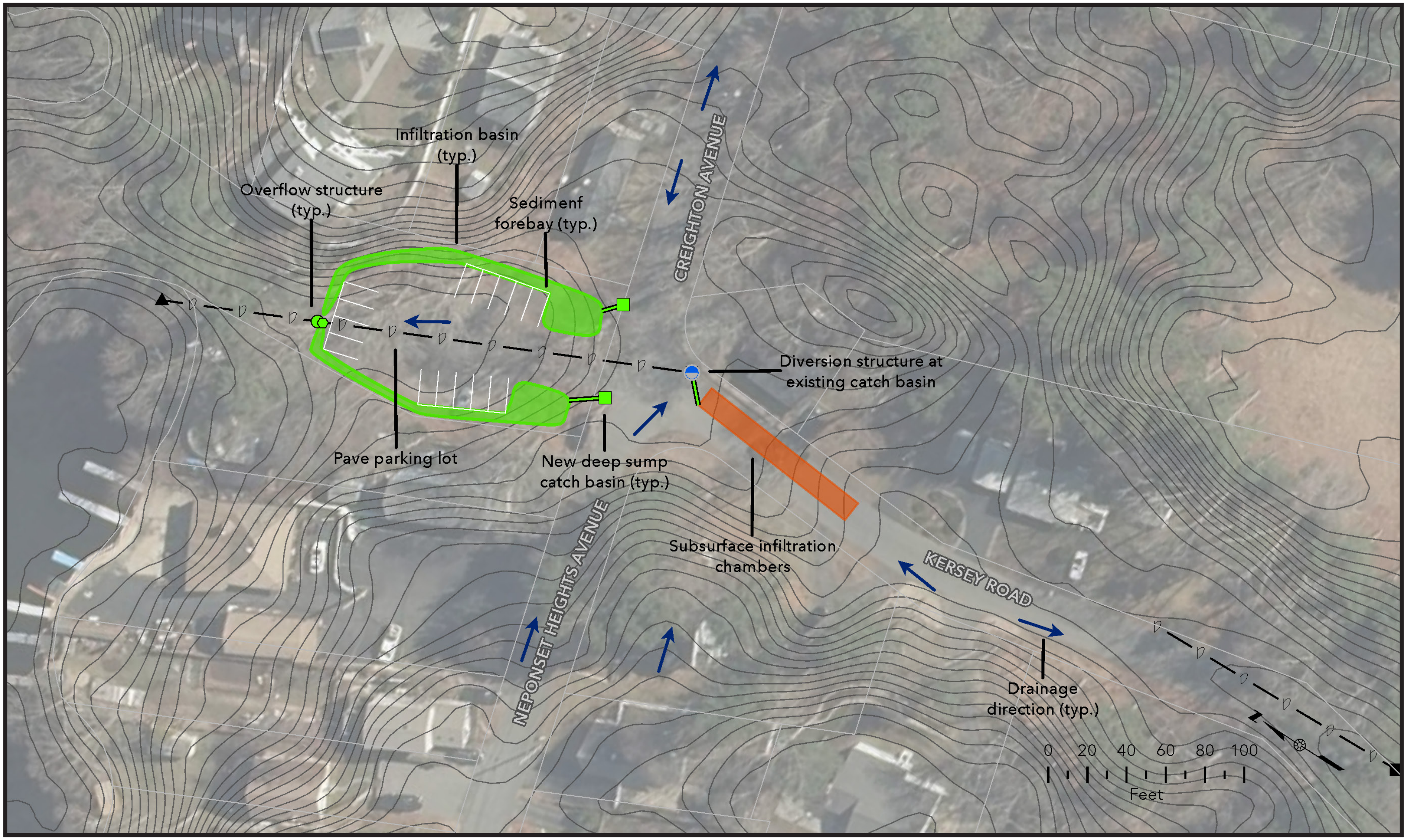
Impervious Area Treated: 2.37 acres
Design Storage Volume: 10,509 ft^3
Runoff Capture Depth: 1.2 inches

Estimated Cost: $150,000

Pollutant Removal:

Total Suspended Solids	Phosphorus	Nitrogen	Bacteria
100	98	100	97

4.1.4
Kersey Point Conservation Area



Site Description

Kersey Point Conservation Area on the shore of the Neponset Reservoir is located at the intersection of Kersey Road, Neponset Heights Avenue, and Creighton Avenue. A short, one-lane road provides access down an approximately 4-foot drop to a small, compacted-dirt parking lot. Two catch basins along Kersey Road discharge via a 12" corrugated metal pipe under the parking lot to the Neponset Reservoir. Runoff from the north side of Neponset Heights Avenue and Creighton Avenue flow down the slope and across the dirt parking lot to the Reservoir. Although soils in the area generally support infiltration-based practices, the proximity of the Neponset Reservoir suggests shallower depth to groundwater at the parking lot, which may limit the feasibility of such practices the closer to the reservoir they are installed.

Proposed Green Infrastructure Concept:

1. Install a subsurface infiltration practice under the intersection to treat stormwater from Kersey Road and Neponset Heights Avenue.

2. Install infiltration basins on both sides of the parking lot entrance between the parking area and parcel boundary.
   - *Conduct infiltration testing to identify the depth to seasonal high groundwater. If there is insufficient depth to groundwater to install an infiltration practice then a lined bioretention practice could be substituted.*

- Install deep sump catch basins in the roadway above the parking area to divert the water quality volume from the roadway to the infiltration basins.
- Pave and stripe the parking lot, regrading to direct stormwater to the infiltration basins.
- Convey water in excess of the design volume to a drainage swale around the parking area, overflowing to the existing drainage pipe.
- Replace poor condition existing pipe with a larger, more durable HDPE or concrete pipe.
- Where feasible maintain existing trees.

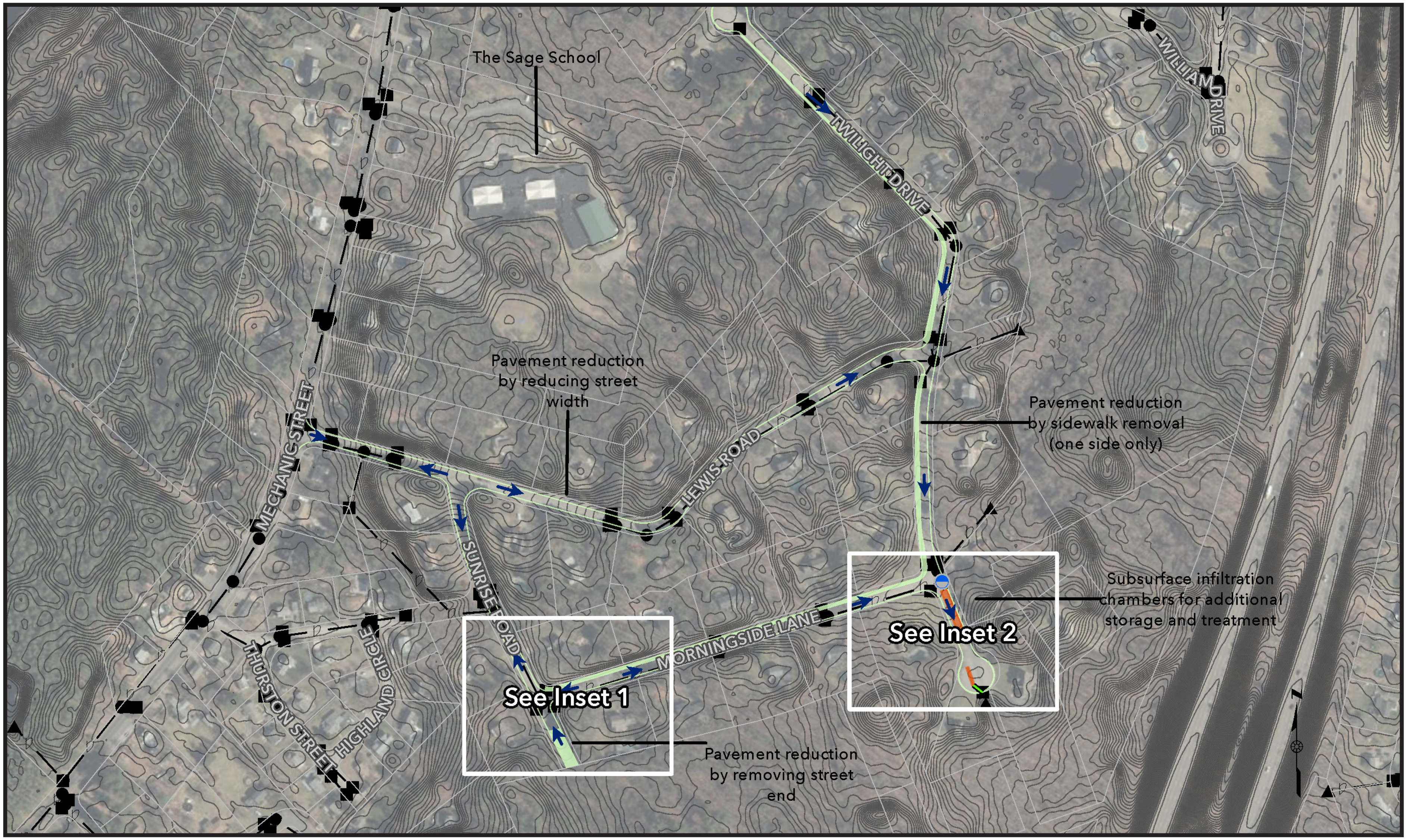
Site Data

Impervious Area Treated:	1.08 acres	Estimated Cost:	\$335,000
Design Storage Volume:	4,452 ft^3	Subsurface infiltration:	\$210,000
Runoff Capture Depth:	1.1 inches	Infiltration basin:	\$55,000

