



Ruthanne Fuller
Mayor

City of Newton, Massachusetts
Department of Planning and Development
1000 Commonwealth Avenue Newton, Massachusetts 02459

#425-18 & #426-18

Telephone
(617) 796-1120
Telefax
(617) 796-1142
TDD/TTY
(617) 796-1089
www.newtonma.gov

Barney Heath
Director

PUBLIC HEARING/WORKING SESSION VI MEMORANDUM

DATE: May 10, 2019
MEETING DATE: May 14, 2019
TO: Land Use Committee of the City Council
FROM: Barney Heath, Director of Planning and Development
Jennifer Caira, Chief Planner for Current Planning
Michael Gleba, Senior Planner
CC: Petitioner

In response to questions raised at the City Council public hearing, the Planning Department is providing the following information for the upcoming public hearing/working session. This information is supplemental to staff analysis previously provided at the Land Use Committee public hearing.

PETITIONS #425-18 & #426-18 156 Oak St., 275-281 Needham St. & 55 Tower Rd.

Petition #425-18- for a change of zone to BUSINESS USE 4 for land located at 156 Oak Street (Section 51 Block 28 Lot 5A), 275-281 Needham Street (Section 51, Block 28, Lot 6) and 55 Tower Road (Section 51 Block 28 Lot 5), currently zoned MU1

Petition #426-18- for SPECIAL PERMIT/SITE PLAN APPROVAL to allow a mixed-use development greater than 20,000 sq. ft. with building heights of up to 96' consisting of 822 residential units, with ground floor residential units, with restaurants with more than 50 seats, for-profit schools and educational uses, stand-alone ATMs drive-in businesses, open air businesses, hotels, accessory multi-level parking facilities, non-accessory single-level parking facilities, non-accessory multi-level parking facilities, places of amusement, radio or TV broadcasting studios, and lab and research facilities, to allow a waiver of 1,600 parking stalls, to allow a reduction in the overall parking requirement to not less than 1900 stalls, to waive dimensional requirements for parking stalls, to waive end stall maneuvering requirements, to allow driveway entrances and exits in excess of 25', to waive perimeter landscaping requirements, to waive interior landscaping requirements, to waive lighting requirements for parking lots, to waive general lighting, surfacing and maintenance requirements, to waive off-street loading facilities requirements, to waive sign requirements relative to number, size, location or design, to waive the number of signs allowed.

The Land Use Committee (the “Committee”) held a public hearing on September 25, 2018 and working sessions on November 13, 2018, December 11, 2018, January 15, 2019, March 12, 2019 and April 9, 2019 on these petitions. This memo reflects and/or refers to additional information subsequently received by the Planning Department.

This memorandum is focused on the revised materials related to the project’s proposed (1) architectural and design guidelines, (2) sustainability, and (3) stormwater management.

1. Architectural and Design Guidelines

For several weeks the City’s peer reviewer for the design guidelines, Form + Place, has reviewed the petitioner’s initial proposed design and architectural master plan guidelines.

The petitioner forwarded an electronic 122-page draft of a proposed design guidelines document to Planning Department staff on May 8, 2019. Printed copies were submitted for distribution and review the following afternoon of May 9, the day before the issuance of this memorandum, May 10th. As such, the timing of the petitioner’s submission (considerably later than the expected April 27th date), did not provide adequate time for Planning staff or Form + Place to review the petitioner’s draft for this memorandum or the Land Use Committee’s May 14 public hearing/working session.

The Planning Department notes that design guidelines are of significant importance for this project as the petitioner is submitting them in lieu of more finalized site plans and architectural drawings for the project’s public realm and buildings of the type usually associated with special permit petitions and associated council orders. Indeed, the architectural drawings, i.e., elevations, etc., included in the submitted petition documentation have been represented as mostly for illustrative purposes, with final designs and plans to be submitted at (if the requested special permits were to be granted) the time of some future building permit plan review stage(s). As such, the Planning Department and Form + Place will expect to provide an appropriate review of the petitioner’s proposed design guidelines at a subsequent public hearing/working session of the Land Use Committee.

2. Sustainability

On April 22, 2019, the petitioner submitted a revised version (**Attachment A**) of the document entitled “Sustainability Strategic Plan: Vision, Goals and Implementation” that was originally submitted with the initial petition material in August 2018 (see “Tab 17” of the original submission binder). This revised document reflects changes to the proposed project’s design and program made on or about April 18, 2019.

In its attached memo (**Attachment B**), the city’s peer reviewer, Horsley Witten (HW), states that the petitioner’s sustainability plan outlines “broad sustainability goals for the project and provide(s) a preliminary framework for incorporation of sustainability elements into the project design, construction, and long-term operation and maintenance of the site,” and that “(t)he current project design and information submitted appear to be generally consistent with best sustainable development practices at multiple scales of community building. The project’s sustainability goals are harmonious with the goals of the Needham Street Area Vision Plan, N2 Innovation District, and the

mission of Green Newton.” Further, HW “concur[s] with the broad goals” of the petitioner’s sustainability plan, and notes that the “project’s inherent location and commitment to multi-modal transportation connectivity (transit, walking, and bicycling) (are) consistent with the City’s objectives” enumerated in the above-referenced plans.

That said, HW notes that “(a)t this stage of the design and review process, the submitted materials are ‘big picture’ and not detailed. While the broad vision and strategies appear to be in line with expectations as noted above, more information is required to verify that the detailed design is consistent with the stated broad goals and that the preliminary approaches are implementable, measurable, and enforceable over time.” Importantly, “(m)ore detailed design development is required to confirm” several sustainability aspects of the proposed project. For example, one of these aspects is the petitioner’s proposed shuttle system which (along with the proposed mobility hub) “requires additional detail to ensure feasibility and long-term operation;” this is key as “(s)uccess of the shuttle system and pedestrian/walkability improvements is related to the predicted reduction in single-occupancy vehicle trips and demand for onsite parking.”

HW makes several recommendations in its memo. Recognizing that the petitioner is considering, in addition to being “committed to pursuing” LEED for Neighborhood Development (LEED ND) Silver Certification, investigating other certification/rating systems (e.g., Envision, Passive House, etc.), HW recommends that “as the design continues to develop that more details regarding the feasibility of these building-oriented sustainability and energy efficiency measures be communicated to the City for evaluation. HW also recommends that the petitioner investigate “incorporating alternative, renewable energy sources including solar power into the building designs” and the feasibility of installing a District Energy system for the project.

Lastly, to further inform the review of this proposal HW also recommends the petitioner submit a listing of all sustainability measures being incorporated and/or considered for project and identify the approximate impact of each.

The Planning Department’s environmental staff also conveyed the following comments and questions regarding the petitioner’s revised Sustainability Strategic Plan, suggesting that the petitioner:

- consider installing a greywater system that would reuse wastewater from the 800 residential units for irrigation to reduce the project’s impact on the city water system; and
- provide for the collection and transport of residential compost to the community compost drop-off at the Rumford Avenue facility

and requesting that the petitioner clarify:

- what is meant by the reference in the sustainability plan to “design for waste reduction in building design” (i.e. during construction, occupancy, etc.);
- whether the “laneways” will be surfaced with pervious pavement.

3. Stormwater Management

On April 22, 2019, the petitioner submitted a revised version (**Attachment C**) of the document entitled “Northland Newton Development Water/Sewer/Stormwater Summary” that was originally submitted with the initial petition material in August 2018 (see “Tab 14” of the original submission binder). This revised document reflects changes to the proposed project’s design and program made on or about April 12, 2019.

In its attached memo (**Attachment B**), HW concurs with the petitioner’s proposed measures to “reduce flows and to improve water quality prior to discharging into South Meadow Brook and the Charles River.” That said, because the potential efficacy of the proposed approaches (identified in the memo) “are dependent on site conditions, including soils, topography, depth to groundwater, and proposed surface uses,” and since the “concept design is at a high level,” the “final design will need to be reviewed to verify functionality, constructability and long-term maintenance requirements.” The memo also notes that the petitioner is aware that the Engineering Division is expected to evaluate the project’s stormwater management based on the assumption the site is 100% permeable and “target 0% increase of runoff for design storm events up to a 100-year 24-hour storm.” Accordingly, the petitioner will need to work with the City and its consultants during future design phases to best achieve that goal. Given that such additional, more detailed stormwater plans and reports will need analysis, the Planning Department recommends that the petitioner be responsible for the costs of appropriate peer review when they are submitted.

Lastly, HW also specifically recommended that, while recognizing desirability of the petitioner committing using rainwater for irrigation purposes, as the need for irrigation in this area is seasonally limited, the petitioner evaluate also utilizing the harvested rainwater, as well as reclaimed groundwater below the subsurface garage, as greywater in on-site commercial toilets.

The Planning Department’s environmental staff also reviewed the petitioner’s submitted Water/Sewer/ Stormwater Summary and conveyed the following general comments:

- given the amount of pervious pavement and proximity to South Meadow Brook and the Charles River, environmentally friendly opportunities for ice and snow management need to be considered for the site,
- in the event the requested special permit is granted, it is recommended that any order include a condition limiting on-site mulch and fertilizer use to help keep excess phosphorus and nitrogen from entering the Charles River.

The Associate City Engineer submitted the attached Engineering Review Memorandum (**Attachment D**) providing an analysis of the submitted project documentation with regard to engineering issues. Among other observations, requests and requirements, the memorandum, notes that the civil site and utility plans are “a generic schematic without much detail or information” and that “no stormwater management report has been submitted which will eventually be required,” nor “a National Pollution Discharge Elimination System (NPDES) & Stormwater Pollution Prevention Plan (SWPP).” That said, the memo notes that it “is anticipated that the overall stormwater quality and volume will be greatly improved as the existing site has no ‘treatment or infiltration’ of stormwater.”

In the event the present petitions are granted, any final project plans will need to be reviewed and approved by the Engineering Division's prior to issuance of any building or utility permits.

SUMMARY

The Planning Department recommends that the petitioner provide any additional information requested, and address the all recommendations discussed above in a timely fashion for review by City agencies and, where appropriate, peer reviewers.

The Planning Department concurs with the statements made in reviews discussed above noting the need for additional details to be provided for various aspects of the proposed plans. The Department urges the petitioner to do so at the earliest possible times in order to best inform the review of this extensive and complex proposal.

ATTACHMENTS

- | | |
|---------------------|---|
| Attachment A | Petitioner's (Lambert Sustainability) memorandum entitled "Sustainability Strategic Plan: Vision, Goals and Implementation" (as revised April 18, 2019) |
| Attachment B | Peer Reviewer's (Horsley Witten) memorandum "Newton Northland Sustainability Peer Review," (May 6, 2019) |
| Attachment C | Petitioner's (VHB) memorandum entitled "The Northland Newton Development Water/Sewer/Stormwater Summary" (April 18, 2019) |
| Attachment D | Engineering Division memorandum (May 2, 2019) |

ATTACHMENT A



Sustainability Strategic Plan:

Vision, Goals and Implementation

Revised - April 18, 2019

Northland Newton Development, Newton, MA

Northland Investment Corporation

Project Description

Northland Investment Corporation is transforming 22 acres of underutilized and mostly vacant industrial and commercial property in the village of Newton Upper Falls into an exciting and thriving new mixed-use community development that will embrace sustainability and innovation. The project will enhance the neighborhood by providing office and retail space as well as 800 residential units in 15 new buildings and one renovated historic building.

Project Sustainability Goals

The Northland Newton Development will achieve success in all three areas that comprise the definition of sustainable development - development that benefits *people*, the *planet* and generates economic *prosperity*. The goals and strategies that benefit one of the categories in the three-legged stool of sustainable design also have beneficial outcomes for the other categories.



With its holistic approach and fully integrated design and development team, Northland Newton Development seeks to create a sustainable new neighborhood that will enhance the lives of people, protect the planet's resources, and generate long-term prosperity to ensure the enduring success of the project.

