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PUBLIC HEARING/WORKING SESSION MEMORANDUM

DATE: February 28, 2020

MEETING DATE: March 5, 2020

TO: Land Use Committee of the City Council

FROM: Barney Heath, Director of Planning and Development
Jennifer Caira, Deputy Director of Planning and Development
Neil Cronin, Chief Planner for Current Planning

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 #26-20 & #27-20 **355 and 399 Grove Street**

Petition #26-20 for a change of zone to Mixed Use 3/Transit Oriented District for portions of land located at 355 Grove Street (currently zoned BU-2) and 399 Grove Street (currently zoned BU-5), also identified as Section 42, Block 11, Lots 3 and 4

Petition #27-20 for a SPECIAL PERMIT/SITE PLAN APPROVAL construct a mixed use, transit-oriented development of residential units, office, retail, personal services, restaurant, hotel, and related commercial uses not to exceed 1,025,000 square feet of gross floor area, with residential uses comprising not less than 60% of the total gross floor area with a residential density of not less than 800 square feet per unit with not less than 560 units nor more than 620 units with special permit relief and/or waivers as follows: a development of more than 20,000 square feet of gross floor area, building height of up to 170 feet, buildings up to 11 stories, Floor Area Ratio of up to 2.5, beneficial open space of not less than 15%, increase of height of certain buildings with the Grove Street Area Corridor (to the extent necessary), and reduction in setback from Grove Street for certain buildings within the Grove Street Corridor Area (to the extent necessary); waiver of the sustainable development design standards and placement of a retaining wall greater than 4 feet in height within a setback; for-profit educational use, retail sales of over 5,000 square feet, restaurant with more than 50 seats, personal service use of over 5,000 square feet, place of amusement, health club on ground floor, animal services, hotel, bank

up to and over 5,000 square feet, theatre/hall, laboratory/research facility, parking facility, accessory, multi-level, parking facility, non-accessory, single level; reduction of the residential parking requirement to 1.25 stalls per unit, reduction of the overall parking requirement by 1/3, and waiver of parking stalls not to exceed 685 stall; and waivers to the requirements of parking facilities containing more than five stalls; waiver of the number, size, type, location, and design requirements, all at 355 and 399 GROVE STREET on land known as Section 42, Block 11, Lots 3, 4 and 4A, containing approximately 13.05 acres of land in districts zoned Mixed Use 3 Transit Oriented (MU3), BU2 (a portion to be rezoned to MU3), BU5 (to be rezoned to MU3). Ref: Sec. 4.2.2.B, 4.2.3, 4.2.4, 4.2.4.A.4, 4.2.4.B.3, 4.2.4.G.2, 4.4.1, 5.1.4, 5.1.4.A, 5.1.4.C, 5.1.8.B.1, 5.1.8.B.2, 5.1.8.B.4, 5.1.8.B.6, 5.1.8.D.1, 5.1.8.D.2, 5.1.9.B, 5.1.10.A.1, 5.1.10.B.3, 5.1.10.B.5, 5.1.12, 5.1.12.B.4, 5.1.13, 5.2, 5.2.13, 5.4.2.B, 5.12, 6.4.29.C.5, 7.3.3, 7.3.5, 7.4 of the City of Newton Revised Zoning Ordinance, 2017. Additionally, as to infiltration and inflow mitigation, an abatement of the infiltration/inflow mitigation fee pursuant to Section 29-170 of the City of Newton Revised Zoning Ordinance, 2017.

The Land Use Committee (the "Committee") opened the public hearing on these petitions on January 25, 2020. A tentative schedule for future Committee public hearings is included as an attachment to this report (**Attachment A)**. This memorandum is focused the engineering, stormwater, and sustainability aspects of the so-called "Riverside Development" proposed for the subject parcels.

Background

The petitioners are requesting a change of zone for a portion of 355 Grove Street, currently the Massachusetts Bay Transportation Authority (the "MBTA") rail yard, and all of 399 Grove Street, currently the Hotel Indigo, to the Mixed Use 3/Transit Oriented Zone. The petitioners are also seeking special permits to allow a ten-building development on 13 acres. The petition includes 617 dwelling units 250,887 square feet of office space, of which 7,500 square feet will be dedicated to the MBTA, 150 hotel rooms, and 43,242 square feet of retail space (the "Project").

Overview

Any redevelopment of the site will require stormwater collection improvements to be consistent with the Massachusetts Department of Environmental Protection requirements because the site discharges into the Charles River, but also due to the standards of the Newton Zoning Ordinance (the "Ordinance). Additionally, due to the amount of square footage, the Project is subject to the Sustainable Development Design provisions of the Ordinance. The intent of these provisions is to "reduce the use of energy, water, and other natural resources in Newton's building stock and minimize adverse environmental impacts from buildings and development in both construction and long-term operation". The Ordinance states that a project subject to these provisions must be designed to meet the standards of either the Leadership in Energy and Environmental Design (LEED) Green Building Rating Program, the Passive House Green Building Rating Program ("Passive House"), or the Enterprise Green Communities Green Building Rating Systems.