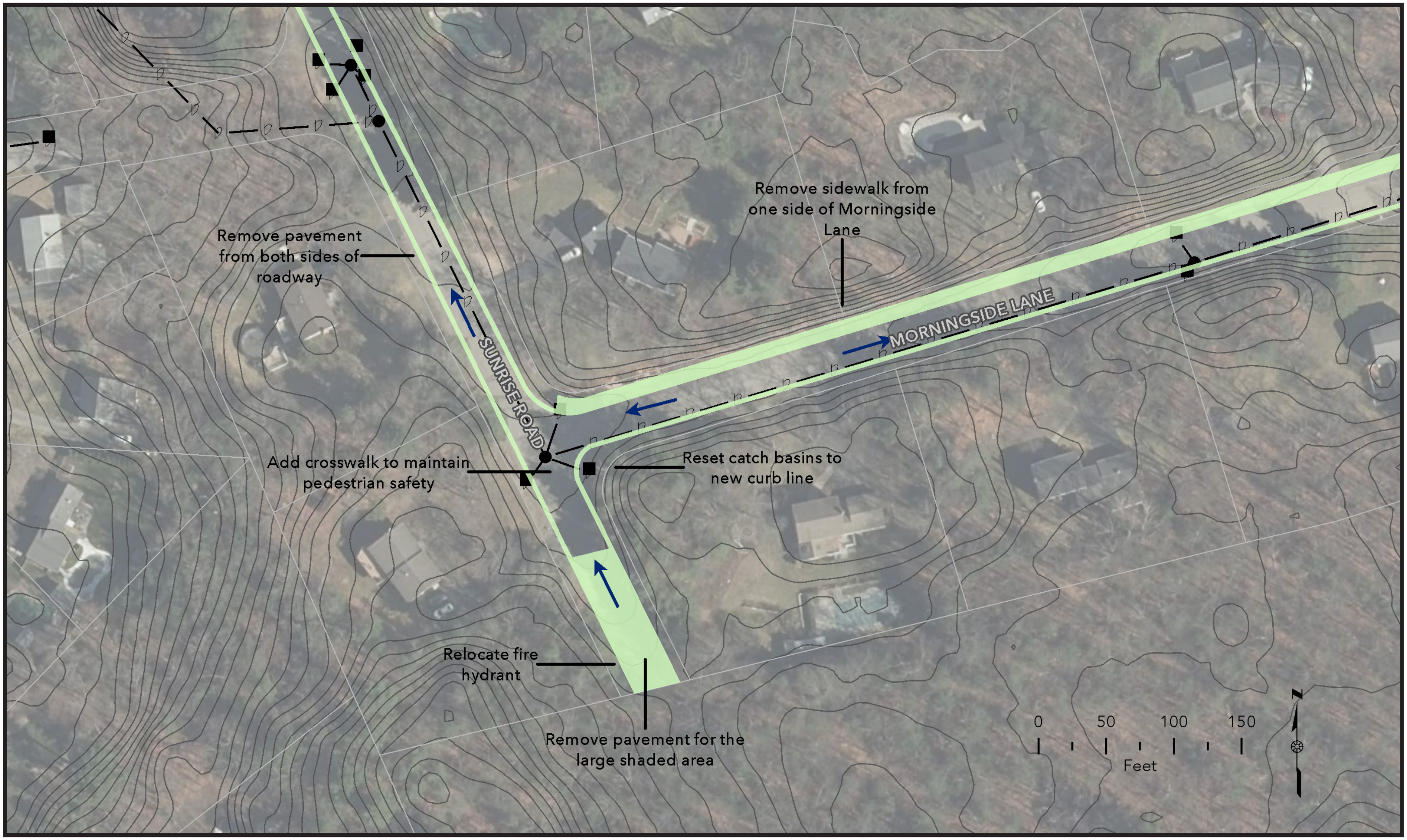
Pollutant Removal:

BMP	Total Suspended Solids	Phosphorus	Nitrogen	Bacteria
Subsurface Infiltration	100	100	100	99
Infiltration Basin	99	53	32	55

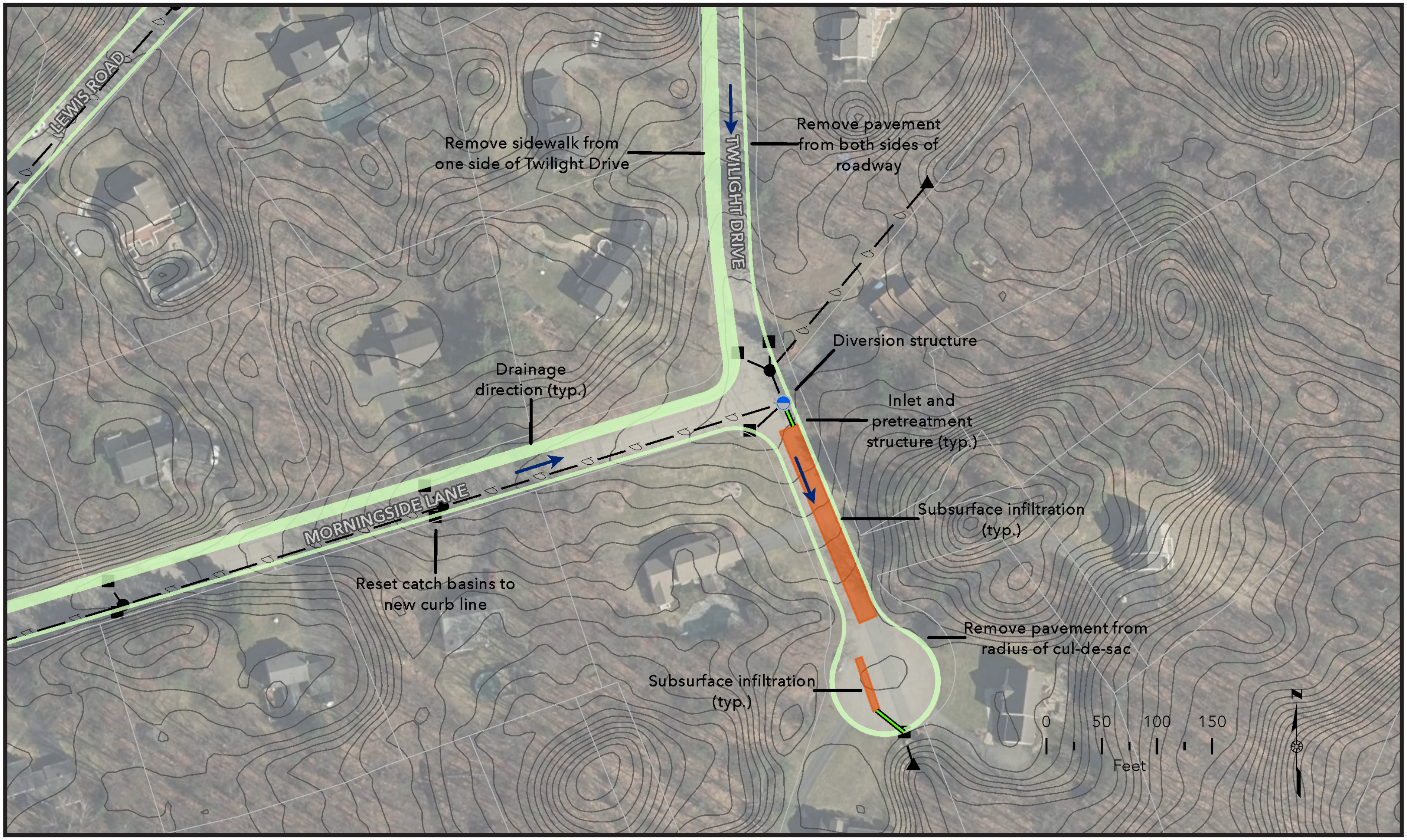
4.1.5
Sunset Estates



Inset 1: Sunrise Road



Inset 2: Twilight Drive



Site Description

The streets that make up the Sunset Estates subdivision, including Lewis Road, Twilight Drive, Morningside Lane, and Sunrise Road, are approximately 33 feet wide. This width of paved road goes beyond the amount of space needed to allow traffic and emergency vehicles to pass. Sidewalks, with buried utilities beneath, run along both sides of the street. Conventional storm drains are also present, with catch basins regularly spaced along both sides of the crowned roadway. On-street parking was not observed during field visits to the subdivision and conversations with the Steering Committee confirmed these observations. Soils in the area generally support infiltration-based practices, although sporadic rock outcrops mapped in the area may limit feasibility. Infiltration testing will be required to determine actual suitability

Proposed Green Infrastructure Concept:

- Reduce pavement width by 3.5 feet on either side of each street in the subdivision, and reduce the paved radius of cul-de-sacs by 5 feet. Restore infiltrative capacity of underlying soil by decompaction. Reset curbs and catch basins as necessary.
- Remove the 112-foot length of pavement at the end of Sunrise Road.
  - *Relocate the hydrant at the end of Sunrise Road to the new end of the street.*
- Remove sidewalk on the north side of Morningside Lane and the west side of Twilight Drive.
  - *Add crosswalks where sidewalk removal would require street crossing to maintain pedestrian safety.*
- Install subsurface infiltration chambers under Twilight Drive south of the intersection with Morningside Lane (1) and under the southern cul-de-sac on Twilight Drive (2). Use a weir or similar diversion structure to direct stormwater to each practice.