The Northland Newton Development is located within the N² Innovation District¹ which seeks to foster innovative companies and connect them with a talented local workforce. The project embraces this concept and inherently meets one of the tenets of smart growth development by creating jobs within walking or biking distance to residents within the same community. The Northland Newton Development will also

¹ www.n2innovationdistrict.com

embrace the mission of Green Newton, a local active non-profit working “to create sustainable solutions to environmental problems facing our city and our world.”²

The sustainability goals of the Northland Newton Development, integrated from the earliest phases, directly align with many of the goals set forth in the Needham Street Area Vision Plan 2018 which was adopted by the City of Newton in August 2018.³ This ambitious plan provides the desired vision for future developments in the Needham Street corridor in order to create a diverse, thriving mixed-use district. The following goals are all priorities directly outlined within the Vision Plan and have already been incorporated into the design of the Northland Newton Development, as detailed further in the sections that follow. Page numbers correspond with the Vision Plan document:

- Create a vibrant destination with a diversity of uses including homes, businesses, and gathering places for the community (p.29-33).
- Reflect the industrial history and heritage of the area (p.5; 30).
- Embrace climate resiliency through reduction of single-occupancy vehicles, maximizing energy efficiency of buildings, and reducing heat island effect (p.12).
- Utilize high-quality and high-performance design and construction of new buildings with a focus on energy efficiency (p.40).
- Support healthy lifestyles with the creation of diverse, multi-use, natural areas and public open spaces (p.11).
- Protect and restore the ecological health of natural resources through low impact design, stormwater management, and the creation of open space (p.11-14).
- Expand trails, walking loops and open space connections on a local and regional level (p.15).
- Create safe and convenient transportation connections as well as diverse options for transit, walking, biking and driving (p.19).
- Utilize design to encourage active lifestyles and promote community social connectedness, health and wellness (p.36).

The Northland Newton Development will engage the community and embrace these principles by creating a vibrant new Main Street, an extensive network of landscaped and active outdoor public spaces, connections to the Upper Falls Greenway and other pedestrian paths, introduction of a mobility hub for alternative transit options, as well as creating a new central village square for community gatherings and events. Additionally, the project will be providing a bike path connection from and to the Greenway along Charlemont, all the way to Christina Street (behind the former Stark property), with hopes to link to an eventual connection across the Charles River into Needham. The renovation of the historic Saco-Pettee mill building as well as the preservation of other historic industrial resources for reuse on the site will maintain and improve important community cultural assets. Design and construction of all new buildings on the site will meet high standards for sustainable design as outlined in detail in the sections below.

Leadership in Energy and Environmental Design (LEED) Goals

The project includes several goals for attaining Certification with the US Green Building Council’s (USGBC) LEED Green Building Rating Systems. The commitment to the rigorous internationally-recognized third-party LEED standards demonstrate a project-wide commitment to high performance design and construction with quantifiable environmental benefits such as energy and water use efficiencies.

² www.greennewton.org

³ Needham Street Area Vision Plan 2018, Adopted by the City Council on August 13, 2018;
www.newtonma.gov/gov/planning/lrplan/comprehensive_plan.asp

“LEED provides a framework that gives project teams the ability to choose solutions that contribute to aggregate environmental progress.”⁴ The United Nations Environment Programme’s 2009 Building and Climate Change Report stated that buildings account for approximately 40% of our total energy use.⁵ In a 2011 study of the U.S. General Services Administration's LEED-certified buildings, the Department of Energy found LEED-certified buildings to have 25 percent lower energy use compared to the national average.”⁶

More recently, the USGBC has found that LEED buildings, on average, save between 30-40% of the energy and water used in buildings of conventional construction. LEED buildings also lease up faster and have higher employee productivity in office spaces.⁷

The USGBC recently announced the 2018 Top 10 States for LEED projects, and Massachusetts ranked second in the nation for gross square footage of LEED-certified space per person. “The benefits of LEED extend well beyond measures like reduced water and energy usage, affecting the health and prosperity of entire communities. LEED-certified projects save money for families, businesses and taxpayers, in addition to reducing carbon and creating a healthier environment in which people can thrive.”⁸

The entire 22-acre Northland Newton Development is registered and will pursue LEED for Neighborhood Development (ND) v3 Certification at the Silver level. The project team elected to pursue LEED-ND which is an ambitious rating system consisting of sustainable planning and design strategies implemented across entire new neighborhoods and developments. Credits are organized into the four categories of Smart Location and Linkage, Neighborhood Pattern and Design, Green Infrastructure and Buildings, and Innovations. LEED-ND Certification is a unique and significant goal as there are only three projects in Massachusetts that have achieved it to date.

In addition, the historic Saco-Pettee mill building will be fully renovated into high quality office space with the goal of achieving LEED Core and Shell (CS) v3 Certification at the Silver level.

All new buildings within the Northland Newton Development will be designed to be LEED ‘Certifiable.’ In pursuit of this goal, every building will achieve energy and water use savings that exceed standard projects built in Massachusetts.

Summarized below are the sustainable design and construction strategies that the Northland Newton Development will incorporate, some of which are included in LEED and other green building rating systems, and all of which are elements of good design that benefit people, the planet and also generate prosperity in order to achieve long-term viability.

Site Design and Landscaping

The project will reduce its use of potable (drinking) water for landscape irrigation by installing highly efficient irrigation systems where necessary to maintain plantings and will also seek to reduce the need for irrigation by specifying drought-tolerant and indigenous plants where appropriate. The project will incorporate the capture and reuse of rainwater from the building roofs for irrigation needs, further reducing the demand for potable water resources.

⁴ www.usgbc.org/articles/leed-facts

⁵ europa.eu/capacity4dev/unep/document/buildings-and-climate-change-summary-decision-makers

⁶ www.usgbc.org/articles/leed-facts

⁷ www.usgbc.org/articles/download-our-free-leed-slide-deck-your-next-presentation

⁸ www.usgbc.org/articles/infographic-top-10-states-leed-2018

Stream restoration and the partial daylighting of South Meadow Brook is an important aspect of the project in terms of both ecological restoration and community awareness about natural resources in the area. Invasive plant species will be removed to the extent possible on the stream banks in order to foster natural vegetation and support healthy stream ecology. Low Impact Design (LID) strategies will be employed in the design of stormwater management systems across the site to reduce stormwater runoff into the stream and to improve the stream water quality. Permeable paving will be used to allow for infiltration in some areas and reduce stormwater runoff. 'Daylighting' a portion of the stream, thereby bringing a section of it out of the underground culvert and into an above ground channel again, will allow the community to experience this natural feature and learn about the local stream ecology.

Heat Island Effect Reduction

Heat island effect occurs when a dense, metropolitan area is significantly warmer than the surrounding rural areas due to human activities. The main cause of urban heat island effect is the increasing change of natural surfaces into hard surfaces, like pavement and roof areas, which absorb and retain heat from the sun.

The Northland Newton Development, in line with the goal of the Vision Plan mentioned above, will reduce heat island effect on the site by utilizing the following strategies:

- Providing a network of green/landscaped open spaces and parks with shading and moist planting materials which provide cool surfaces as opposed to pavement and dark-colored materials.
- Shading of streets and sidewalks with street trees.
- The buildings will incorporate roof design options including white/reflective materials, vegetated green roofs and/or "solar-ready" design for future installation of photovoltaic panels (PV's). Those preliminary studies are included at the end of this chapter.

Open Space

The Northland Newton Development dedicates a significant portion of the site- 43% or 9.8 acres- to a rich and diverse network of new open spaces. Building at the density proposed will result in the ability to preserve more of the site area as open space for programmed parks, landscaped green spaces, a playground, bike and walking paths throughout.

- Through the extensive cleanup and ecological restoration of the brook and its banks, **South Meadow Brook Park** will become a natural green space with tree cover and rich vegetation. It will provide public access and enjoyment of this portion of the South Meadow Brook for the first time in decades. South Meadow Brook Park also includes a dedicated dog park area.
- **The Mobility Plaza** adjacent to the Mobility Center includes areas of seating with tables shaded by clusters of trees to provide an enjoyable outdoor spot while waiting for the transit shuttles or just enjoying coffee or lunch.
- The **Laneways** provide a pedestrian-oriented hardscaped east-west connection through the site between the Mobility Plaza and the new community building and adjacent playground. Wide walkways and protected courtyard spaces with seating and tree cover provide rich diversity to the types of open space on the site.
- **Mill Park** embraces the historic nature of the site by displaying repurposed cultural and architectural artifacts as newfound sculptures. It provides a safe pedestrian pathway connection from Needham Street to the new Village Green and through to Oak Street Park.
- **The Village Green** is the jewel of the project's open space network. 1.3 acres of open/green space at the center of the site will host a variety of uses such as frisbee and ball-playing, picnicking or just

reading and lounging in the sun. The space will also be actively programmed to host community events such as a farmers' market, temporary ice skating rink and other community-oriented festivals and activities.

- **Oak Street Park** provides a tree-lined landscaped sidewalk edge and encourages pedestrian access from Oak Street up through the park to the Village Green.
- A new **Community Playground** adjacent to the Greenway and the new community building provides several new spaces for the residents and surrounding community to play. Current research has found that intentionally designed natural playscapes promote early childhood development better than more traditional play structures⁹. The Community Playground will incorporate several different areas of creative natural playscape elements encouraging children to climb, explore and use their imaginations.

Roof Mapping

A preliminary roof mapping exercise was completed for the new buildings and the existing historic Saco-Pettee mill building. The purpose of the exercise is to study the roof areas that may be available after the placement of mechanical equipment and other required items on the roofs and to weigh the opportunities for planted green roof areas, solar ready roof areas and active rooftop terrace amenity areas. Preliminary roof mapping diagrams are included in Figure 1 at the end of this chapter. The diagrams are still conceptual and subject to the requirements of final design.

Alternative Transportation

According to the U.S. Energy Information Administration (EIA), transportation emissions contributed 37% of the total greenhouse gas emissions in the U.S. in 2017.¹⁰ There are many transportation-related strategies that the Northland Newton Development is integrating in line with the goal of reducing single-occupancy vehicles and vehicular traffic on the site and in the surrounding area. The benefits of providing alternatives include improved local air quality, reduced CO2 emissions for mitigating climate change, encouraging exercise and healthy living, and preserving open space by reducing the parking areas provided. The project is incorporating the following strategies:

- Creating pedestrian and bike connections to the Newton Upper Falls Greenway, Upper Falls village center, surrounding neighborhoods, and adjacent bus stops.
- A new Mobility Hub provides both resident and public access to a range of alternative transit options. The Hub will host shuttle service to several T stops and commuter rail stops and serve as a welcoming gathering place for shuttle and MBTA riders.
- On-site electric car charging stations are provided for the public and residents.
- Vehicle and bike sharing programs will be incorporated on site.

Community Livability

The 'people' part of the sustainable development equation is an important driver for making the project an integrated part of the community fabric and for creating new places that will benefit all who interact with them. Existing residents of the surrounding neighborhoods, new residents of the development, employees of the new businesses, and customers of the new retail stores and restaurants will all appreciate and enjoy the care put into making the Northland Newton Development a livable and vibrant part of the community.

⁹ Lisa P. Kuh, Iris Ponte, & Clement Chau. (2013). The Impact of a Natural Playscape Installation on Young Children's Play Behaviors. *Children, Youth and Environments*, 23(2), 49-77.

¹⁰ www.eia.gov/energyexplained/index.php?page=environment_where_ghg_come_from

New affordable housing units will provide for economic access and increased community diversity. A significant number of 'all age friendly housing' units in the project will incorporate Universal Design Standards making them accessible to all members of the community. Intergenerational equity and the inclusion of all ages in the development aligns with the core tenets of sustainability.

Health and Wellness

Sustainable design has seen a recent shift towards a greater focus on the importance of health and wellness for the people both building and occupying the spaces we create. The LEED for Neighborhood Development Rating System promotes this in many capacities which will be important components of the Northland Newton Development. Mixed-use, compact developments inherently promote physical activity through walkability, and in addition, this project will create retail, restaurants and office space within walking/biking distance of existing neighborhoods. Safe, well-lit outdoor spaces and paths will be provided as well as connections to existing regional bike trails, providing opportunities for outdoor recreation and exercise for all ages.

The buildings will also be designed to create healthy indoor spaces for living and working. Specifying low-VOC and non-toxic building materials, finishes and paints contribute to cleaner indoor air quality. Access to fresh air with the use of operable windows will be utilized when appropriate, and daylighting of the interior spaces will be part of the inherent project design criteria.

Climate Change Resiliency

Designing for resiliency to climate change has rapidly become a topic of importance in the real estate and development sector. It is clearly a topic of high priority to the City of Newton as made evident by the detailed section on the topic in the Needham Street Area Vision Plan. Some strategies to address and mitigate climate change on the urban design level have already been addressed in this chapter.