The petitioners engaged Vanasse Hangen Brustlin, Inc. ("VHB") to develop the engineering, and stormwater aspects of the Project and engaged New Ecology, Inc ("New Ecology") to develop a sustainability plan. The Planning Department retained Horsley Witten Group ("Horsley Witten") and Utile, Inc, ("Utile") to peer review VHB's and New Ecology's analysis. The Planning Department met with Horsley Witten, Utile, the petitioners, and their respective consultants and initial reviews have been submitted to VHB and to New Ecology. Horsley Witten and Utile's comments are included as an

attachment to this memorandum **(Attachment B).** New Ecology's revised sustainability plans is also attached **(Attachment C)** and VHB's responses to Horsley Witten's stormwater comments are also included **(Attachment D)**. In their review of the sustainability plan, Horsley Witten and Utile also reviewed the sustainability narrative for its alignment with the Riverside Vision (the "Vision"), the Newton Leads 2040 Housing Strategy, the *Comprehensive Plan*, the Climate Action Plan, and Green Newton Green Building Principles.

The Riverside Vision Plan

The Planning Department, with the help of residents and stakeholders, participated in a community engagement process that resulted in the Vision. The Vision sets out principles for the future of the site and it is intended to be used as a guide to assist decision-making. The Vision identified several principles for a development at the site within six categories: Newton Community Connections (C), Housing for Newton (H), Model for Sustainability (S), Quality Design (D), Robust Newton Economy (E), and Transportation Hub (T).

Model for Sustainability (S)

Vision: *The Riverside site will exemplify sustainable development standards, improve local climate resiliency, and enhance ecological health and connections to nature.*

S1: Provide options for residents to live low-carbon lifestyles.

The Vision calls for a development at Riverside to provide amenities and services to attract residents who may rely less on cars and more on public transportation and other alternative modes. The petitioners are providing approximately 43,242 square feet of ground floor commercial space that will contribute to the pedestrian environment but will also provide residents with local amenities to reduce unnecessary trips off site. Such proposed amenities include a market, restaurants, and other retail and service uses that will meet the daily needs of residents. The petitioners are also providing bicycle parking in every residential building and will be constructing protected bicycle lanes on either side of Grove Street as well as a shared-use path on the northern side of Recreation Road; this shared-use path will also extend to Newton Lower Falls over the interstate 95 overpass. The petitioners are also incentivizing residents to forgo cars by separating the cost of a parking space from the cost of rent and will provide residents with a transit reimbursement for up to $200 per dwelling unit, per month. Lastly, as discussed below, the petitioners have committed to certain trail enhancements that will increase connectivity to the surrounding network.

S2: Prioritize energy-efficient building principles

The petitioners submitted a sustainability master plan created by New Ecology which states the Project will "minimize building operating energy by methods that include Passive House design principles, minimize embodied carbon, incorporating all electric mechanical systems and minimize the carbon footprint for transportation". Specifically, the Project will

- Utilize Passive House design standards for the residential portions for Buildings 3 through 10, with a commitment to certifying Buildings 7 and 8 as Passive House;
- Design Buildings 1 and 2 (office and hotel Buildings, respectively) to LEED Gold Certification; the petitioners will explore certification;

- Feature all electric sourced heating and cooling systems (heat pumps, variable refrigerant flow systems, and similar systems in addition to electric hot water generation) for the residential portion of Buildings 3 through 10. The petitioners will also investigate electric heating for Buildings 1 and 2;
- Conduct an embodied carbon analysis for all building materials; and
- Provide solar ready roof design throughout the Project.

The Ordinance requires the Project to either: be designed to meet a minimum of LEED "Gold", certification is not required; or to be designed to achieve the Passive House standard, certification is required. The petitioners have requested a waiver from the Sustainable Design provisions and the City Council may grant such waiver if "an applicant can demonstrate that the same or better environmental outcomes can be achieved through a different approach or product design. An exception may also be granted where literal compliance is impracticable due to the nature of the use or that such exception(s) would be in the public interest".

The petitioners will design all residential portions of Buildings 3 through 10 to passive house standards, but only the residential portions of Buildings 7 and 8 will be certified to the Passive House standard. This is due in part because the architecture of the buildings has not been developed and it is difficult to guarantee certification at this stage. There is also an interplay between the aesthetics of a building and its sustainability goals given that some of the buildings have a southern exposure and to achieve passive house certification, shades or other elements may have to be installed. These elements will then need to be accounted for in the Design Guidelines.