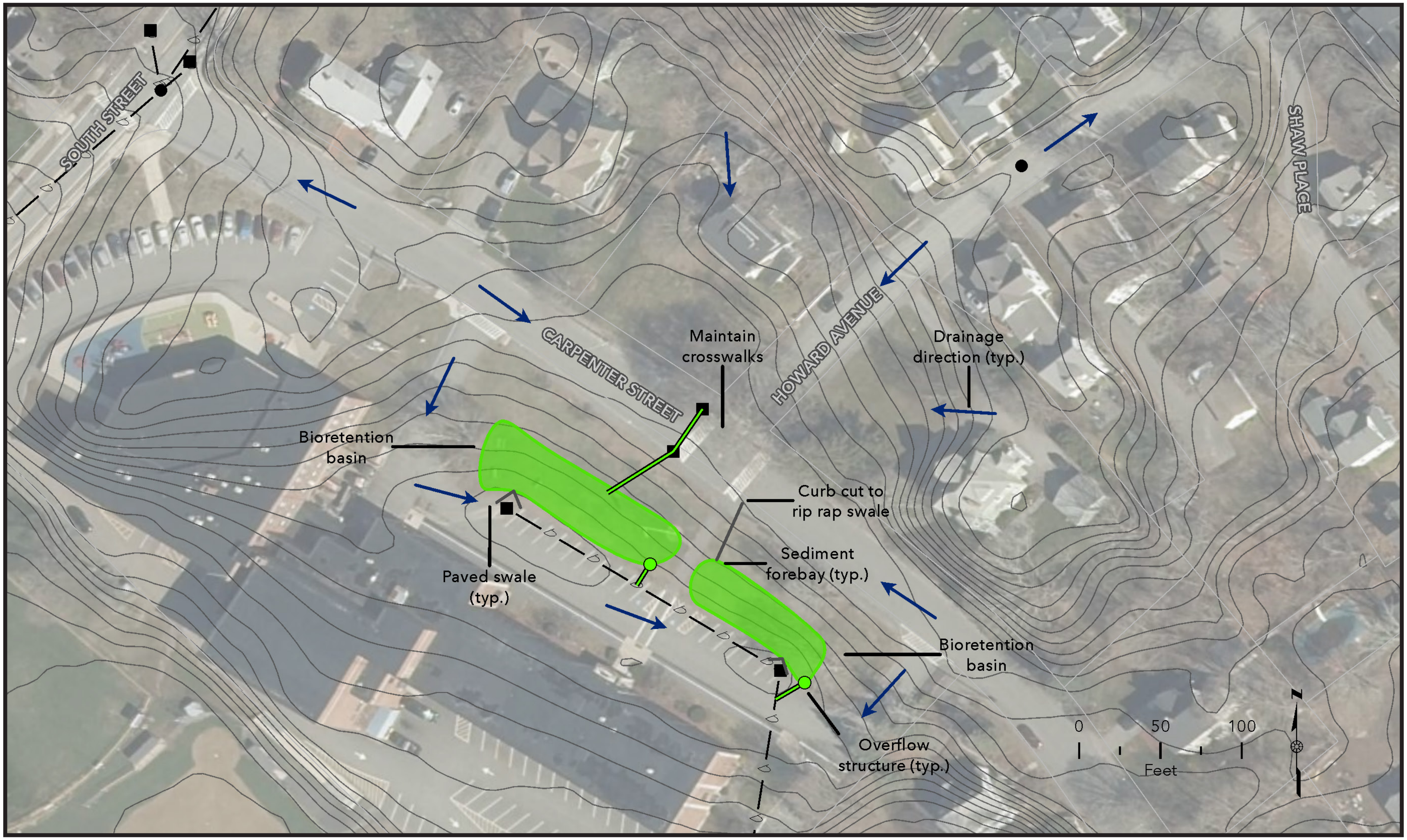
Site Data

Impervious Area Treated:	1.43 acres	Estimated Cost:	$900,000
Design Storage Volume:		Pavement Removal:	$30,000
Pavement Removal:	4,948 ft^3	Subsurface infiltration:	$600,000
Subsurface Infiltration:	6,500 ft^3		

Pollutant Removal:

BMP	Total Suspended Solids	Phosphorus	Nitrogen	Bacteria
Pavement Removal	N/A	2.8 lb/yr	N/A	N/A
Subsurface Infiltration	98	82	95	80

4.1.6
Igo Elementary School



Site Description

Vincent M. Igo Elementary School is located near downtown Foxborough and the intersection of South Street and Carpenter Street. The intersection of Carpenter Street and Howard Avenue at the front of the school is approximately 33 feet wide and includes three crosswalks. Two catch basins at the northwest side of the intersection are believed to convey runoff around the school and toward a tributary of Robinson Brook behind Booth Fields. Gas and water utilities were observed within the right-of-way. Sidewalks are located on both sides of the streets. Soils in the area are mapped as Woodbridge-Urban land complex, which may have a firm and platy structure that can inhibit the infiltration rate of the native soil.

Proposed Green Infrastructure Concept:

1. Install bioretention areas with native plantings in the open space at the front of the school to infiltrate stormwater from the school's front parking area and Howard Avenue

- Construct two catch basins at the southeast side of the intersection to address intermittent flooding and to act as overflow structures
- Relocate existing flagpole closer to street
- Move picnic tables under large tree at north end of parking lot

Site Data

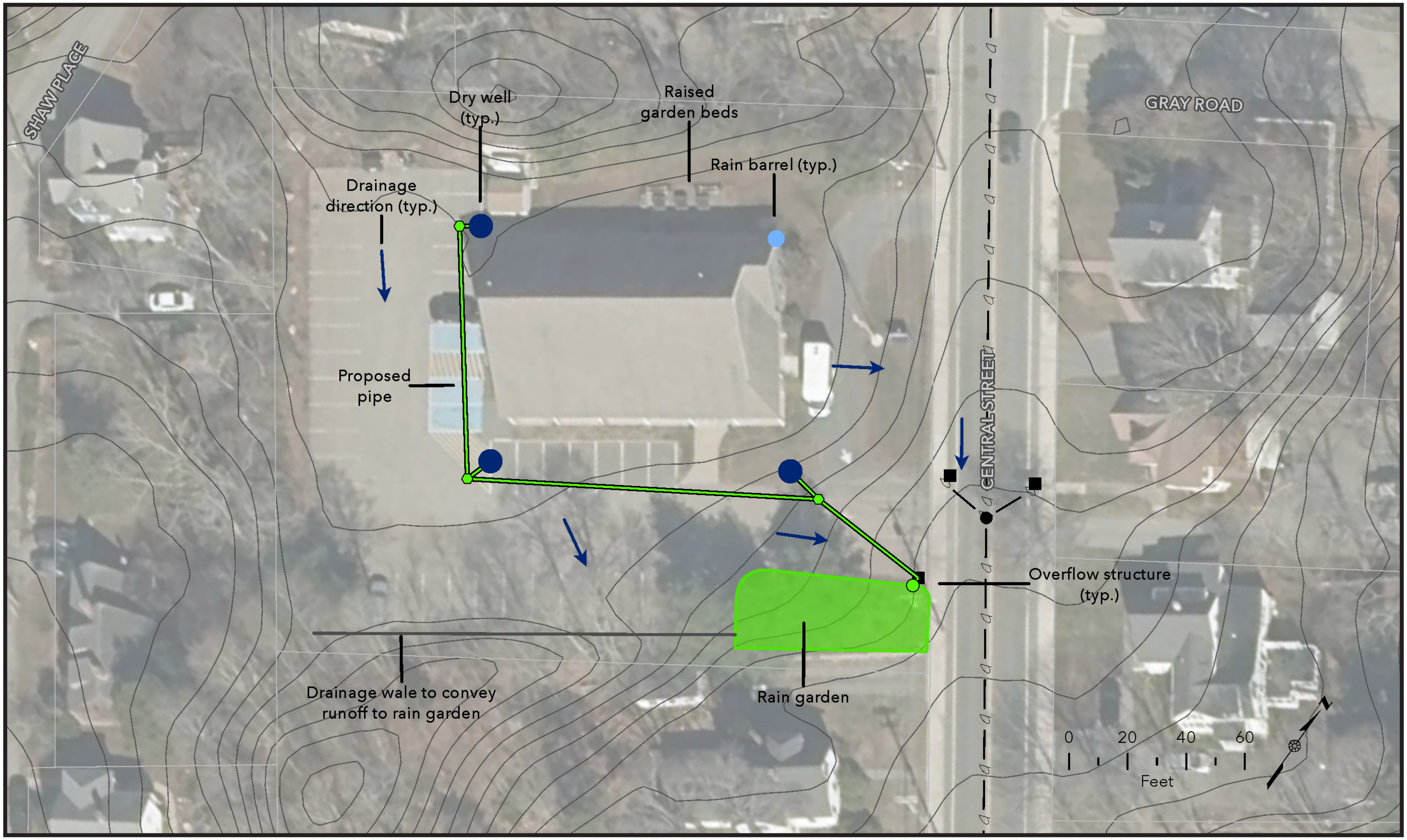
Impervious Area Treated:	1.89 acres
Design Storage Volume:	7,064 ft^3
Runoff Capture Depth:	1.0 inches

Pollutant Removal:

Total Suspended Solids	Phosphorus	Nitrogen	Bacteria
99	53	32	55

Estimated Cost: $115,000

4.1.7
Council on Aging



Site Description

The Council on Aging Senior Center on Central Street south of downtown Foxborough includes a 42-space parking lot, which slopes toward the parcel's southern boundary. In past, stormwater flowed erosively along the southern boundary, which is now lined with 2-inch stone as a rip rap swale. Conversations with Senior Center staff indicated that the parking lot floods and runoff flows across landscaped bed located at the entrance to the parking lot. Roof downspouts were observed to be buried and are believed to connect to a catch basin located at the parking lot entrance. Three raised garden beds were observed at the rear of the building. Soils in the area are mapped as Woodbridge-Urban land complex, which may have a firm and platy structure that can inhibit the infiltration rate of the native soil.

Proposed Green Infrastructure Concept:

1. Replace front landscaped bed with rain garden to infiltrate water quality volume. Direct overflow to nearby catch basin at parking lot entrance
2. Install precast leaching galleys at each downspout at the four corners of the building, directing overflow around building to existing catch basin at parking lot entrance
3. At the north corner downspout, install a rain barrel to provide water for the existing raised garden beds. Coordinate with Council on Aging staff to provide training on the correct maintenance schedule for the rain barrel.