The project must comply with the Massachusetts Environmental Policy Act (MEPA) Greenhouse Gas Emissions Policy and Protocol¹¹. The Policy requires that projects quantify carbon dioxide (CO₂) emissions and identify measures to avoid, minimize, or mitigate such emissions. The analysis will quantify the direct and indirect CO₂ emissions associated with the project's energy use (stationary sources) and transportation-related emissions (mobile sources).

The Northland Newton Development is already incorporating many of the CO₂ mitigation measures suggested in the MEPA Greenhouse Gas Emissions Policy and Protocol. The following suggested measures are an abbreviated list of items already included in the project-

- Minimize building footprints
- Design project to support alternative transportation to site including transit, walking and bicycling
- Develop or support multi-use paths to and through the site
- Improve building envelopes
- Use high-albedo roofing materials to reduce heat absorption
- Design roofs to be solar-ready
- Construct green roofs to reduce heat load on roof, further insulate, and retain/filter rainwater
- Install high-efficiency HVAC systems and high-efficiency lighting
- Install Energy Star rated appliances
- Install efficient water fixtures that exceed building code requirements

¹¹ www.mass.gov/orgs/massachusetts-environmental-policy-act-office

- Collect and re-use rainwater for landscaping
- Design for waste reduction in building design
- Implement a construction waste management plan
- Incentivize use of public transportation
- Pursue opportunities to minimize parking supply

Reduced energy consumption across all of these measures results in reduced consumption of fossil fuels and thereby reduces the carbon footprint of the project's construction and ongoing operations.

Building Energy Efficiency

As mentioned above, all of the new buildings in the project will meet strict standards for energy efficiency. The Needham Street Area Vision Plan states a goal for new projects to target net-zero energy use. Net zero is still a very challenging bar to meet for large-scale commercial buildings in an urban environment, but the Northland Newton Development is committed to pursuing energy efficient construction methods and systems in order to reduce energy and electricity use by the buildings. As the project enters the more focused and detailed design phases, additional energy efficiency strategies and standards will be explored for feasibility and viability, including net zero energy and Passive House Institute US (PHIUS).

At a minimum, all new buildings on the site will be designed to be LEED Certifiable under LEED for Building Design and Construction (BD+C) v3. All buildings will be required to meet the Massachusetts Stretch Energy Code¹² as adopted by the City of Newton. The Stretch Code requires that buildings be 10% more energy efficient than the currently adopted International Energy Conservation Code (IECC) 2015, making it a more stringent energy standard than even LEED currently is. The design of the new buildings on the site will strive for a higher energy efficiency threshold than the Stretch Code.

Further investigation and research during schematic design will take place to weigh options for increasing energy use reductions. At a minimum, the buildings will include the following-

- High-efficiency heating, ventilation and air conditioning (HVAC) and domestic hot water systems
- High-efficiency LED smart lighting systems and fixtures
- EnergyStar appliances throughout.
- Window and glazing/glass selection will reduce energy required by HVAC systems
- Energy modeling of each building will be required to demonstrate performance and tangible energy use and cost savings.
- High-performance building envelope systems/materials.
- Building system commissioning will be performed to ensure all systems are operating as designed.

Building Water Efficiency

The use of LEED as a framework will also require meeting water efficiency thresholds for water use inside the buildings and all new buildings will target a minimum water use efficiency of 30% over the Energy Policy Act LEED v3 water use baseline.

Some of the water efficiency strategies will include the following-

- Low-flow plumbing fixtures that comply with, or exceed, the EPA WaterSense standards

¹² The Stretch Energy Code refers to the 9th Edition of the Massachusetts State Building Code 780 with the Stretch Energy Code Amendment 780 CMR 115 AA.

- Water use calculations will be required to demonstrate performance and tangible water quantity savings.

Durability of Building Materials

High quality and long-lasting building materials and finishes will be selected to ensure that the buildings are both beautiful and sustainable for the long-term. Durable materials require less maintenance and don't need to be replaced as often, which allows for a longer material life and inherent sustainability.

Waste Management

In an article by the National Trust for Historic Preservation in 2012, the author coined the phrase, "the greenest building is the one that's already built"¹³ and launched a movement to integrate historic preservation and sustainability. The preservation of the historic Saco-Pettee mill building provides many environmental benefits including the reduction of landfill waste from demolition as well as the avoidance of new materials and construction waste that would be generated by replacing it. During construction, the waste materials for all buildings will be sorted and recycled in order to divert as much of the construction waste as possible from landfills, with a minimum goal of 75% construction waste diversion. Once occupied, the buildings will have recycling programs in place for the residents and businesses consistent with, or better than the LEED requirements for collecting recyclables.

Public and Tenant Education Programs

The Northland Newton Development will embrace and demonstrate so many ideas and technologies under the umbrella of sustainable design that it can serve as a wonderful educational opportunity. Site signage will be used to provide education to the public on the environmental strategies including the stream restoration, rainwater management strategies, and LEED-ND signage explaining what LEED is and how the project meets certain credits. The preservation of a historic building and reuse of elements from the industrial history on the site will preserve those cultural assets and provide public education about the history and context of place. A residential tenant education program could be implemented to explain the operations of the building systems, the benefits of the green materials and resulting healthy indoor air quality, as well as tout the energy and water savings of the apartment units and buildings.

Comprehensive Sustainability Vision

The sustainability goals and strategies of the Northland Newton Development, further illustrated in Figure 2 at the end of this chapter, mirror the overall vision as well as many of the short and long term goals set forth in the Needham Street Area Vision Plan 2018. The project will align with specific desired strategies in all of the Vision Plan categories including environmental health, transportation, land use, and design and will act as a demonstration of innovative and sustainable design aligned with the goals for future growth in the City of Newton and the community.

¹³ Elefante, C. (2012). The Greenest Building Is One That Is Already Built. *Forum Journal* 27(1), 62-72. National Trust for Historic Preservation.

Figure 1: Preliminary / Conceptual Roof Mapping Diagram

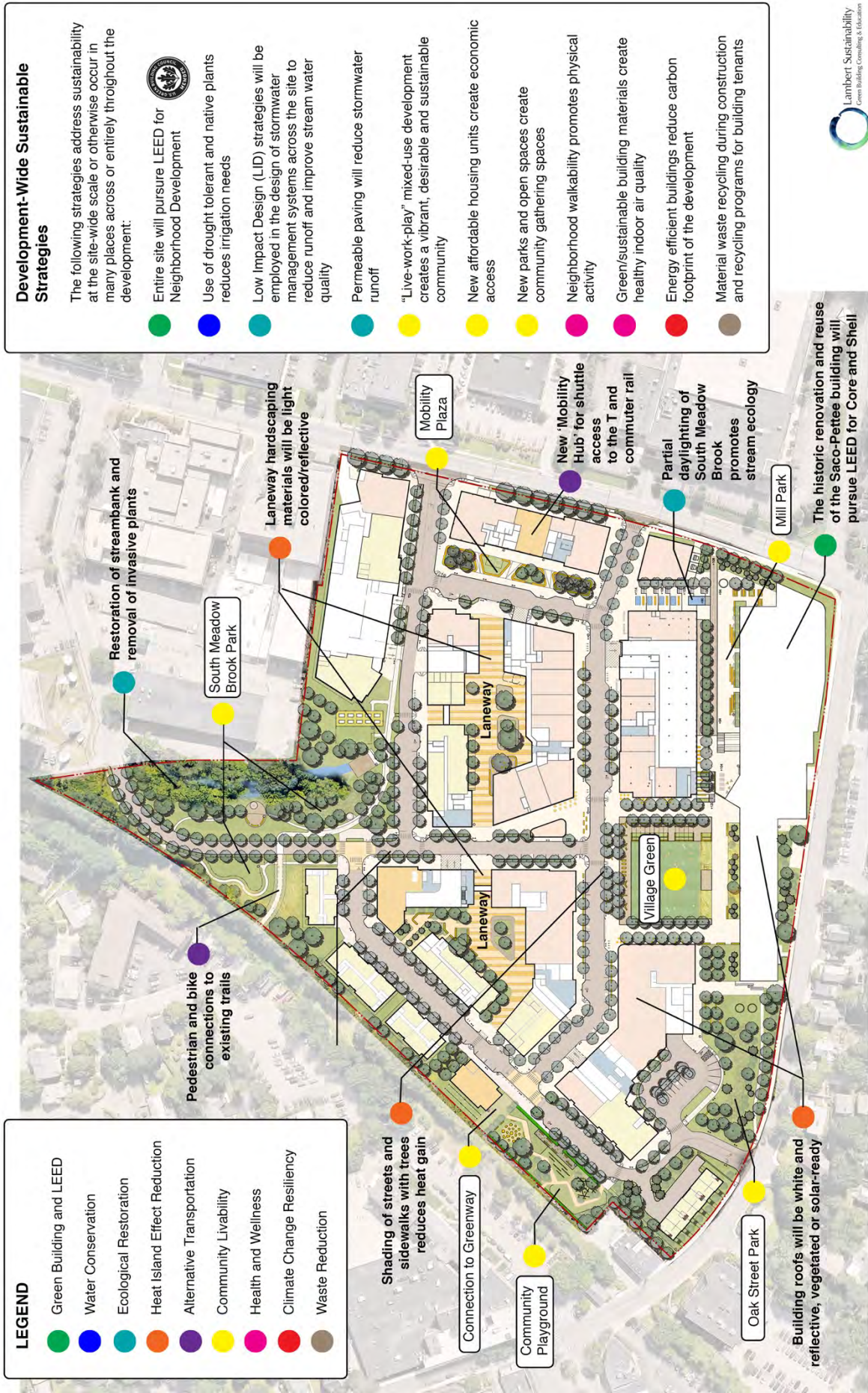
NOTES:

1. Final roof layouts subject to change during final design process.
2. All exposed roof membranes will be highly reflective
3. Majority of all HVAC equipment will be located on high-roofs and screened
4. A minimum of 10' is to be maintained as a safety buffer between the parapet edge and any service area or equipment requiring regular maintenance



Conceptual Roof Mapping Legend	
	Potential Sedum Green Roof
	Potential Active Green Roof Amenity
	Potential Amenity Roof Deck / Private Terrace
	Anticipated Rooftop Equipment Zones
	Potential Skylights
	Potential Solar Ready Roof Areas

Northland Newton Development
Figure 2: Sustainable Strategies Plan





MEMORANDUM

To: Michael Gleba, Jennifer Caira – City of Newton
From: Jonathan Ford, PE, Janet Bernardo, PE
Date: May 6, 2019
Re: Newton Northland Sustainability Peer Review

The intent of this memorandum is to provide a preliminary review of the Newton Northland Development's Sustainability Strategic Plan and Water/Sewer/Stormwater Summary. HW offers the following comments:

Introduction & Background:

The Proponent's Sustainability Strategic Plan and Water/Sewer/Stormwater Summary, both last revised April 18, 2019, outline broad sustainability and stormwater management goals for the project and provide a preliminary framework for incorporation of sustainability elements into the project design, construction, and long-term operation and maintenance of the site. The sustainability goals for the project are organized and presented using a holistic view of sustainability, addressing equity, environment, and economy.

The current project design and information submitted appear to be generally consistent with best sustainable development practices at multiple scales of community building. The project's sustainability goals are harmonious with the goals of the Needham Street Area Vision Plan, N² Innovation District, and the mission of Green Newton as stated in the Sustainability Strategic Plan (page numbers correspond with the Vision Plan document):

- Create a vibrant destination with a diversity of uses including homes, businesses, and gathering places for the community (p.29-33).
- Reflect the industrial history and heritage of the area (p.5; 30).
- Embrace climate resiliency through reduction of single-occupancy vehicles, maximizing energy efficiency of buildings, and reducing heat island effect (p.12).
- Utilize high-quality and high-performance design and construction of new buildings with a focus on energy efficiency (p.40).
- Support healthy lifestyles with the creation of diverse, multi-use, natural areas and public open spaces (p.11).
- Protect and restore the ecological health of natural resources through low impact design, stormwater management, and the creation of open space (p.11-14).

- Expand trails, walking loops and open space connections on a local and regional level (p.15).
- Create safe and convenient transportation connections as well as diverse options for transit, walking, biking and driving (p.19).
- Utilize design to encourage active lifestyles and promote community social connectedness, health and wellness (p.36).