The petitioners are committing to designing the Project to LEED Neighborhood Development ("LEED ND") standards; however, they have not committed to achieving LEED ND certification. The Planning Department suggests that the petitioners provide their initial checklist(s) for review by Horsley Witten and Utile. Lastly, City staff and Horsley Witten noted that the roof of the garage should be a candidate for solar installation due to its size. The petitioners stated that they only control a portion of this space as the remaining garage space is reserved to the MBTA. The Planning Department suggests that the MTBA consider allowing solar installation(s) on their portion of the garage to make efficient use of the entire roof.

S3: Protect and improve the Charles River through site design

The Vision states that due to the site's proximity to the Charles River, a development has the potential to incorporate green infrastructure to restore the area's ecology and to mitigate stormwater runoff into the Charles River. The petitioners are proposing to construct three subsurface infiltration chambers that will collect all stormwater on site. During more severe rainstorms, the chambers will overflow into an existing 60" culvert and discharge into the Charles River. Horsley Witten suggests that the petitioners perform additional soil testing in the exact locations of two proposed infiltration chambers prior to installation but notes that the assumptions for these two chambers are reasonable. Horsley Witten notes that the third chamber, within the garage of Building 9, requires certain documentation from the petitioners to ensure a proper infiltration rate is achieved. Additionally, Horsley Witten suggests that the petitioners consider opportunities to implement green infrastructure, such as:

- Bioretention basins, planters, and curb bump-outs;

- Permeable pavement;
- Cisterns to enable rainwater harvesting; and
- Landscaping with drought tolerant species.

In response to Horsley Witten's comments, VHB stated that these types of infrastructure will be incorporated into the final plans, where conditions allow. The last page of VHB's response includes a conceptual plan indicating where each type of infrastructure will be installed. The Planning Department suggests that the revised plans include the type and location of this infrastructure.

As discussed in their response to Horsley Witten, VHB noted that the site has been extensively mined, and is occupied by large parking areas and the MBTA's rail yard. As such, the site has been subject to hazardous materials with three reported releases to the Massachusetts Department of Environmental Protection. The petitioners engaged Sanborn, Head & Associates, Inc. to review the site's history and they stated that the Project construction will be managed in accordance with the Massachusetts Contingency Plan using a detailed construction Release Abatement Measure (the "RAM") Plan. Horsley Witten reviewed Sanborn Head's memorandum and agrees with the management of the proposed construction activities under the RAM Plan **(Attachment E)**. The Planning Department suggests that these measures be included in the revised construction management plan.

S4: Improve Newton's Climate Resiliency

The Vision notes that although the site is not currently at risk for flooding, there is some key infrastructure at risk of flooding during extreme weather events. As discussed above, the petitioners are proposing to increase the amount of stormwater infiltration with three subsurface chambers and green infrastructure. The Vision also states that the site is currently a "hot spot" which is defined as an area that generates high land temperatures due to the amount of asphalt and paved areas. Such an environment can be a risky environment for young children and seniors during the summer months.

The petitioners are proposing to create approximately 2.29 acres of Beneficial Open Space, of which 1.49 acres will be open to the public. These spaces will consist of hardscaped areas improved with impermeable pavers, and softscape areas such as lawns. The petitioners are also proposing street planting zones with structural soils on both side of all streets within the Project; these zones range in width from five feet to 14 feet. These planting zones will also be installed along the eastern side of Grove Street and the northern side of Recreation Road. Lastly, all roofs will be solar ready and will be white or of light solar reflectance index to reduce the heat island effect.

S5: Reinforce connections to nature

The Vision calls for a development at Riverside to connect to and celebrate the nearby natural areas such as the Charles River and the trail network. The petitioners are proposing to design and to construct a shared use path along the northern side of Recreation Road which will provide access to Riverside Park. However, there are additional resources in the area and the petitioners outlined their commitments to these trail connections at the January 28, 2020 meeting of the Committee, as follows:

- Design and construct an accessible ramp from the Connector Road to the north end of the Two Bridges. If feasible, the petitioner will design and construct an at-grade shared use path from the north end of the Two Bridges directly to Riverside Station.
- Fund the design of the Two Bridges Trail with south side connections to the Newton Lower Falls

Street grid and the Leo J. Martin Golf/Cross Country Ski Park.

- Design and construct the Massachusetts Water Resource Authority (the "MWRA") Link shared-use trail/Park and pedal installation between Riverside Park and the MWRA site and the soon to be replaced Stoller/Recreation Road "Boathouse" Bridge.
- Design and construct the Riverside Depot Tunnel and the approaches to the Pony Truss Trail and to Charles Street.

The Planning Department is supportive of these commitments as they will help reinforce the site's natural connections to the Charles River and beyond. However, the Planning Departments suggests that the petitioners provide more information regarding these connections such as draft scopes of work, estimated costs, timeliness, and governing agencies. A wayfinding program will also be key to directing residents, employees, and visitors to these areas.