Site Data

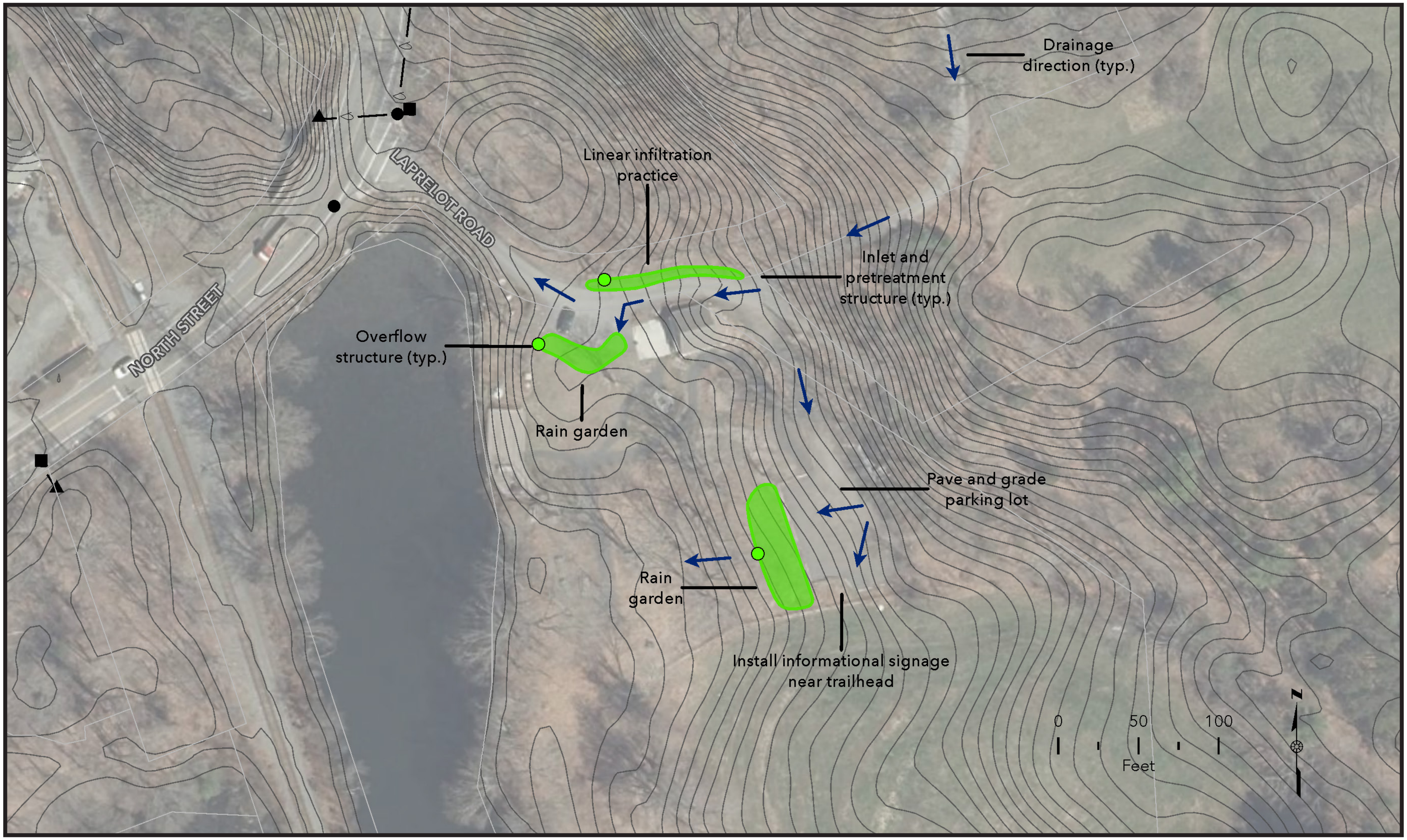
Impervious Area Treated:	0.50 acres
Design Storage Volume:	6,210 ft^3
Runoff Capture Depth:	1.0 inches

Pollutant Removal:

Total Suspended Solids	Phosphorus	Nitrogen	Bacteria
99	53	32	55

Estimated Cost: $140,000

4.1.8
Lane Homestead Conservation Area



Site Description

The Lane Homestead Conservation Area is one of several abutting Town conservation parcels located between the Neponset Reservoir and Crackrock Pond, comprising over 90 acres. The Lane Property includes the Lane Learning Center, which provides a venue for educational nature programming, and a compacted gravel parking lot for approximately 15 vehicles. Rain barrels have been installed at downspouts of the Learning Center, and a small rain garden captures runoff from the entrance to the property. A private property is located uphill of the Learning Center, accessible by a private driveway. Runoff from this developed area of the property discharges overland to Crackrock Pond. Soils in the area are mapped as Hinckley loamy sand, which generally support infiltration-based practices.

Proposed Green Infrastructure Concept:

1. Construct a rain garden downgradient of the main parking area, using native plantings. The nearby mature maple trees are invasive and could be replaced with a native tree species. Use a level spreader or similar energy dissipation device to reduce erosion from runoff in excess of the design storage volume. Regrade and resurface the parking lot as necessary to reduce sediment load and to direct all runoff to the practice.

2. Construct a linear infiltration practice north of the Learning Center and entrance to treat runoff from the private drive and entrance. Direct runoff in excess of the design volume to the open space to the north.

3. Construct a rain garden in front of the Learning Center to capture runoff from the private driveway, property entrance, front parking area, and patio. Use a level spreader or similar energy dissipation device to reduce erosion from runoff in excess of the design storage volume.

- Given the educational purpose of the property and highly public location, install educational signage near each practice to demonstrate the value and benefits of the various installed practices, including the existing rain barrels, which can be effective for individual homeowners.

Site Data

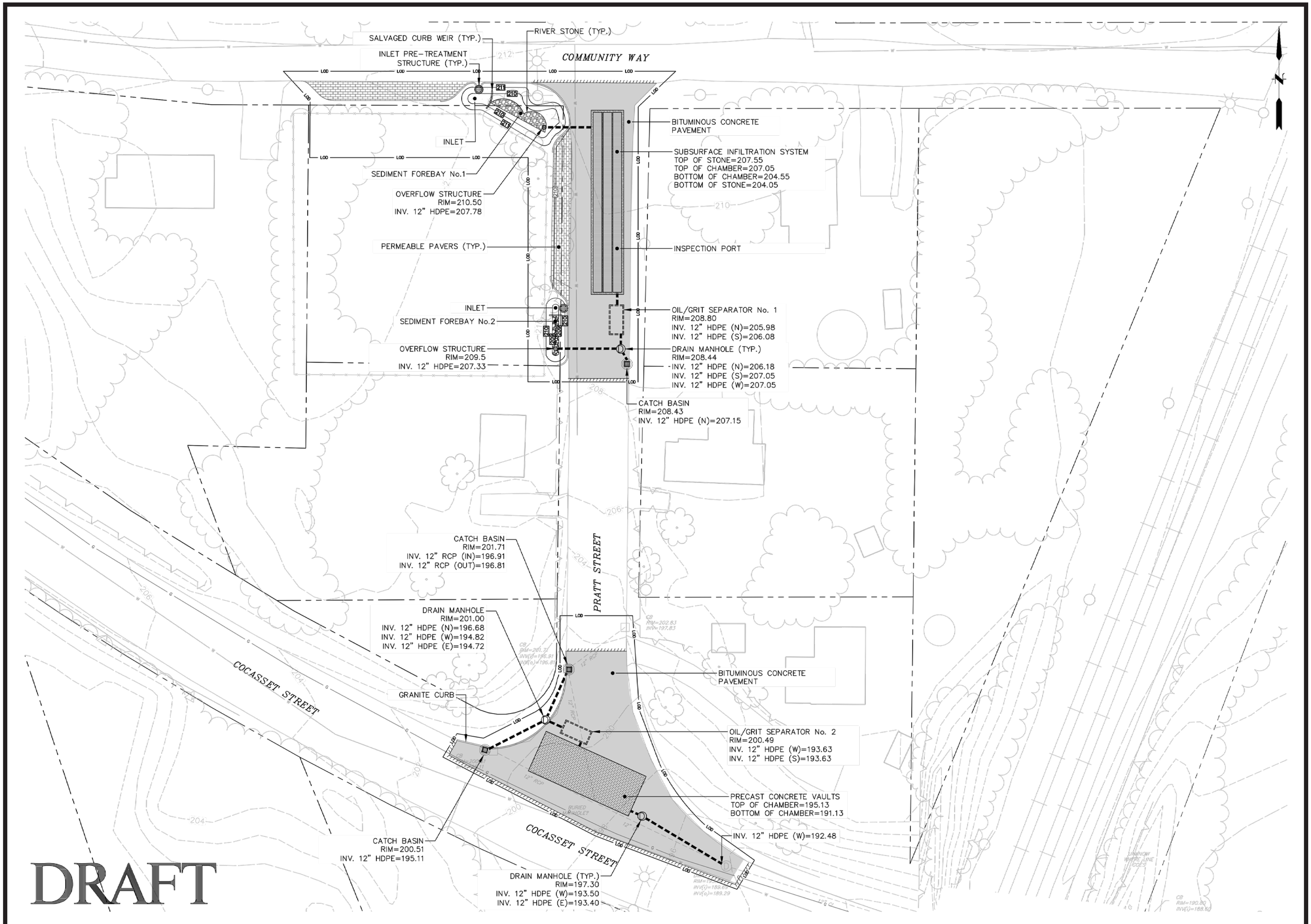
Impervious Area Treated: 0.23 acres
Design Storage Volume: 1,218 ft^3
Runoff Capture Depth: 1.25 inches