At this stage of the design and review process, the submitted materials are “big picture” and not detailed. While the broad vision and strategies appear to be in line with expectations as noted above, more information is required to verify that the detailed design is consistent with the stated broad goals and that the preliminary approaches are implementable, measurable, and enforceable over time. Summaries are provided below with HW commentary in **bold type**.

Equity/People – “Enhance the lives of people.”

The Proponent summarizes the equity/people goals of the project to include the creation of a vibrant destination with a diversity of uses, respect of the history and heritage of the area, support of healthy lifestyles with promotion of transportation alternatives and provision of public open spaces and trails, and encouraging active lifestyles and social connectedness.

HW concurs with the broad goals as stated in the Sustainability Strategic Plan. The project’s inherent location and commitment to multi-modal transportation connectivity (transit, walking, and bicycling) is consistent with the City’s objectives including the Needham Street Area Vision Plan 2018 and the N² Innovation District. The basic elements summarized above and included in the plan are a minimum baseline to achieve the stated goals. More detailed design development is required to confirm the following:

- 1. Shuttle system and mobility hub requires additional detail to ensure feasibility and long-term operation. Success of the shuttle system and pedestrian/walkability improvements is related to the predicted reduction in single-occupancy vehicle trips and demand for onsite parking. See traffic peer review comments.**
- 2. As the permitting process proceeds, more detailed design of public realm elements is needed to ensure streetscapes and spaces are properly detailed and connected for users of all abilities – within the site and to adjacent neighborhoods and open space amenities, especially the Greenway.**
- 3. The addition of internal block “laneways” to the project design is a significant improvement to site permeability and walkability. Additional detail is required to review how these spaces will function and ensure consistency with best practices and the Newton Street Design Guide.**
- 4. The Proponent proposes that 15% of the number of dwelling units will be designated affordable housing units, meeting the City’s inclusionary housing provisions. HW defers to the City whether this is an appropriate amount. Whether designated affordable or not, a wide range of multi-family product types will also help provide choices and increase diversity on the site.**
- 5. More information is required as the design progresses to ensure measures will be included to appropriately respect the industrial heritage and history of the area.**

Environment/Planet – “Protect the planet’s resources.”

At the City/neighborhood scale, the proposed redevelopment of a currently underutilized and highly impervious site within the existing land use, transportation, and open space networks is a positive sustainable growth strategy both environmentally and economically. The Proponent has committed to pursuing LEED for Neighborhood Development (LEED ND) Certification at the silver level. LEED ND is a system for rating sustainable development at the scale of a neighborhood, including several prerequisites and a point system providing credits in the following categories:

- Smart Location and Linkage
- Neighborhood Pattern and Design
- Green Infrastructure and Buildings
- Innovation
- Regional Priority

Projects are certified at four levels, at the Plan stage (no more than 75% of the project’s total floor area constructed) and at the Built stage of development:

- LEED Certified™: 40-49 points
- LEED Silver®: 50-59 points
- LEED Gold®: 60-79 points
- LEED Platinum®: 80+ points

The Proponent has also committed to renovate the historic Saco-Pettee mill building to achieve LEED Core and Shell Certification at the silver level, and to design all new buildings to be LEED “Certifiable”.

HW concurs that the LEED ND rating system is a useful framework for evaluation of the Newton Northland’s project sustainability goals. Many LEED ND credit categories are “preset” based upon the Northland project’s location, context, and master plan – especially those related to Smart Location and Linkage and Neighborhood Pattern and Design. Many credits related to Green Infrastructure and Buildings (29 points possible), Innovation (6 points possible), and Regional Priority (4 points possible) are based on planning and design decisions that are still to be evaluated in more detail, which could result in higher certification at the Gold or Platinum level.

HW understands that alternative ratings frameworks, standards, and efficiency goals such as Envision Certification, Passive House, and other certification and rating systems are being investigated by the Northland design team. HW recommends as the design continues to develop that more details regarding the feasibility of these building-oriented sustainability and energy efficiency measures be communicated to the City for evaluation.

HW recommends that the Proponent investigate incorporating alternative, renewable energy sources including solar power into the building designs as well as consider installation of District Energy if feasible. The City of Newton is intent on reducing the use

of fossil fuels through alternative energy throughout the City, with an expectation of zero fossil fuels used for this development. HW recommends that the Proponent include a list of all sustainability measures being incorporated and considered for the Northland project as well as their approximate impact. Specific measures that cannot be accomplished for reasons such as a contradiction to the State Building Code should be noted as well as those proposed that are above and beyond certifiable criteria.

Water/Sewer/Stormwater Summary

The Proponent has provided an explanation of its design approach and commitment to best practices regarding managing its anticipated water intake, its wastewater disposal, and the quantity and quality of the stormwater runoff from the project site.

Water and Wastewater Conservation Methods:

The average water demand and daily wastewater flows from the parcel for the past 20 years has been in the order of 8,300 gallons per day (gpd). The calculated proposed wastewater flow based on MassDEP Title V design flow rates will be approximately 85,000 gpd. The Newton Engineering Department has stated that the City's water and sewer system have capacity to service the site.

To reduce the increased water demand which will in turn reduce the wastewater flows the Proponent is committed to water conservation measures which include the following:

- Residential units will be individually metered and equipped with low flow, high efficient faucets.
- Commercial space will have low flow, high efficient faucets, water closets and urinals.
- Office Space will have low flow, high efficient faucets, water closets and urinals.

The design is still at a high level and HW anticipates that the residential units will also be equipped with high efficiency appliances and that measures to reduce water consumption through behavioral and operational practices will be encouraged by the residences as well as employees of the businesses.

The Proponent is also committed to harvesting rainwater for irrigation purposes which HW concurs is desirable, however irrigation use in Massachusetts is limited by seasonal needs. HW suggests that the Proponent evaluate the possibility of utilizing the harvested rain water and/or reclaimed groundwater below the subsurface garage as grey water in the commercial toilets. An example of this is at the Post Office Square parking garage in Boston where a groundwater reclamation system allows them to re-utilize the groundwater to flush the toilets and wash the floors in the Garage, reducing the amount of high-quality drinking water the Garage uses in its operation. The reclaimed toilet water is dyed blue and educational signage is posted explaining the system. The design is an excellent example of Integrated Water Management and Green Infrastructure focusing on sustainability of resources.

Stormwater Management and Green Infrastructure:

The proposed stormwater design is intended to showcase best practices and principles of green infrastructure. The Proponent has outlined numerous approaches to reduce flows and to improve water quality prior to discharging into South Meadow Brook and the Charles River. The highlighted best management practices include:

- Bioretention basins, planters and curb bump-outs
- Permeable pavement
- Street trees with sand based structural soil
- Cisterns to enable rainwater harvesting
- Subsurface infiltration chambers
- Reducing impervious surfaces
- Increasing the tree canopy to reduce the heat island effect
- Landscape with drought resistant plants
- Daylighting of South Meadow Brook

HW concurs with the proposed measures. The various practices are dependent on site conditions, including soils, topography, depth to groundwater, and proposed surface uses. The concept design is at a high level and the final design will need to be reviewed to verify functionality, constructability and long-term maintenance requirements. The proponent is aware that the City of Newton Engineering Department expects that the stormwater management be evaluated with the assumption that the existing site is 100% permeable and target 0% increase of runoff for design storm events up to a 100-year 24-hour storm. During future design phases HW will continue to work with the Proponent to evaluate opportunities to mitigate stormwater runoff, verifying that all performance standards are met and that educational opportunities have been included.

Economy – “Generate long-term prosperity.”

The Sustainability Strategic Plan briefly addresses economic benefits, including job creation, creation of a vibrant destination with a diversity of uses on the site, energy efficiency, and durability of materials.

HW defers economic impact review to others. As noted in the Sustainability Plan, efforts to maximize environmental sustainability, equity, and community livability will strengthen the long-term viability of the project, thus reinforcing economic sustainability.

ATTACHMENT C



Memorandum

To: John Daghlian, Associate City
Engineer
Jennifer Caira, Chief Planner
City of Newton

Date: April 18, 2019

Project #: 12239.00

From: VHB

Re: The Northland Newton Development
Water/Sewer/Stormwater Summary

The following memorandum has been prepared to summarize the Project's water/wastewater and stormwater design approach and the Proponent's commitment to best practices. Quantitative analyses and calculations demonstrating compliance with state and local stormwater regulations will be prepared during later design stages and provided to Engineering for design review prior to any applications for building permits.

1.1 Water and Wastewater

The City's sewer system is divided into three primary sewershed areas. Each of those primary sewershed areas are further subdivided into smaller subsets defined by logical flow boundaries for system analysis and location reference. The Project Site resides within the City's Sewer Area A09A.

Existing retail, industrial and office buildings on the site are all presently serviced by gravity sewers in Oak Street and Needham Street. Average daily wastewater flows from existing uses have been on the order of 8,300 gal/day for roughly the past 20 years during which time the offices at 156 Oak Street (Building 1) were fully occupied by Clark's Shoes and the Marshalls plaza was fully tenanted. Obviously, existing wastewater flows from the site have gradually diminished as leases have expired in preparation of this redevelopment project.

The proposed building program reduced since the initial submission in September 2018 now includes 800 residential units of mixed housing types, refurbishing the 180,000 sf office building at 156 Oak Street, and 115,000 sf of flexible commercial space including retail, restaurants and entertainment, health care, and community uses. Proposed uses on the site will generate new wastewater flows on the order of 85,000 gal/day. Refer to Table 1.

A new on-site system of 8" gravity sewer mains will be constructed through the Project Site to collect domestic (non-industrial) wastewater from all new buildings. The new sewer mains will connect to existing sewers in Oak Street at the relocated driveway entrance and in Needham Street at the Main Street entrance. Based upon early discussions with representatives from Engineering and DPW, both the water system and sewer system have capacity to service the project.

101 Walnut Street
PO Box 9151
Watertown, MA 02472-4026
P 617.924.1770

Average daily wastewater generation for the uses proposed is closely correlated to water demand, and the water conservation measures that will be incorporated into the project through the Proponent's commitment to sustainability which will significantly reduce wastewater flows to the system comparatively. For example, residential units will be individually metered and equipped with low flow, high efficiency faucets, which will both reduce demand. Likewise, the commercial space will have low flow, high-efficiency faucets, as well as low-flow water closets and urinals. The office building will be re-fitted with the same. While unrelated to wastewater, the Proponent is also committing to harvest rainwater for irrigation.

Table 1 – Estimated Net New Wastewater Generation

Proposed Use	Size	Title V Design Flow Basis	GPD
Residential	1,200 bedrooms	110 GPD per bedroom	132,000
Retail	60,000 SF	0.05 GPD per SF	3,000
Office	180,000 SF	0.075 GPD per SF	13,500
Restaurant	1,190 Seats	30 GPD per seat*	35,700
Medical Offices	6 Doctors, 2 Dentists	250 GDP per doctor, 200 GDP per dentist**	1,900
Commercial/Flex	10,000 SF	0.075 GPD per SF***	750
Community	4,000 SF	0.05 GPD per SF+	200
Σ Design Flow			187,050
Conversion factor design flow to average daily flow ⁽¹⁾			x 0.5
<i>AVERAGE DAILY FLOW</i>			93,525
Less existing average daily flows ⁽²⁾			- 8,315
Net New Wastewater Average Daily Flow			85,210

- * Varies from 20 GPD/seat for fast food to 35 gpd/seat for other (presumably casual and formal dining). The calculation assumes approximately 25% of restaurant seats will be “fast food”.
- ** Assumes 25% of medical office space will be used by dentists.
- *** 10,000 square feet of the flexible commercial space will be tenanted by an undetermined mix of uses. Current trends suggest these spaces will be absorbed by office share space providers, such as WeWork and Regus; and by small specialty exercise providers that offer classes in yoga, pilates, spinning, physical therapy and personalized training. None of these uses in small spaces are large water/wastewater users so it is estimated that the wastewater profile of this space will be similar to office use.
- + The community center building is unprogrammed floor space likely to be used periodically for small gathering and meeting space; therefore, average daily flow generation is expected to be more in line with a retail use than other Title V uses.
- (1) Flow generation rates prescribed by Title V (310 CMR 15.416) are “design flows” to be used for the design of ground disposal systems and are defined as “... [daily] estimated generated flow for the proposed use plus a factor representing flow variations”. Title V utilizes a factor of 2.0 to convert average daily flow to design flow (refer to 310 CMR 15.203(6)). Therefore, calculating average daily flow based on Title V is determined by estimating design flow and multiplying by 0.5.
- (2) Determined for existing retail and office uses at 275/281 Needham Street and 156 Oak Street using the same methodology as shown for proposed uses.