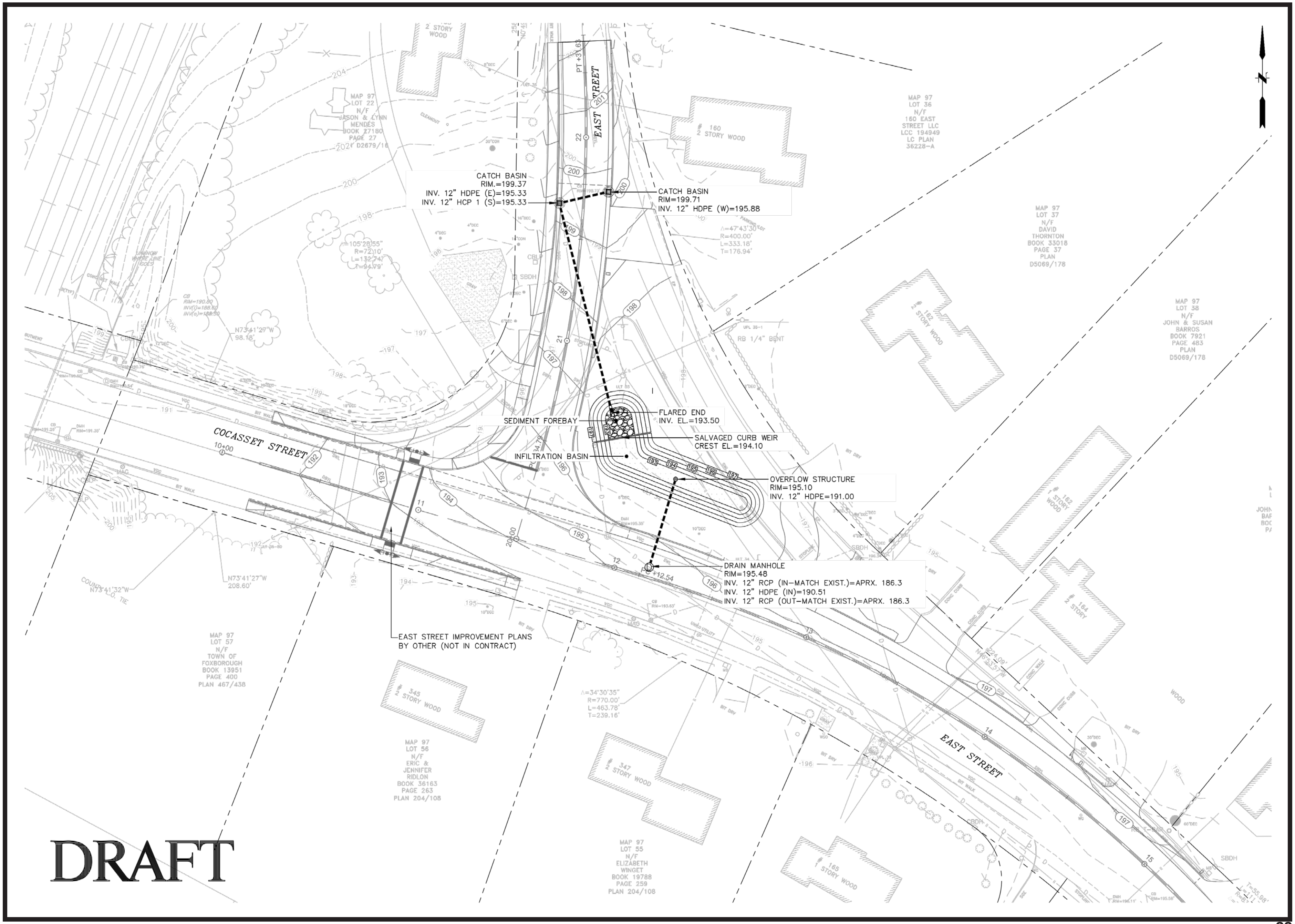
Pollutant Removal:

Total Suspended Solids	Phosphorus	Nitrogen	Bacteria
100	98	100	97

Estimated Cost: $20,000, does not include cost of paving parking lot

4.2
Cocasset Street Green Infrastructure Conceptual Designs and Cost Estimates




CATCH BASIN
RIM.=199.37
INV. 12" HDPE (E)=195.33
INV. 12" HCP 1 (S)=195.33
CATCH BASIN
RIM=199.71
INV. 12" HDPE (W)=195.88
EAST STREET
COCASSET STREET
FLARED END
INV. EL.=193.50
SEDIMENT FOREBAY
SALVAGED CURB WEIR
CREST EL.=194.10
INFILTRATION BASIN
OVERFLOW STRUCTURE
RIM=195.10
INV. 12" HDPE=191.00
DRAIN MANHOLE
RIM=195.48
INV. 12" RCP (IN-MATCH EXIST.)=APRX. 186.3
INV. 12" HDPE (IN)=190.51
INV. 12" RCP (OUT-MATCH EXIST.)=APRX. 186.3
EAST STREET IMPROVEMENT PLANS
BY OTHER (NOT IN CONTRACT)
EAST STREET
DRAFT

Site Description

The Cocasset Street underpass, located near East Street and the Canoe River, regularly floods even during relatively minor rain events. The underpass is a local low point, receiving runoff from Cocasset Street, East Street, and Pratt Street. A nearby constructed berm exacerbates flooding during larger events. Land use in the area is primarily residential, with the exception of the Ella. G. Hill Playground on Pratt Street. Soil test pits were excavated at the site to investigate local conditions. Test pits showed adequate depth to seasonal high groundwater and soils suitable for infiltration-based GI practices. Additional details on the site and the proposed green infrastructure concept can be found in the Cocasset Stree Rail Underpass Design memorandum developed separately under this MVP Action Grant.

Proposed Green Infrastructure Concept:

1. At the Ella G. Hill Playground, formalize the existing compacted gravel parking with permeable pavers or pavement. Use a curb cut to direct stormwater into sediment forebays to remove sediment and debris. Convey stormwater from the forebay to an oil/grit separator and subsurface infiltration chambers.

2. At the intersection of Pratt & Cocasset Street, divert stormwater from the existing catch basins to subsurface infiltration chambers under the intersection. Use a pre-treatment chamber to remove sediment and floatables prior to infiltration.

3. As part of the roadway realignment and repaving at the intersection of East Street and Cocasset Street, construct a surface infiltration basin in the space opened by the realignment. Replace the existing catch basin on East Street with a pair of catch basins and divert flow into a surface infiltration basin. Additional pavement removal is proposed as part of the intersection realignment.

Site Data

Impervious Area Treated:	2.65 acres
Design Storage Volume:	6,827 ft^3
Runoff Capture Depth:	1.5 inches

Pollutant Removal:

Total Suspended Solids	Phosphorus	Nitrogen	Bacteria
100	99	100	98

Estimated Cost: $560,000, does not include cost of surface infiltration basin

4.3
Other GI Ideas

While this Green Infrastructure Plan makes recommendations for nine publicly owned locations, public input gathered during outreach efforts and discussion with Town staff noted several other privately owned locations with known issues stemming from stormwater. The desktop review of available information also identified several other opportunities on Town-owned properties, and additional municipal-private and municipal-state partnership opportunities that can provide additional climate resilience and water quality benefits. While these benefits can be substantial, they may require additional time and effort to conduct outreach with property owners and could incur additional costs to acquire easements.

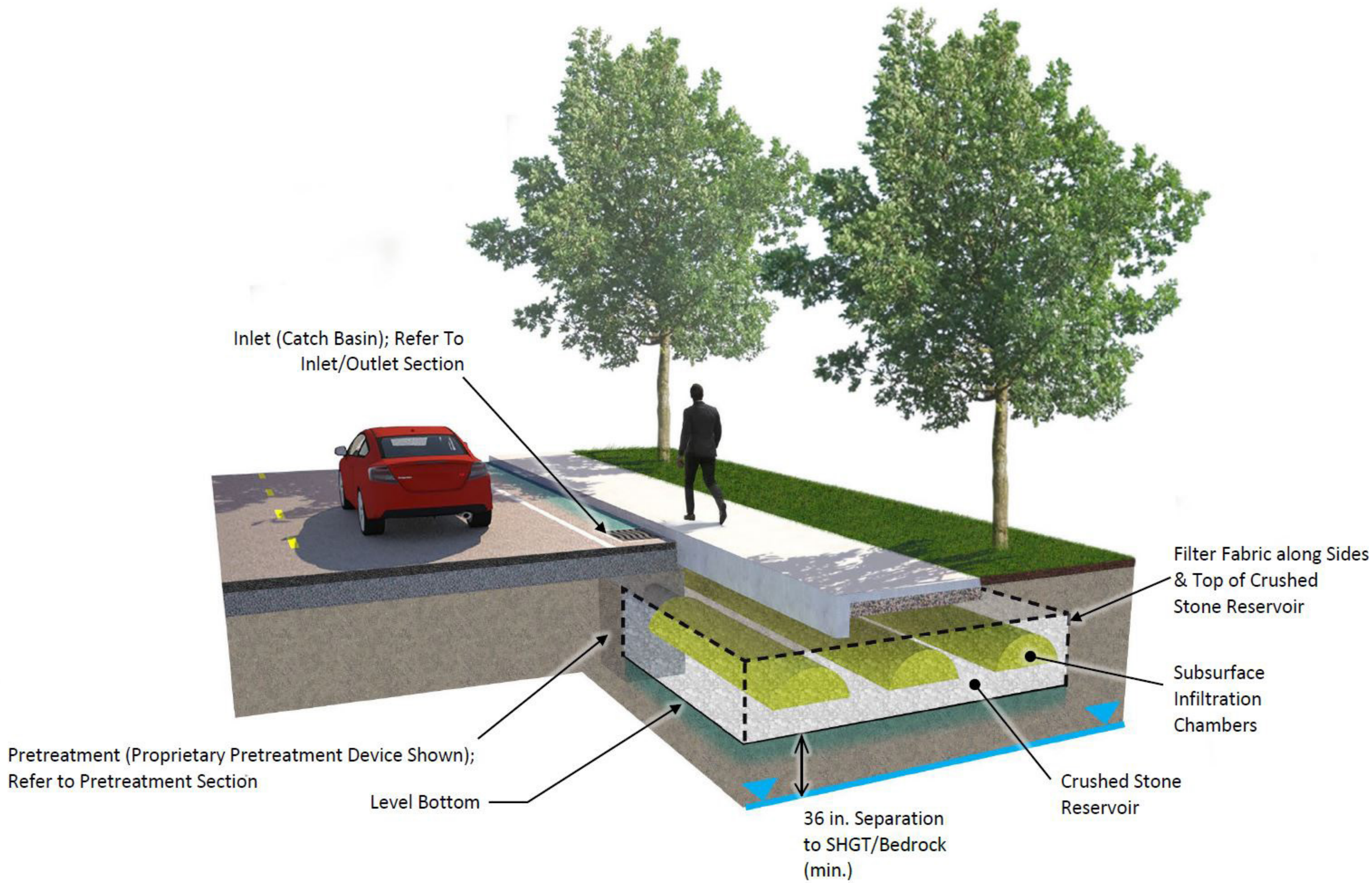
Other Town-owned locations would benefit from additional study to identify more substantive recommendations with additional input from the Town, such as the Department of Public Works complex, which regularly experiences flooding. The Town Engineer suggested conducting a facility and drainage study to identify ways the site could be redesigned to better address stormwater generation while making operations more efficient.

Examples of non-municipal locations include state-owned sites, such as the Commercial Street segment of Route 140. Private institutional sites include the Foxborough Regional Charter School and the Sage School, as well as multiple churches in Foxborough, which occasionally have large parking areas. Private commercial locations, such as Schneider Electric and many retail developments around Foxborough offer additional GSI retrofit opportunities.

4.4 Typical Details

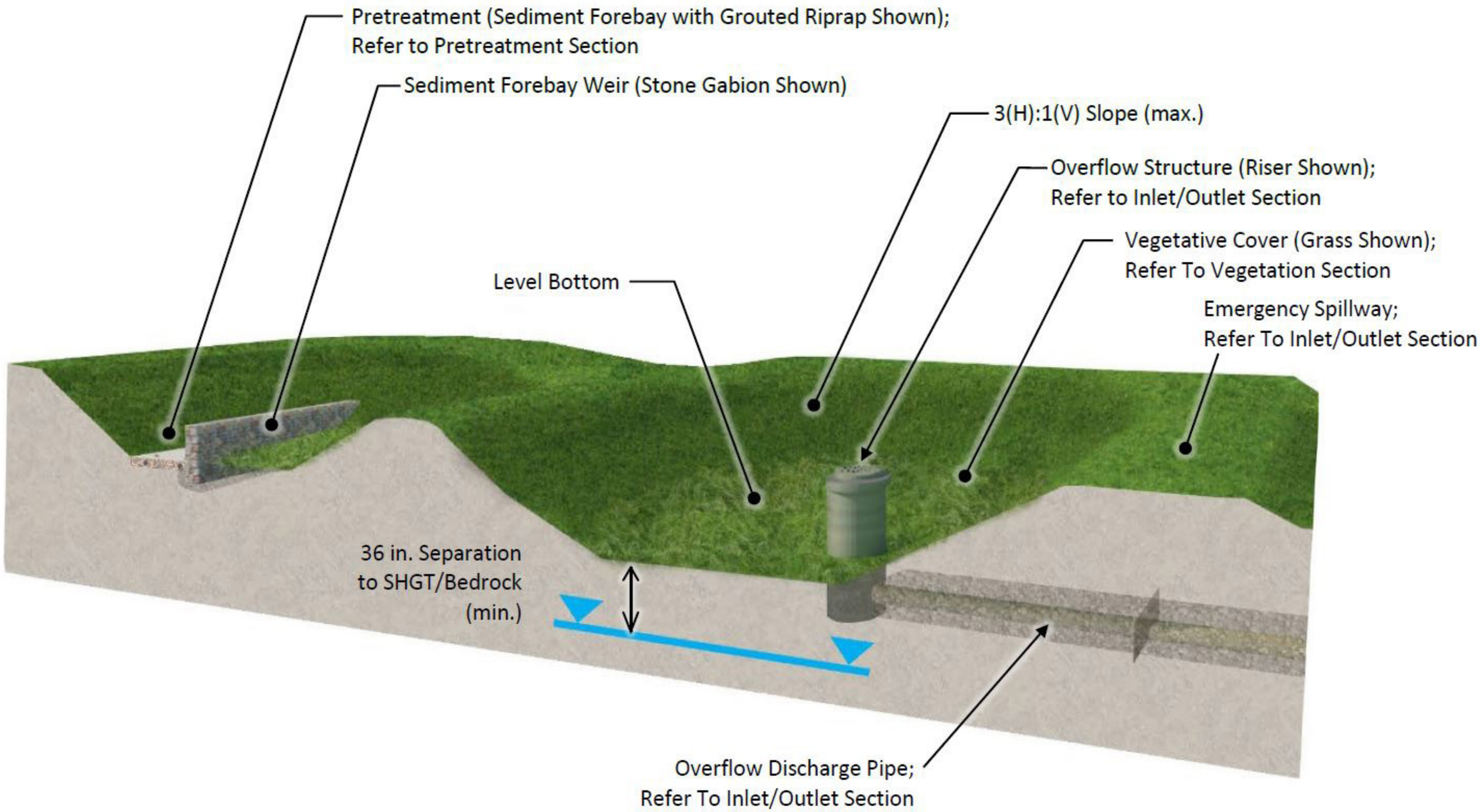
Subsurface Infiltration System

Payson Road Athletic Complex - South Parking Lot



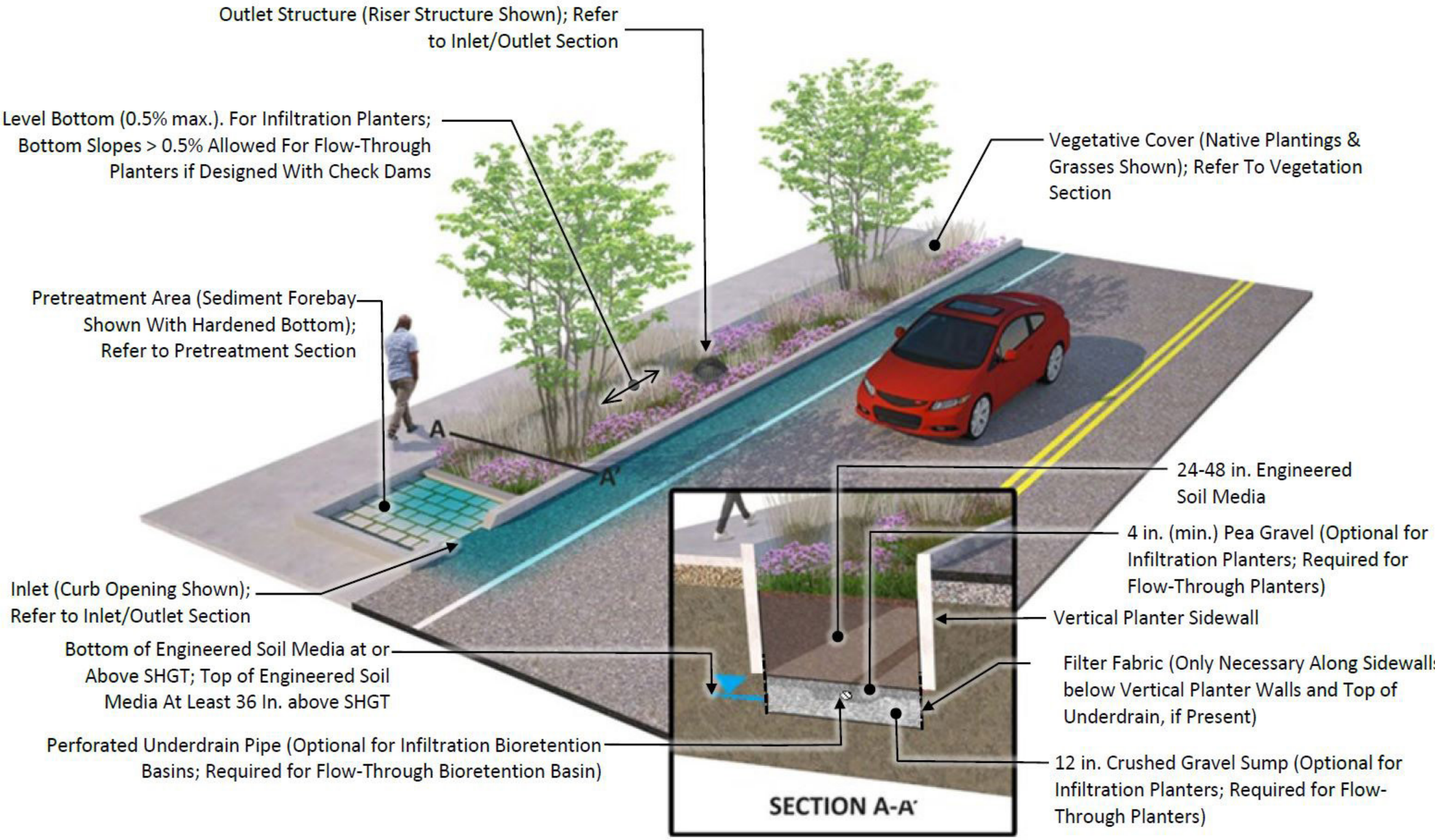
Infiltration Basin

Payson Road Athletic Complex - Ernie George Field



Parking ROW Infiltration/Bioretention Curb Inlet Planter

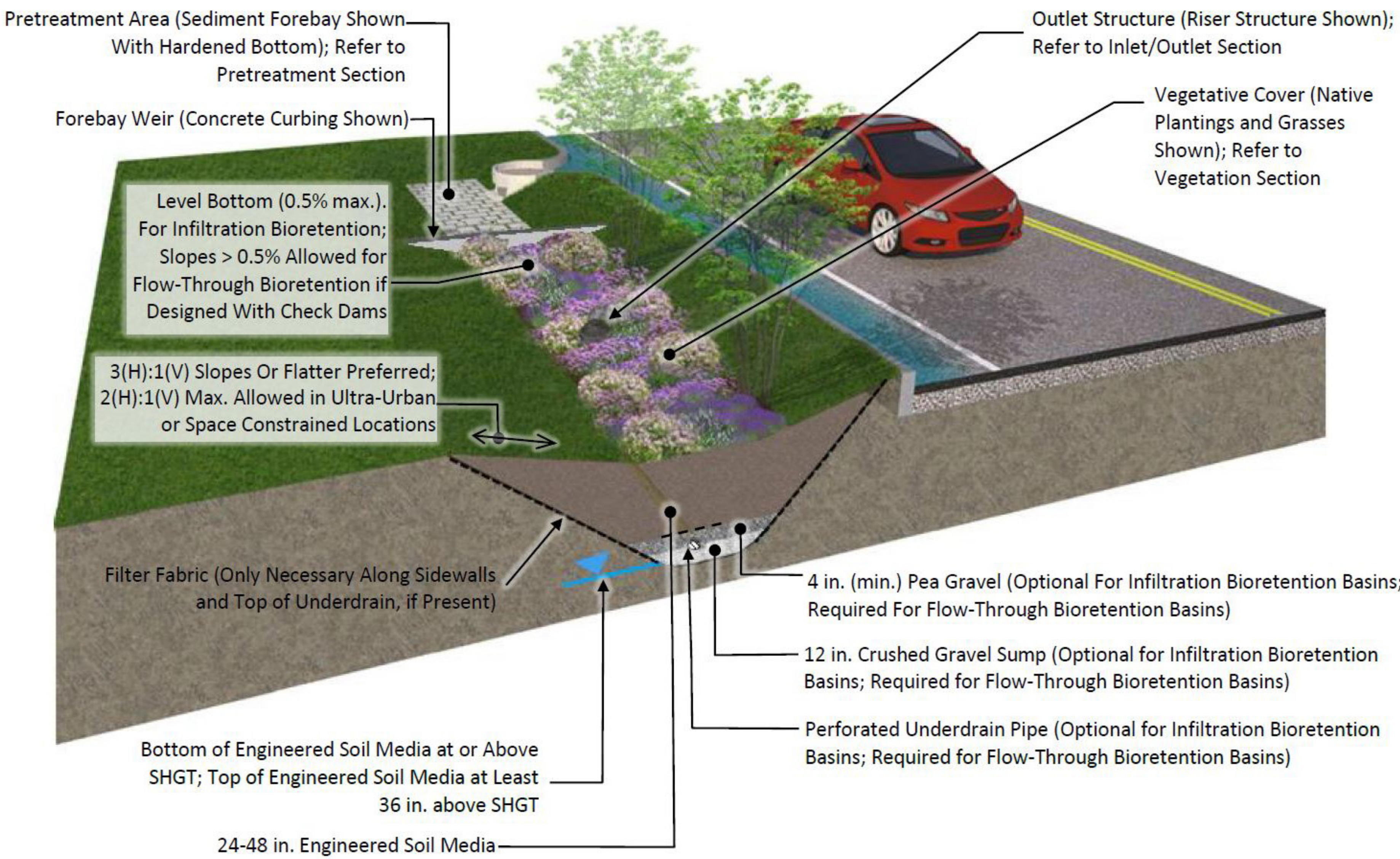
Payson Road Athletic Complex - North Parking Lot