1.2 Stormwater

The Project proposes to showcase best practices and principles of green infrastructure: restoring the ecological and hydrologic functions of a former industrial site in the heart of Newton. With sustainability, livability, and resilience as guiding principles, the design team has developed a green infrastructure concept design that will exceed stormwater management regulatory requirements while creating public amenities, reducing urban heat island effect, enhancing natural habitat, and reconnecting Newton residents to South Meadow Brook.

The Project's green infrastructure approach will integrate small-scale, decentralized stormwater practices throughout the site, in locations where those practices best fit site conditions and can generate the highest benefits. The proposed green infrastructure practices include water-receiving landscapes, permeable hardscapes, and water conservation practices. These practices, proven effective in installations in Cambridge, Boston, and throughout the Northeast, will be designed with maintenance in mind to ensure that they provide environmental and community benefits well into the future.

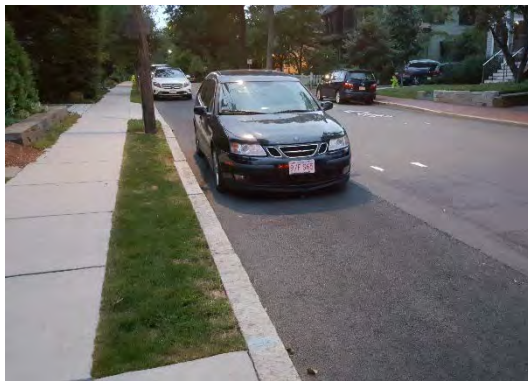


Bioretention Planters
North Street, Pittsfield

1.2.1 A Watershed Perspective

Situated within the Charles River Watershed and South Meadow Brook subwatershed, the Project has an opportunity to mitigate the impacts that past development and urban stormwater runoff have had on these waterbodies. To improve upon existing conditions, the Project aims to restore the "sponge" function of the landscape, which has been lost through urbanization. To do this, the Project will reduce impervious cover, increase tree canopy, store and reuse roof runoff for irrigation, daylight a portion of South Meadow Brook, and integrate green infrastructure throughout the site to slow, filter, collect, and infiltrate rainwater where it falls.

The Charles River Watershed is impaired in part due to phosphorus carried by urban stormwater runoff to the river. The Final TMDL for Nutrients in the Upper/Middle Charles River establishes a



Porous Asphalt Parking Lane
Lakeview Ave, Cambridge

pollution diet and stormwater management strategies to reduce phosphorus loading to the Charles River. Per Table ES-3 of the TMDL Technical Report (CN 272.0), Commercial/Industrial and High Density/Multi-Family Residential uses require a 65% reduction in annual average phosphorus loading. The Project commits to meeting this phosphorus reduction target, as detailed in Section 1.2.3 below.

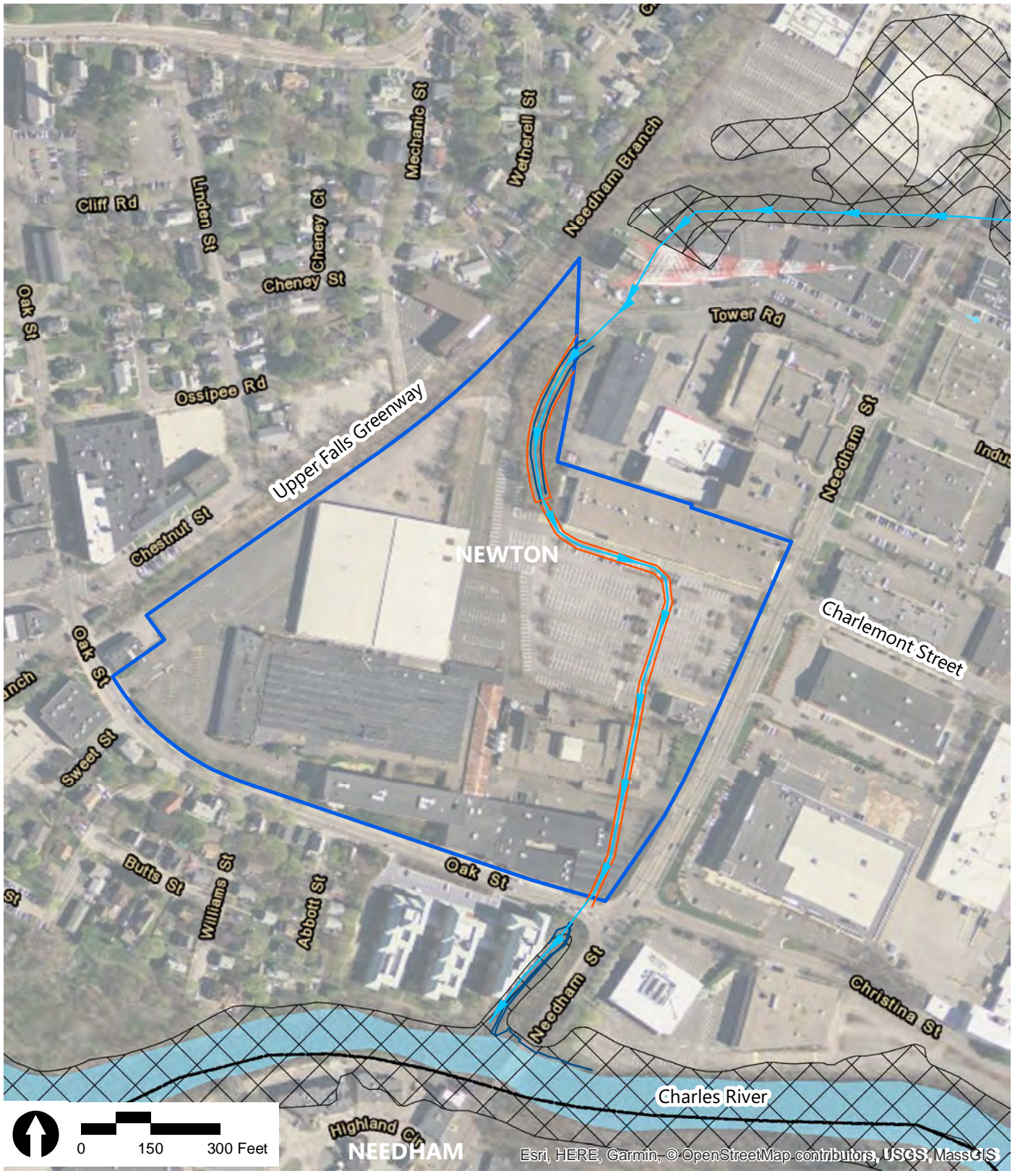
South Meadow Brook flows south through the Project site, first through an open channel for approximately 350 feet and then through a culvert for approximately 1,050 feet. After South Meadow Brook passes under Oak Street, it exits the culvert and flows approximately 370 feet to the Charles River (Figure 1). The Project proposes to daylight a portion of South Meadow Brook within the Mill Park area between the mill building (Building 1) and Building 3. The daylighted portion of South Meadow Brook will be a focal point in Mill Park featuring a terraced waterfall that cascades into a settling pool lined with rocks for enhanced aesthetics before resuming flow through the culvert under the mill building.

1.2.2 Finding the Best Fit for Site Conditions

The Project site has had various industrial, commercial, and retail historical uses since the 1800s, resulting in variable soil conditions of fill and natural material. Certain areas may be unsuitable for infiltration; particularly, a former man-made pond located generally below the footprint of the Marshalls building and parking lot which was filled with demolition debris.

According to the National Resources Conservation Service (NRCS), surface soils on the Project site are identified as urban land, which does not have a Hydrologic Soil Group (HSG) rating. Soils adjacent to the Project site in the NRCS soil map are classified with a HSG A rating. Soil evaluations in the geotechnical report completed by Haley & Aldrich show predominately well-draining soils that would be characterized as a HSG A soil. Groundwater is variable on the site ranging from approximately 3.1 feet to 17.6 feet below existing grade.

Under existing conditions, illustrated in Figure 2, the Site is developed and is predominately impervious, except for a small wooded area around the open channel section of South Meadow Brook to the north and small isolated landscaped areas dispersed throughout the Site. From a high point



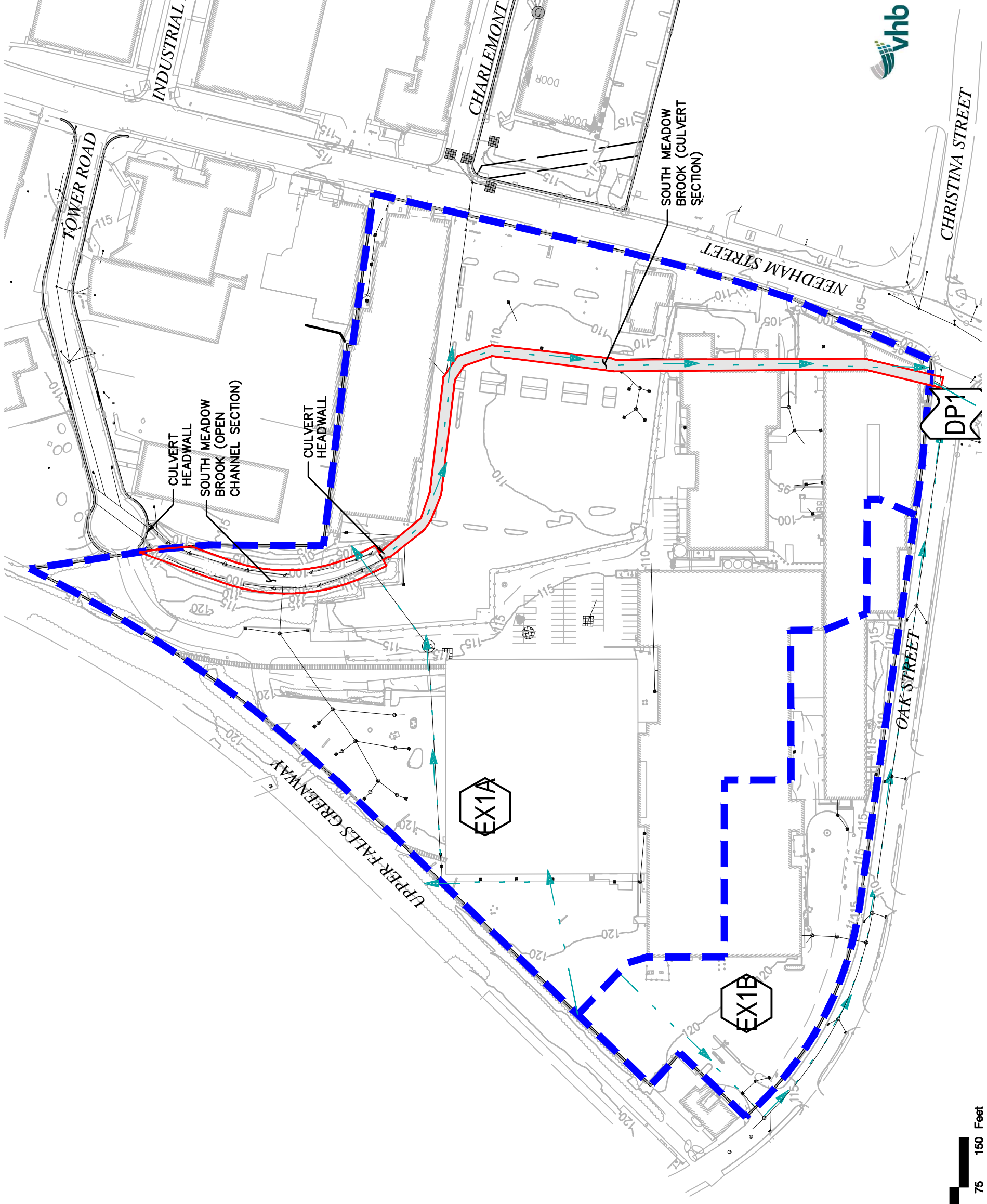
Legend

- Project Site
- Town Boundaries
- 100 Year Floodplain
- ← South Meadow Brook
- South Meadow Brook Easement
- South Meadow Brook Bank Lines



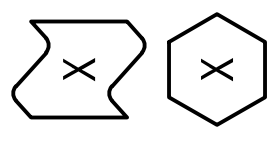
Figure 1
Site Locus Map

**The Northland Newton Development
Newton, Massachusetts**



Legend

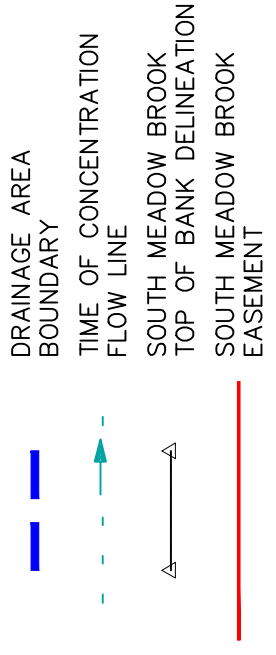
SYMBOLS



DESIGN POINT

DRAINAGE AREA DESIGNATION

LINETYPES



DRAINAGE AREA BOUNDARY

TIME OF CONCENTRATION FLOW LINE

SOUTH MEADOW BROOK TOP OF BANK DELINEATION

SOUTH MEADOW BROOK EASEMENT

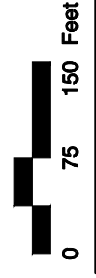


Figure 2
Existing Drainage Conditions
The Northland Newton Development
Newton, MA
August 2018

along the Upper Falls Greenway, the land slopes at approximately 3.5% east/southeast toward the Needham Street/Oak Street intersection or south toward Oak Street.

Of the existing buildings on site, the Project proposes to retain only one – the old mill building at 156 Oak Street. Likewise, the Project proposes to replace most existing utility and roadway infrastructure. In their place, the Project proposes new buildings, roadways, sidewalks, streetscape, parking areas, and green space, as generally illustrated in Figure 3 and as shown in detail on the project landscape plans.

In selecting the conceptual stormwater practices, the design team aimed to maximize benefits by matching stormwater practices to the best setting and site conditions. The conceptual design prioritizes infiltration practices where subsurface conditions allow, and fits those practices under hardscapes (parking lane, bike lane, and plaza) and landscapes (streetscape and open space). Where conditions preclude infiltration, the conceptual design includes lined stormwater practices that filter runoff before draining to the closed drainage system.

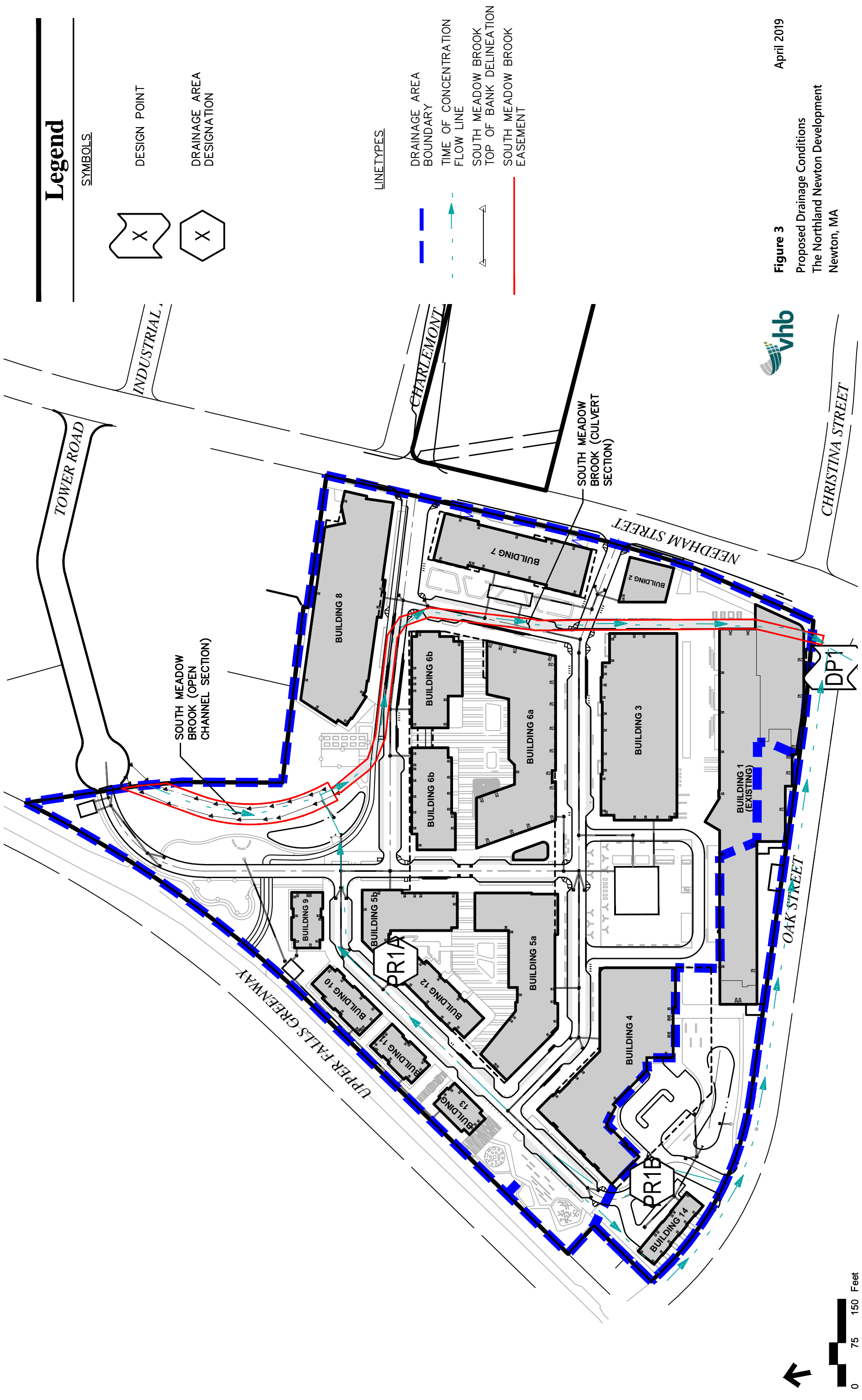


Bioretention Basin
Assembly Row, Somerville

1.2.3 Conceptual Green Infrastructure Plan

The overall principles of the conceptual green infrastructure plan are:

1. Make room for stormwater: grading and utility layout to allow green infrastructure to be distributed throughout the site.
2. Divert runoff from sidewalks, bike path, and streets into permeable pavement and bioretention facilities, integrated into the streetscape and transportation design.
3. Capture roof runoff in rainwater cisterns, to be used for landscape irrigation.
4. Prioritize infiltration facilities where conditions are most amenable; particularly, under the proposed village green situated between buildings 3, 4, 5a, and 6a. Infiltration facilities (including rainwater reuse for irrigation) maximize groundwater recharge and phosphorus reduction.
5. Where site conditions are not amenable to infiltration, design facilities with underdrains that direct filtered runoff to the closed drainage system.



April 2019

Figure 3
Proposed Drainage Conditions
The Northland Newton Development
Newton, MA



6. Maximize tree canopy, and support tree health by extending sand-based structural soil under the sidewalk adjacent to tree wells.
7. Design with maintenance and longevity in mind.
8. Reduce runoff volume and peak discharge rates to the municipal drainage system.

The conceptual green infrastructure plan is illustrated in Figure 4. The following describe where runoff from impervious surfaces will be directed and treated.

- Main Street will be crowned, which will direct roadway and sidewalk stormwater to permeable pavement parking on both sides of the street.
- Hardscape surfaces within the Village Green will be constructed in part with permeable pavers.
- Roof runoff from Buildings 3, 4, 5a, and 6a will be routed to a large subsurface infiltration system below the Village Green.
- On Pettee Lane, roadway and sidewalk runoff will be treated in bioretention bump-outs along the eastern side of the street. Runoff from the western end will be treated in a bioretention basin before discharge to South Meadow Brook.



Bioretention Curb Bump-out
Edenfield Ave, Watertown

- The surface parking lot south of Building 4, roof and driveway at Building 14, and a portion of Pettee Lane will be directed to a surface bioretention basin for water quality treatment prior to discharge to the municipal drainage system in Oak Street.
- Roof runoff from Buildings 9, 10, 11 and 12 will be routed to a subsurface infiltration system near Building 9. Building 5b roof and a portion of Pettee Lane will be collected in a bioretention basin at South Meadow Brook park.
- Stormwater from Unnamed Road, Charlemont Street, Building 7, and portions of Building 8 will be routed to an infiltration system adjacent to Building 7.
- Runoff from the north end of Tower Road, which drains directly into South Meadow Brook today will be intercepted and routed to a subsurface infiltration system.