Bioretention Basin/Swale

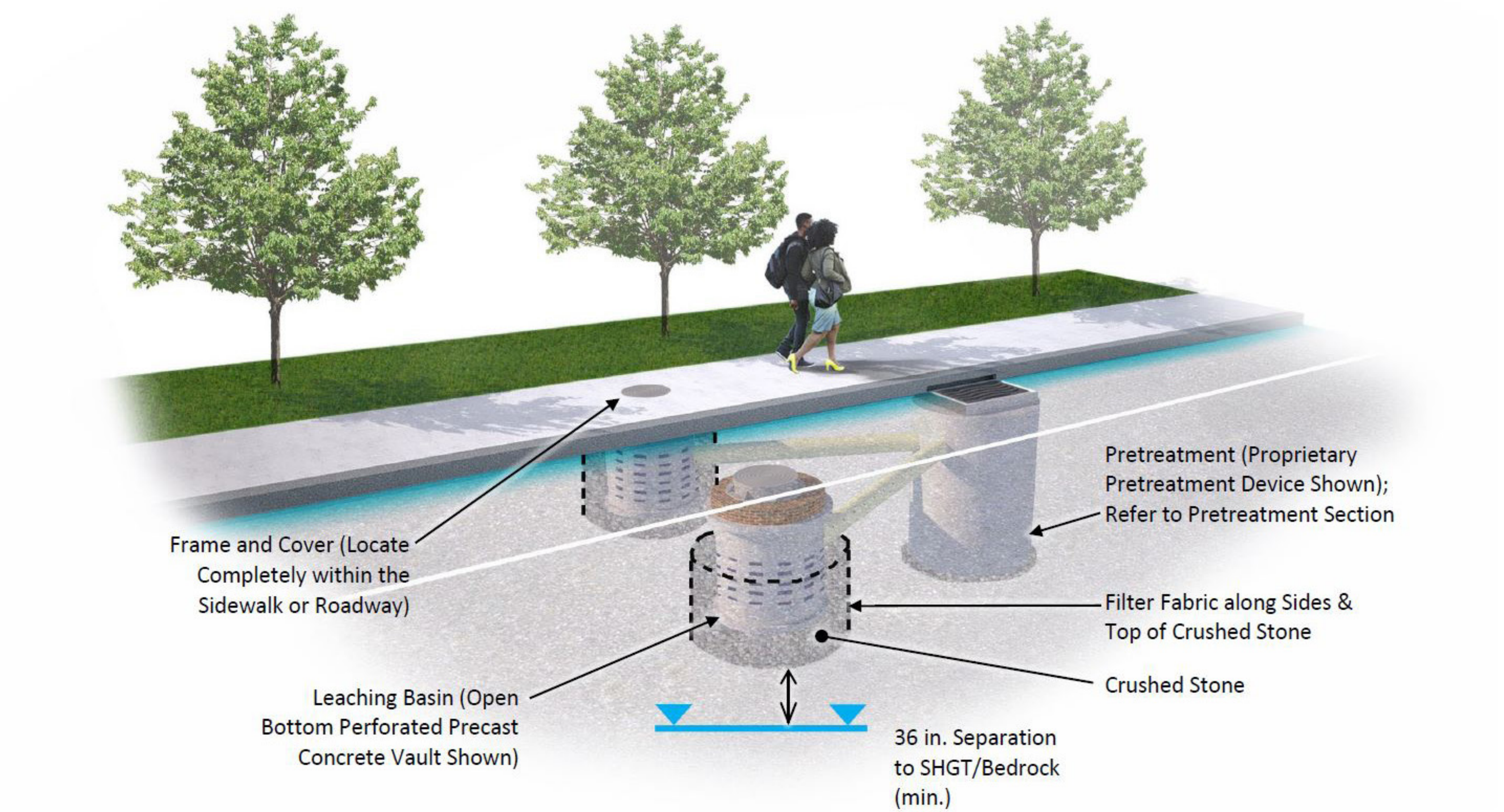
Kersey Point Conservation Area
Igo Elementary School

Council on Aging
Lane Homestead Conservation Area



Dry Well/Leaching Catch Basin

Council on Aging



5 Funding Sources

When properly designed and maintained, GSI and other nature-based approaches have the benefit of lower maintenance costs and effort over time. Managing stormwater through on-site infiltration reduces the need to dig up, repair, or extend pipe networks. If it becomes necessary over the life of a GSI installation, the infiltration capacity of these practices can be 'refreshed' by replacing media and plantings without major construction effort. A shift toward GSI thus promotes resilience benefits at lower future cost and is a smart long-term investment for the Town. However, like any construction improvement, the initial investment in GSI can be costly.

Fortunately, as climate resilience and nature-based solutions continue to gain traction throughout Massachusetts and the wider United States, a variety of funding programs have become available to fund GSI and other resilience solutions. The Commonwealth of Massachusetts has been at the forefront of prioritizing climate adaptation actions through an expanding set of funding opportunities, and both state and federal opportunities exist to help fund GSI projects. Foxborough anticipates pursuing an array of grant funding to help offset capital costs as the Town gradually begins to incorporate GSI into its future capital projects.

5.1 State Funding Sources

Executive Office of Energy and Environmental Affairs Planning Assistance Grants

EEA Planning Assistance grants are available to support projects that are consistent with state priorities for land conservation, reduction of natural resource consumption, and climate mitigation and resilience building. Actions implementing the results of climate vulnerability assessments or priorities identified during a community's MVP process are eligible for funding, as are Low Impact Development, and other related projects. Up to $50,000 is available per municipality, with the option of pursuing a multi-jurisdictional regional project. Projects must include a minimum non-state match of 25%. Approximately $1M to $1.3M has been awarded each year.

Website:
https://www.mass.gov/service-details/planning-assistance-grants

Chapter 90 Program

The Chapter 90 program is administered by the Massachusetts Department of Transportation. The program provides 100% reimbursement for approved roadway projects, including projects such as road resurfacing, roadside drainage structures, bridges, side road approaches, and landscaping and tree planting.

Website:
https://www.mass.gov/chapter-90-program

Clean Water Act, Section 319 Nonpoint Source Implementation Grants

Section 319 Grants are available for projects that promote restoration and protection of water quality through reducing and managing nonpoint source pollution. These grants are made possible by federal funds provided to MassDEP by the USEPA under Section 319 of the Clean Water Act. Eligible applicants include municipal, state, or regional governments, quasi-state agencies, public schools and universities, and non-profit watershed, environmental, or conservation organizations. Pursuant to federal guidelines for Section 319 funding, projects can only be funded in those areas in which a Watershed-Based Plan has been completed. MassDEP created the Massachusetts Watershed-Based Plan (WBP) for all watersheds in the state that can be used to develop proposals for 319 grants.

Clean Water Act Section 319 grants may be used for green stormwater infrastructure projects (if not mandated by a stormwater permit) and certain restoration activities such as dam removal. The EPA's guidance, "Nonpoint Source Program and Grants Guidelines for States and Territories," includes hydrologic modification as a type of nonpoint source pollution and therefore projects that address hydrologic modification such as dam removal are potentially eligible for funding. Dam removal or river restoration projects need to be consistent with a state's written Nonpoint Source Management Program Plan. Dam removal projects that are included in local watershed-based plans that are consistent with EPA Guidelines would also be eligible for 319 funds.

MassDEP WBP Website: https:
https://www.mass.gov/guides/watershed-based-plan-information

MassDEP 319 Website:
https://www.mass.gov/info-details/grants-financial-assistance-watersheds-water-quality

Division of Ecological Restoration (DER) Project Grants

The DER offers small grants to fund wetland, river, and flow restoration projects that are high-priority and provide significant ecological and community benefits to the Commonwealth. The DER considers funding for several types of "priority projects," including dam removal and culvert replacements. In addition to small grants, eligible projects also receive technical services (data collection, engineering, design work, and permitting) and project management and fundraising help.

DER Website: https:
//www.mass.gov/how-to/become-a-der-priority-project

Dam Removal Website:
https://www.mass.gov/river-restoration-dam-removal

Culvert Replacement Website:
https://www.mass.gov/river-restoration-culvert-replacements

MassWorks Infrastructure Program

The MassWorks Infrastructure Program is administered by the Executive Office of Housing and Economic Development, the Department of Transportation, and the Executive Office for Administration and Finance. The program provides public infrastructure funding to support sustainability in Massachusetts, as well as job creation and economic development. Although the program is not specifically for hazard mitigation, the infrastructure improvements covered under MassWorks could help protect communities from natural disasters such as flooding.