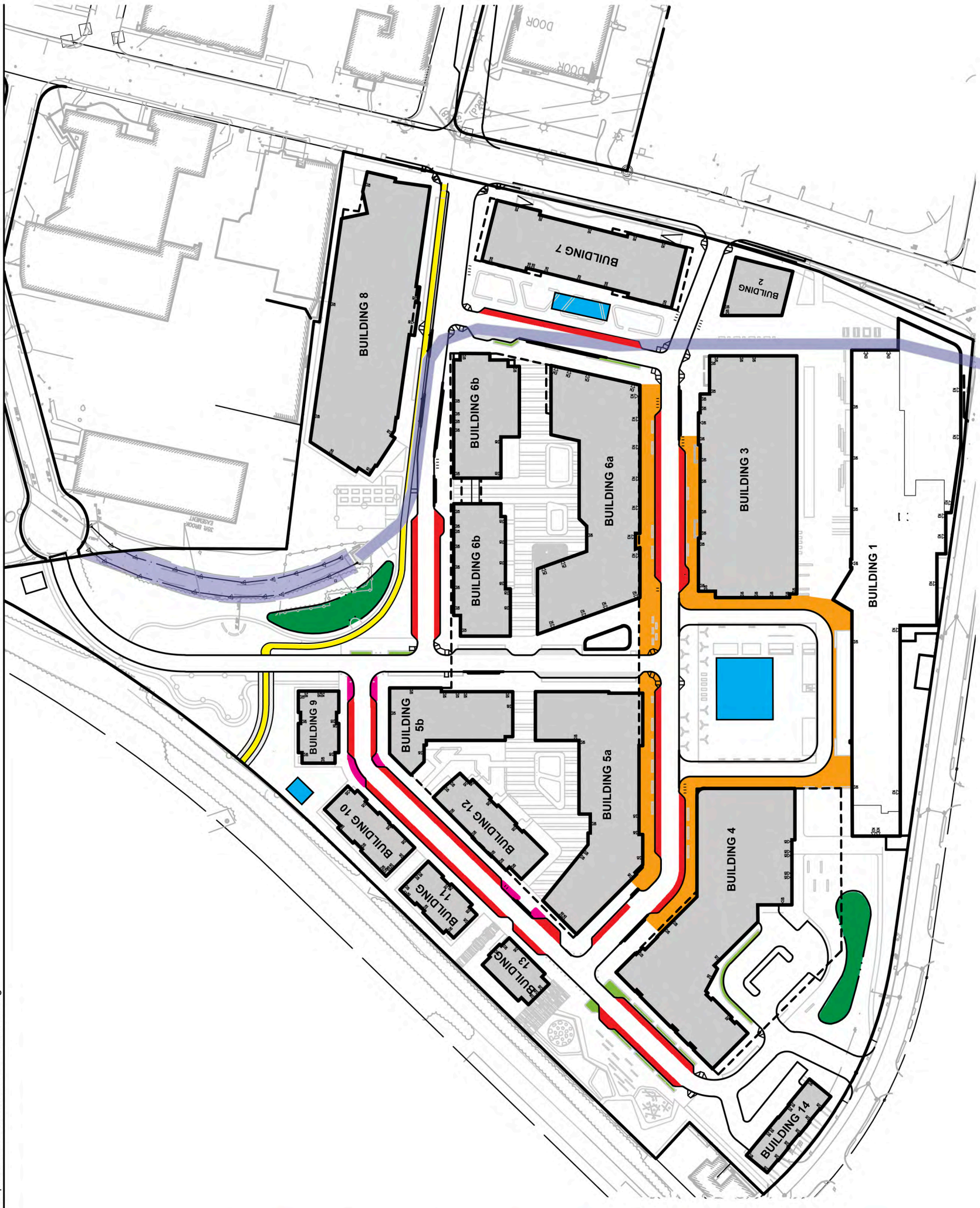
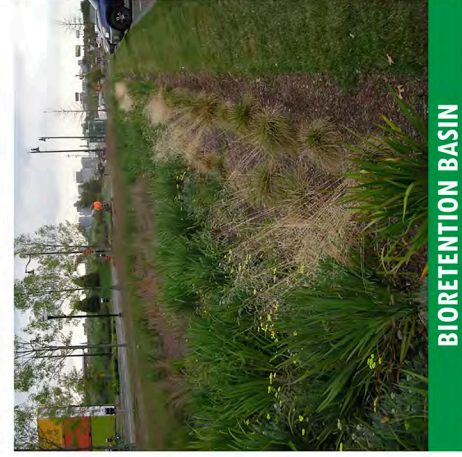
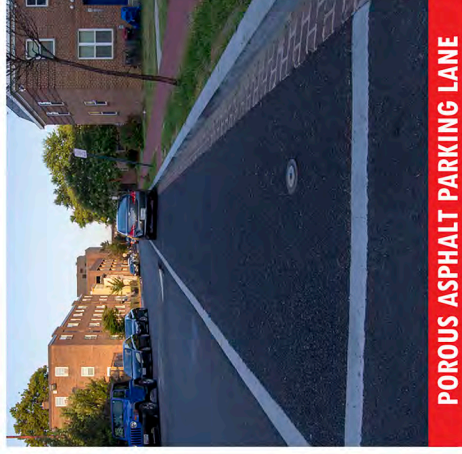
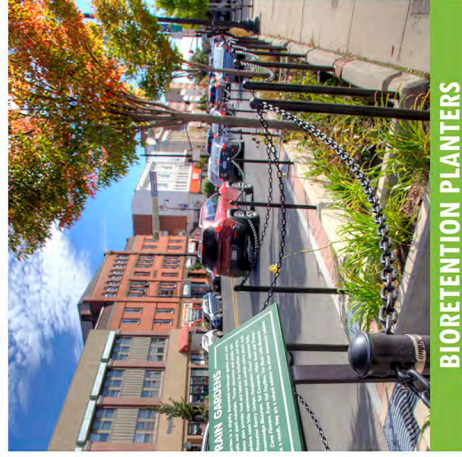
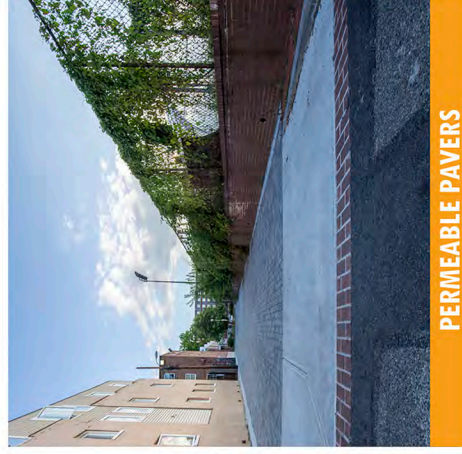
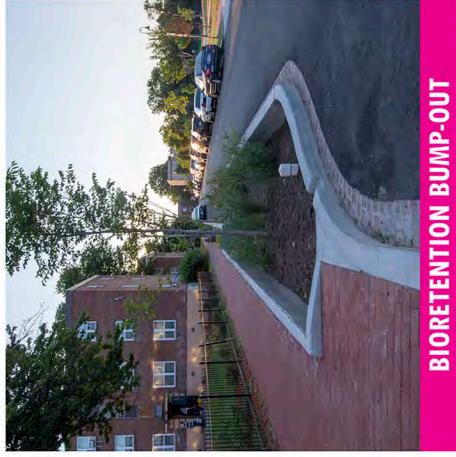


Figure 4
Conceptual Green Infrastructure Plan
The Northland Newton Development
Newton, MA

April 2019



Specific green infrastructure practices are described below and illustrated in Figure 4.

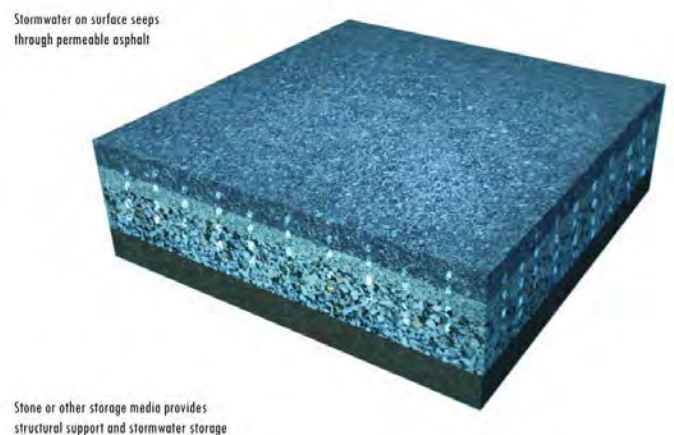
Bioretention basins, planters and curb bump-outs

Gutter flow, sidewalk runoff, and parking lot runoff will be diverted into bioretention basins, curb bump-outs, and planters distributed throughout the Site. While facility designs will be tailored to each location, each bioretention facility will feature an inlet directing runoff into a sediment forebay for pretreatment. After passing through the forebay, runoff will infiltrate through layers of mulch, bioretention media, and peastone into a reservoir layer of open-graded crushed stone. Once ponding reaches the desired ponding depth, an outlet or standpipe with beehive grate will drain each bioretention facility to the next downstream catch basin or manhole. Where conditions preclude infiltration, these facilities will be designed with a waterproof liner and perforated underdrain to fully drain the facility within 72 hours.



Permeable Pavement

The bike path, several on-street parking lanes, and other hardscape plaza areas will feature permeable pavement. Rain falling on the pavement or running onto it from adjacent surfaces will infiltrate through the pavement and choker stone into a reservoir layer of open-graded crushed stone. Where conditions preclude infiltration, these facilities will be designed with a sand filter layer (for phosphorus reduction), a waterproof liner, and a perforated underdrain to fully drain the facility within 72 hours.



Street Trees with Sand-Based Structural Soil

Sand-Based Structural Soil (SBSS) is a non-proprietary mix of stone and soil that supports the sidewalk while allowing tree roots to grow normally. A SBSS system, located adjacent to a tree well, will include sidewalk set on a minimum of six inches of open graded crushed stone over a minimum of 30 inches of SBSS. Where appropriate for each site, the tree wells and SBSS will be paired with permeable pavement or diversion of gutter flow into a depressed tree well.



Rainwater Harvesting and Infiltration Chambers.

Roof runoff from several buildings will be routed through cisterns with overflow piping to direct the water to prefabricated stormwater chambers below the Village Green. This system will serve two functions: 1) storage for rainwater harvesting, and 2) infiltration for groundwater recharge, water quality treatment, and peak rate reduction.

1.2.4 Regulatory Compliance

Through the integrated green infrastructure approach described above, the Project will meet stormwater management regulatory requirements while providing broad environmental and community benefits. Regulatory requirements applicable to the Project stormwater management plan include:

- Final TMDL for Nutrients in the Upper/Middle Charles River, CN 272.0 (May 2011);
- Massachusetts Stormwater Management Standards; and
- City of Newton Requirements for On-Site Drainage.

In addition, the open channel section of South Meadow Brook on-site is regulated by the Massachusetts Wetlands Protection Act and is under the jurisdiction of the Newton Conservation Commission. Proposed work within jurisdictional resource area buffers will be documented in a Notice of Intent that will be prepared and filed in due course.

At the conceptual design level, the Project is focused on designing for four primary regulatory objectives:

- Protecting receiving waterbodies;
- Peak Rate Attenuation;

- Groundwater Recharge; and
- Water Quality: total suspended solids and phosphorus reduction.

The Project proposes to reduce impervious cover from 86% to 83%, which does not account for converting paved areas to permeable pavers. When counting the approximately one acre of proposed permeable pavers the impervious cover is reduced to 80%. Under proposed conditions, new pervious spaces will infiltrate rainwater where it falls, thereby increasing groundwater recharge and reducing peak discharge rates compared to existing conditions. In addition, all runoff from the site will be collected in or passed through one or more BMPs, as described above, designed specifically to recharge groundwater and/or remove TSS and phosphorus to levels prescribed by DEP, prior to connecting into the municipal drainage system in Oak Street and or to South Meadow Brook. All proposed Project stormwater outlets and conveyances will be designed with rip-rap energy dissipators, geofabric protection, and/or other vegetative cover to prevent erosion or scour that would transport sediments to wetlands or receiving waters.

ATTACHMENT D

CITY OF NEWTON Department of Public Works ENGINEERING DIVISION

MEMORANDUM

To: Council Gregory Schwartz, Land Use Committee Chairman

From: John Daghlian, Associate City Engineer

Re: Special Permit – The Northland Newton Development

Date: May 2, 2019

CC: James McGonagle, Commissioner DPW
Amy Hamel, COS DPW
Lou Taverna, PE City Engineer
Ted Jerdee, Utilities Director
Barney Heath, Director of Planning
Jennifer Caira, Chief Planner
Nadia Khan, Committee Clerk
Jennifer Steel Sr. Environmental Planner
Michael Gelba, Sr. Planner
Neil Cronin, Sr. Planner

In reference to the above site, I have the following comments for a plan entitled:

The Northland Newton Development

Prepared By: VHB

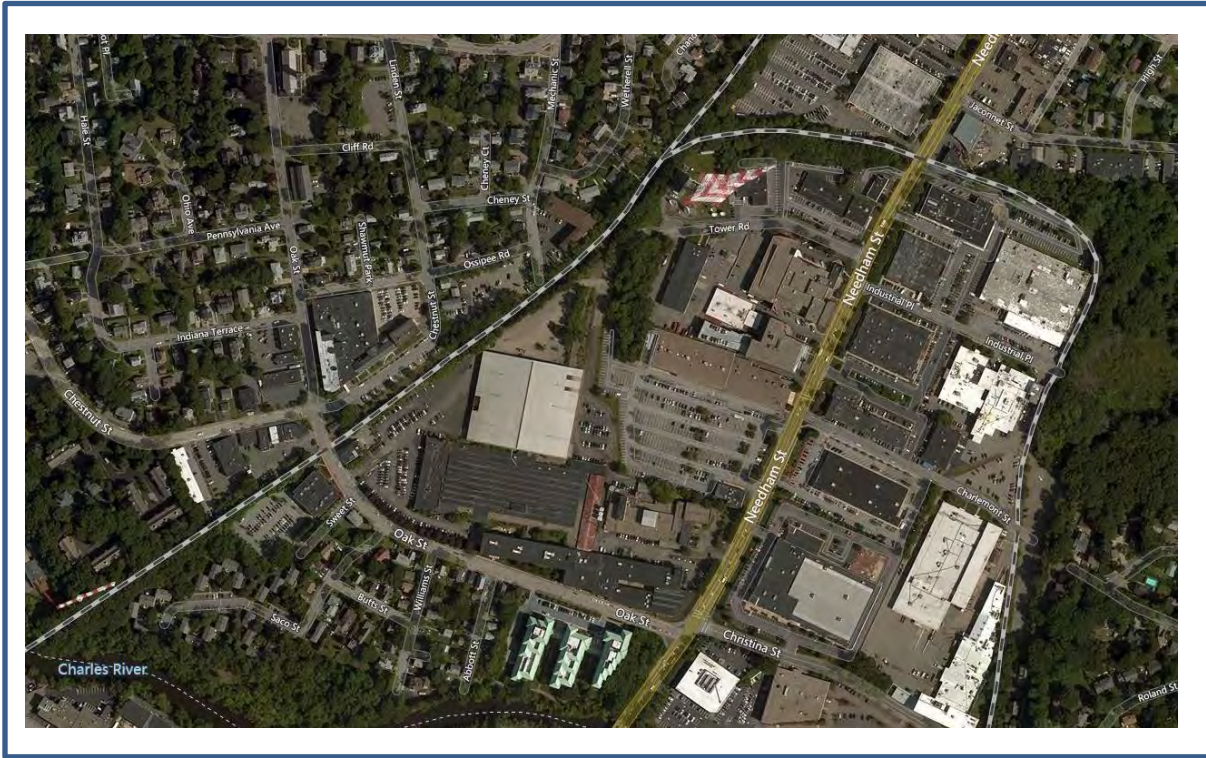
Dated: August 6, 2018

Revised: April 12, 2019

Executive Summary:

This application is for a proposed mixed-use development with multiple buildings of varying heights and functions; located on 22.6 acres having frontage on Needham Street, Oak Street, and Tower Road. The site is currently developed with industrial & commercial buildings and vast paved parking lots; the topography is relative flat and having very little green space. South Meadow Brook and wetland areas transverses the site in a meandering fashion starting at Tower Road and flows southerly towards the

Needham Street- Oak Street intersection. At various points the brook is daylighted and culverted.



If the special permit is approved an Approval Not Required (ANR) plan will be needed in accordance to Massachusetts General Laws Chapter 41 Section 81P requiring the two separate lots be combined into one lot.

Access to the site will be provided from two curb cuts off Needham Street (a MassDOT controlled road), one curb cut off Oak Street; and an extension of Tower Road. Internally a network of private ways will interconnect the site to provide pedestrian, bicycle and motor vehicle access. One feature the applicant is proposing is an 8-foot wide shared path for pedestrians & bicyclist from the Upper Falls Greenway into the development within a 20- foot wide emergency access road.

Regarding the Civil- Site and Utility Plans, they are a generic schematic without much detail or information.

Stormwater & Drainage:

A meeting was held with on April 26th with the applicant and their consultant engineering teams who were informed, and agreed to consider the entire 22.6-acre site as an “undeveloped” parcel for preconstruction conditions to design a stormwater collection and infiltration system capable of infiltrating and/or detaining the City’s 100-year storm event of 8.78-inches over a 24-hour period to the best practical extent. The design shows

catch basin, drain manholes, underground infiltration and on grade detention basins with overflows to South Meadow Brook, however no stormwater management report has been submitted which will eventually be required, as well as a National Pollution Discharge Elimination System (NPDES) & Stormwater Pollution Prevention Plan (SWPP) plans since the site is over one-acre. The report will have identified subcatchment areas, control points, on site soil evaluation, identifying soil type(s); groundwater and seasonal high groundwater elevations. The entire site must be evaluated and analyzed for *Pre & Post* Construction, stormwater runoff so that there is *no net increase in volume or rate of* runoff from the site to any Control point- boundary including the South Meadow Brook that discharges into the River Charles.

Since the property had various industrial activities, and rail road spur, it is expected that some contaminated soils will be encountered, these areas must be identified as it will limit the ability to infiltrate stormwater in these zones unless the contaminants are properly cleaned in accordance to Federal, State Environmental Protection Agency Regulation, and the Newton Board of Health.

Portions of the site near South Meadow Brook are within the City Flood Plain, the applicant will have to file a Notice of Intent (NOI) with the Conservation Commission to obtain an Order of Conditions that will dictate the limit of construction activities within or near the wetlands, flood zone and Riverfront setback zones of South Meadow Brook.

The design does indicate an overflow connection from a proposed above ground detention basin to and existing drain pipe within Oak Street, prior to making this connection, a hydraulic capacity study & structural integrity of this pipe must be evaluated. Pre & Post Closed Circuit Television Inspections will also be required.

An overflow connection is also proposed from the infiltration system behind building #9 to South Meadow Brook, the (hydraulic) capacity study & structural integrity of this pipe must be evaluated. Pre & Post Closed Circuit Television Inspections will be required.

Details of all underground infiltration systems and detention basins with control structures are needed for evaluation. CCTV inspection of the culverted portions of South Meadow Brook will be required prior to any construction activity as well as post construction, these inspections must be witnessed by the Engineering Division.

An Operations and Maintenance (O&M) plan for Stormwater Management Facilities needs to be drafted and submitted for review. Once approved the O&M must be adopted by applicant, incorporated into the deeds; and recorded at the Middlesex Registry of Deeds. A copy of the recording instrument shall be submitted to the Engineering Division.

It is imperative to note that the ownership, operation, and maintenance of the proposed drainage system and all appurtenances including but not limited to the infiltration systems, detention basins, drywells, catch basins, and pipes are the sole responsibility of the property owner(s).

It is anticipated that the overall stormwater quality and volume will be greatly improved as the existing site has no “treatment or infiltration” of stormwater.

Environmental:

1. Has a 21E investigation & report been performed on the site, if so copies of the report should be submitted the Newton Board of Health and the Engineering Division.
2. Are there any existing underground oil or fuel tanks, are they to be removed, if they have been evidence should be submitted to the Newton Fire Department, and Newton Board of Health.
3. Several monitoring wells are located throughout the site, what is the long-term requirement for maintaining these and what is being monitored at the well points?

Sanitary Sewer:

A collection system has been drawn; however, detail profile(s) are needed that will show rim & invert elevations, slope(s) of pipes, pipe material, manholes and bedding details.

On sheet *C-8.1* the manhole labeled ‘S-8’ within Oak Street must be relabeled as SMH #1 having station 0+00 as this is the point at which the remaining sewer pipe upstream are extended from, each successive upstream manhole shall be consecutively stationed and numbered. On sheet *C-8.2* ‘S-23’ within Needham Street shall be relabeled SMH #1 station 0+00 as this is the point at which the remaining sewer pipe upstream are extended from for this collection system. All sanitary sewer and water main shall be separated a minimum of 10-feet horizontally or the sanitary pipe shall be encased in class B concrete in areas where a ten-foot separation cannot be achieved.

1. The existing water & sewer services to the abandoned building(s) shall be cut and capped at the main and be completely removed from the main and the site then properly back filled. The Engineering Division must inspect this work; failure to having this work inspected may result in the delay of issuance of the Utility Connection Permit.
2. All new sewer service and/or structures shall be pressure tested or videotaped after final installation is complete. Method of final inspection shall be determined solely by the construction inspector from the City Engineering Division. All sewer manholes shall be vacuum tested in accordance to the City’s Construction Standards & Specifications. The sewer service will NOT be accepted until one of

the two methods stated above is completed. All testing MUST be witnessed by a representative of the Engineering Division. A Certificate of Occupancy will not be recommended until this test is completed and a written report is received by the City Engineer. ***This note must be added to the final approved plans.***

3. All sewer manholes shall be vacuum tested in accordance to the City's Construction Standards & Specifications. The sewer service will NOT be accepted until one of the two methods stated above is completed. All testing MUST be witnessed by a representative of the Engineering Division. A Certificate of Occupancy will not be recommended until this test is completed and a written report is received by the City Engineer.

The proposed sanitary sewer collection system shall be considered a private connection and not a City sewer main, it shall be privately owned and maintained.

Infiltration & Inflow:

The DPW will be assessing a fee or this development should it get approval. In accordance to the Policy for Sewer Infiltration & Inflow (I&I) mitigation for new connections to the municipal system the following formula will utilized. The per-gallon fee is established annually based on the program cost to remove I/I, mitigation fee is currently (\$19.77/gallon), at a 4:1 removal ratio.

Residential Component:

the flow rate is based in the total number of bedrooms and the flow rate of 110 gallons per day per bedroom.

$$\# \text{ bedrooms} \times 4 \times \$19.77/\text{gallon} \times 110 \text{ gallons/bedroom} = \$ \boxed{}$$

Commercial Component:

the flow rate is based on estimated generated flow for the proposed use set forth in Title 5.

$$\text{Flow rate (square feet/gallons)} \times 4 \times \$19.77/\text{gallon} \times \text{total sq. feet} = \$ \boxed{}$$

Emerging technologies are available to re-use waste water for grey water use and recommend that the developer performs an investigation into this technology. This may reduce the total flow into the City sewer system.

Domestic Water:

A generic system has been laid out with no information regarding the size of the proposed pipe network. Due to the number of buildings of varying heights and residential demand, a hydraulic model (capacity and demand) analysis will be required to ensure proper volume and pressure will be provided for domestic demand and fire protection. Depending upon hydraulic demand, some buildings may require booster pumps to maintain proper working pressure for fire suppression systems.

For intersections with three pipes, triple gate valves will be required for each branch of the intersection.

The proposed loop system from Charlemont Street thru the site and out to Needham Street is not acceptable, the City Engineer & Director of Utilities Division will require that the loop begin at Tower Road and through the site then connect to Needham Street.

Fire flow testing is required for the proposed fire suppression system. The applicant must coordinate this test with both the Newton Fire Department and the Utilities Division; representatives of each department shall witness the testing, test results shall be submitted in a write report to the Utilities & Engineering Division and the Fire Department. Hydraulic calculation shall be submitted to the Newton Fire Department for approval.

All water connections shall be chlorinated & pressure tested in accordance to AWWA and the City of Newton Construction Standards and Specifications prior to opening the connection to existing pipes.

Approval of the final configuration of the water service(s) shall be determined by the City Engineer and the Utilities Division.

Once the water main is installed, and successfully passes both pressure testing and chlorination testing as required by the DPW, the City will accept the ownership and maintenance of the water main within the development, additionally the property owner shall grant an easement to the City to allow access and future maintenance of the water main.

Electric & Telecommunications:

The development will provide underground conduit for power & telecommunications for the entire site, provisions need to be made for the Newton Fire Department alarm system, this will require separate conduit system and easements for the Fire Department to access the alarm system.

DPW recommends that all overhead electric & telecommunication wires and utility pole network along the Needham Street & Oak Street frontage of the property be converted to an underground distribution system, this will provide an attractive and safe system.

Construction Management:

1. A project of this scale and magnitude will obviously have to be phased. The applicant will have to provide phasing diagrams to address the various components of the overall development of the site it shall include at a minimum installation time line with duration for the installation of all underground utilities, construction of access roads, construction of each building and associated services to final completion.
2. A construction management plan is needed for this project. At a minimum, it must address the following: staging site for construction equipment, construction materials, parking of construction worker's vehicles, phasing of the project with anticipated completion dates and milestones, safety precautions, emergency contact personnel of contractor. It shall also address any anticipated dewatering during construction, site safety & stability, and impact to abutting properties.
3. Stabilized driveway entrances are needed during construction which will provide a tire wash and mud removal to ensure City streets are kept clean.

General:

1. All trench excavation contractors shall comply with Massachusetts General Laws Chapter 82A, Trench Excavation Safety Requirements, to protect the general public from unauthorized access to unattended trenches. Trench Excavation Permit required. This applies to all trenches on public and private property. *This note shall be incorporated onto the plans*
2. All tree removal shall comply with the City's Tree Ordinance.
3. All construction located on Needham Street will require Permits from MassDOT District 6.
4. The contractor is responsible for contacting the Engineering Division and scheduling an appointment 48 hours prior to the date when the utilities will be made available for an inspection of water services, sewer service, and drainage system installation. The utility in question shall be fully exposed for the inspector to view; backfilling shall only take place when the City's Inspector has given their approval. *This note should be incorporated onto the plans*

5. The applicant will have to apply for Street Opening, Sidewalk Crossing, and Utilities Connecting permits with the Department of Public Works prior to any construction. *This note must be incorporated onto the site plan.*
6. The applicant will have to apply for a Building Permits with the Department of Inspectional Service prior to any construction.
7. Prior to Occupancy Permit being issued, an As-Built Plan shall be submitted to the Engineering Division in both digital format and in hard copy. The plan should show all utilities and final grades, any easements and final grading, improvements and limits of restoration work. The plan shall also include profiles of the various new utilities, indicating rim & invert elevations, slopes of pipes, pipe material, and swing ties from permanent building corners. ***This note must be incorporated onto the final contract plans.***
8. All site work including trench restoration must be completed before a Certificate of Occupancy is issued. *This note must be incorporated onto the site plan.*
9. A project of this scale will obviously have different timeline for requests of Occupancy, ISD and the Planning Department will need to work out language to address this before Building Permits are issued.
10. If any changes from the original approved design plan that are required due to unforeseen site conditions, the engineer of record shall submit a revised design & stamped and submitted for review and approval prior to continuing construction.

Note:

If the plans are updated it is the responsibility of the Applicant to provide all City Departments [Conservation Commission, ISD, and Engineering] involved in the permitting and approval process with complete and consistent plans.

If you have any questions or concerns please feel free to contact me @ 617-796-1023.