Website:
https://www.mass.gov/service-details/massworks-infrastructure-grants

Municipal Vulnerability Preparedness (MVP) Action Grant Program

The MVP Action Grant Program is administered through the Executive Office of Energy and Environmental Affairs. To be eligible for funding, communities must complete the MVP Planning Grant process. The MVP Action Grant offers financial assistance to municipalities that are interested in implementing climate adaptation actions to address the impacts of climate change (extreme weather, sea level rise, inland and coastal flooding, severe heat, etc.). The program funds projects relating to planning, assessments, and regulatory updates; nature-based solutions for ecological and public health; and resilient redesigns and retrofits for critical facilities and infrastructure. The MVP program also emphasizes robust engagement of the public and benefits for environmental justice communities or climate vulnerable populations. In past funding rounds, applicants were able to request $25,000 to $2,000,000 in funding (up to $5,000,000 available for regional projects). A 25% match, either through cash or in-kind services, is required.

Website:
https://www.mass.gov/service-details/mvp-action-grant

State Revolving Fund (SRF) Loan Program

The SRF provides a low-cost financing option for communities through two programs: the Clean Water Program and the Drinking Water Program. The Clean Water Program provides loans to help municipalities comply with federal and state water quality requirements by focusing on watershed management priorities, stormwater management, and GSI. The Drinking Water SRF Program provides loans to communities to improve water supply infrastructure and drinking water safety.

SRF Clean Water Program Website:
https://www.mass.gov/service-details/srf-clean-water-program

SRF Drinking Water Program Website:
https://www.mass.gov/service-details/srf-drinking-water-program

Water Management Act (WMA) Grant Program

The WMA grant program is available to WMA permit holders. The program provides aid for planning assistance, demand management, and withdrawal impact mitigation projects in local communities. Grants are reimbursed at 80% and require a 20% match through in-kind services or cash. The Commonwealth awards approximately 10 grants per year. Both planning and implementation projects are eligible.

Website:
https://www.mass.gov/info-details/water-management-act-grant-programs-for-public-water-suppliers

5.2 Federal Funding Sources

Army Corps of Engineers Aquatic Ecosystem Restoration Program

Under Section 206 of the Water Resources Development Act of 1996 (33 U.S.C. 2330), the Army Corps of Engineers can participate in the study, design and implementation of ecosystem restoration projects. Projects conducted in New England under this program have included eelgrass restoration, salt marsh and salt pond restoration, freshwater wetland restoration, anadromous fish passage and dam removal, river restoration, and nesting bird island restoration. Projects must be in the public interest and cost effective and are limited to $10 million in Federal cost. Non-Federal project sponsors must be public agencies or national non-profit organizations capable of undertaking future requirements for operation, maintenance, repair, replacement and rehabilitation (OMRR&R), or may be any non-profit organization if there are no future requirements for OMRR&R. The Corps of Engineers provides the first $100,000 of study costs. A non-Federal sponsor must contribute 50 percent of the cost of the feasibility study after the first $100,000 of expenditures, 35 percent of the cost of design and construction, and 100 percent of operation and maintenance costs.

Website:
http://www.nae.usace.army.mil/Missions/Public-Services/Continuing-Authorities-Program/Section-206/

Community Rating System (CRS) under National Flood Insurance Program (NFIP)

The Community Rating System is a voluntary program under the NFIP that encourages municipalities to participate in flood management actives that exceed the minimum requirements of the NFIP. There are three goals of the CRS: reduce flood damage to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management. Communities participating in the CRS receive reduced insurance premiums as a result of their compliance.

Website:
https://www.fema.gov/media-library/assets/documents/181241

FEMA Hazard Mitigation Assistance Grant Programs

The Federal Emergency Management Agency (FEMA) administers two major programs related to hazard mitigation: the National Flood Insurance Program (see Section 3.1 of this plan) and the Hazard Mitigation Assistance Program. FEMA's hazard mitigation assistance grant programs provide funding to protect life and property from future natural disasters. In Massachusetts, these programs are administered by the Massachusetts Emergency Management Agency (MEMA). FEMA flood hazard mitigation assistance funding is available to Massachusetts communities through the following programs:

- **Building Resilient Infrastructure and Communities (BRIC) BRIC** provides funds to support public infrastructure projects that increase a community's resiliency to reduce the effects of future disasters. The program replaced the former Pre-Disaster Mitigation (PDM) program in 2020. The goal of the BRIC program is to reduce overall risk to the population and structures, while at the same time, also reducing reliance on Federal funding from actual disaster declarations. A 25% non-federal share (local government or other organization) is required.

- **Flood Mitigation Assistance (FMA)** provides funds for projects to reduce or eliminate risk of flood damage to buildings that are insured under the National Flood Insurance Program (NFIP) on an annual basis. These are cost share grants for pre-disaster planning and projects, with a federal share (up to 100%) and non-federal share (local government or other organization).

- **Severe Repetitive Loss (SRL)** is designed to reduce flood damages to residential properties that have experienced SRLs under flood insurance coverage. The program provides funds so that measures can be taken to reduce or eliminate risk of flood damage to buildings insured under the NFIP. Funding is available on an annual basis (as available). SRL provides up to 90% Federal funding for eligible projects.

- **Hazard Mitigation Grant Program (HMGP)** assists in implementing long-term hazard mitigation measures following Presidential disaster declarations. Funding is available to implement plans or projects in accordance with State, Tribal, and local priorities. HMGP grants are post-disaster cost share grants consisting of 75% federal share and 25% non-federal share (local government or other organization).

- **Public Assistance (PA) Grants** provide assistance to local, tribal and state governments and certain types of Private Non-Profit (PNP) organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President. Through the PA Program, supplemental Federal disaster grant assistance is provided for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain PNP organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.

Website:
https://www.fema.gov/hazard-mitigation-assistance

National Fish and Wildlife Foundation (NFWF) New England Forests and Rivers Fund

The National Fish and Wildlife Foundation (NFWF) New England Forests and Rivers Fund is dedicated to restoring and sustaining healthy forests and rivers that provide habitat for diverse native bird and freshwater fish populations in the six New England states. This program annually awards competitive grants ranging from $50,000 to $200,000 each. Since its creation in 2015, the Fund has awarded 48 grants to restore early successional habitat, modify and replace barriers to fish movement, restore riparian and instream habitat, and engage volunteers in forest habitat restoration and stream connectivity projects. Major funding for the New England Forests and Rivers Fund is provided by Eversource Energy, the U.S. Fish and Wildlife Service, and the U.S. Department of Agriculture's Natural Resources Conservation Service and Forest Service.

Website:
http://www.nfwf.org/newengland/Pages/home.aspx

US Department of Housing and Urban Development (HUD) Community Development Block Grants

Title 1 of the Housing and Community Development Act of 1974 authorized the Community Development Block Grant program. The program is sponsored by the US Department of Housing and Urban Development. The Massachusetts program is administered through the Massachusetts Department of Housing and Community Development. CDBG-DR (disaster recovery) funds may be used to restore public facilities and infrastructure, rehabilitate or replace housing, acquire property, promote economic revitalization, and support Hazard Mitigation Planning. CDBG-DR funds are intended to support long-term recovery from a specific natural disaster and may not be applied to recovery activities associated with other disasters. Annual CDBG Program funds may also be used for certain eligible hazard mitigation and disaster recovery activities (Commonwealth of Massachusetts, n.d.). Implementation of green stormwater infrastructure and drainage system upgrades to mitigate drainage-related flooding is potentially eligible for CDBG funding.

Website:
https://www.mass.gov/service-details/community-development-block-grant-cdbg

US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Funding Programs

The USDA Natural Resources Conservation Service (NRCS) works with land owners in Massachusetts to improve and protect soil, water, and other natural resources. NRCS has several funding programs in Massachusetts that help property owners address flooding and water quality issues.

- **The Emergency Watershed Protection (EWP) Program** is designed to help people and conserve natural resources by relieving imminent hazards to life and property caused by floods, fires, windstorms, and other natural occurrences. EWP is an emergency recovery program, which responds to emergencies created by natural disasters. It is not necessary for a national emergency to be declared for an area to be eligible for assistance. EWP is designed for installation of recovery measures. Activities include providing financial and technical assistance to remove debris from stream channels, road culverts, and bridges, reshape and protect eroded banks, correct damaged drainage facilities, establish cover on critically eroding lands, repair levees and structures, and repair conservation practices.

Website:
https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/ewpp/

- **The Emergency Watershed Protection - Floodplain Easement Program (EWP-FPE)** provides an alternative measure to traditional EWP recovery, where it is determined that acquiring an easement in lieu of recovery measures is the more economical and prudent approach to reducing a threat to life or property. The easement area is restored to the maximum extent practicable to its natural condition using structural and nonstructural practices to restore the flood storage and flow, erosion control, and improve the practical management of the easement. Floodplain easements restore, protect, maintain and enhance the functions of floodplains while conserving their natural values such as fish and wildlife habitat, water quality, flood water retention and ground water recharge. Structures, including buildings, within the floodplain easement must be demolished and removed, or relocated outside the 100-year floodplain or dam breach inundation area.

Website:
https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ct/programs/financial/ewp/?cid=stelprdb1244478

- **The Watershed and Flood Prevention Operations Program** provides technical and financial assistance to states, local governments and Tribes to plan and implement watershed project plans for the purpose of watershed protection, flood mitigation, water quality improvement, fish and wildlife enhancement, wetlands and wetland function creation and restoration, groundwater recharge, and wetland and floodplain conservation easements.

Website:
https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wfpo/

American Rescue Plan Act

In 2021, Congress passed and President Biden signed the American Rescue Plan Act, which includes $1.9 trillion dollars in funding to individuals, schools, businesses, and areas suffering from the COVID-19 pandemic. $130 billion is directed to municipal and county governments for the purpose of replacing revenue lost or reduced due to the pandemic, funding COVID-related costs, providing support to aid households and businesses impacted by the crisis investing in economic recovery and renewal, and funding investments in water, sewer and broadband infrastructure. GSI and stormwater projects can be funded under the sewer infrastructure category. As of June 1, 2021, Foxborough's total allocation through ARPA was anticipated to be approximately $1.9 million. In addition, Norfolk County has also received $137 million to use in its constituent communities. The funds will be provided in two blocks, in 2021 and 2022, and will be available for use through 2024.

MVP
Municipal Vulnerability Preparedness

PREPARED BY FUSS & O'NEILL