Sewer System Infiltration and Inflow Mitigation

The City Council adopted a sewer Infiltration and Inflow("I&I) mitigation ordinance "to decrease the burden on the City's capacity-limited and overtaxed public sewer system by ensuring that infiltration and inflow is removed in sufficient amounts to accommodate the increased demand on the public sewer system resulting from new developments". City Engineer, Lou Taverna, calculated the I&I mitigation payment to be $7,460,261 based on the number of bedrooms, the use of low flow fixtures, and the existing flow from the hotel use at 399 Grove Street. The petitioners have requested a waiver from the I&I mitigation ordinance; the Engineering Division will review this request based upon the condition of the sewer system in the area and will inform the Committee of its findings.

ATTACHMENTS

Attachment A: Tentative Schedule as of February 28, 2020
Attachment B: Peer Review Memorandum, dated February 3, 2020
Attachment C: Sustainability Master Plan, dated February 25, 2020
Attachment D: VHB Memorandum, dated February 25, 2020
Attachment E: Horsley Witten Memorandum, dated February 24, 2020

ATTACHMENT A

TENTATIVE LAND USE COMMITTEE SCHEDULE

As of February 28, 2020

#26-20 Request to Rezone and #27-20 Special Permit

355 AND 399 Grove Street "RIVERSIDE"

Land Use Committee Date	Topic	Description
3/5/2020	Civil Engineering and Sustainability	Stormwater, Utilities, and Efforts to conserve natural resources
3/24/2020	Design Guidelines and Project Review	Guidelines that will regulate architecture of individual buildings as well as signage and Review of Project to date
Tentative 4/7/2020	Transportation	Review of Traffic Impacts, Shared Parking Analysis, and Transportation Demand Management Plan

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MEMORANDUM

To: **City of Newton Planning & Development**

From: **Jonathan Ford, PE & Janet Bernardo, PE (Horsley Witten Group)**
Cyrus Dahmubed (Utile)

Date: **February 3, 2020**

Re: **Riverside Station, Newton, Massachusetts**
Sustainability Review Summary

A. SUMMARY

The intent of this memo is to provide a preliminary review of the Riverside Sustainability Strategic Plan and Drainage Summary. The following documents were the focus of this review:

- Site Plans & Landscape Plans, Riverside Station, Grove Street, Newton, Massachusetts (23/2 sheets, prepared by VHB, dated December 9, 2019)
- Architectural Plans, Riverside Master Plan, Newton, Massachusetts (28 sheets, prepared by VHB & David M Schwarz Architects, dated December 3, 2019)
- Design Guidelines and Architectural Controls, Riverside Station Redevelopment (92 sheets, prepared by Speck & Associates & Stantec, dated January 2020)
- Sustainability Strategic Plan, Riverside Station Mixed-Use Redevelopment, Newton, Massachusetts (9 pages, prepared by New Ecology, dated September 26, 2019)
- Stormwater Report, Riverside Station, Newton, Massachusetts (247 pages, prepared by VHB, dated December 2019)

The Petitioner's Sustainability Strategic Plan outlines broad sustainability and stormwater management goals for the project, and provides a preliminary framework for incorporation of sustainability elements into the project design, construction, and long-term operation and maintenance of the site.

The following City documents were utilized as the standard of review for sustainability elements:

- Newton Leads 2040 Housing Strategy;
- Newton Comprehensive Plan, last revised November 7, 2011;
- Climate Action Plan, dated November 15, 2019;
- Green Newton Green Building Principles; and
- Zoning Ordinance Sections 5.12 (Sustainable Design), 7.3.3.C.5, and 7.4.5.B.8.

B. GENERAL COMMENTS

The current project design and information submitted appears to be generally consistent with best sustainable development practices at multiple scales of community building. As stated in the Petitioner's Sustainability Strategic Plan, the project pledges the following commitments:

- Passive House design for the residential portions of Buildings 4, 5, 6, 7, 8, and 10
- Electrification for the residential portions of buildings 4, 5, 6, 7, 8, and 10
- Embodied Carbon analysis guiding material selection
- Solar ready design on all building roofs and parking garages
- Rainwater reuse for irrigation
- Electric vehicle charging stations for 10% of the project parking spaces (noting EV stations for MBTA parking spaces is to be determined by the MBTA)

While the project's broad vision and strategies appear to be generally consistent with the City's goals, more information is required for review. More information will continue to be required as the project moves forward to verify that the detailed design elements and construction methods are consistent with the stated commitments, and that the preliminary approaches are implementable, measurable, and enforceable over time. Summaries are provided below and on the following pages, with numbered peer review comments by HW and Utile in **bold type**. The sustainability goals for the project are organized and presented using a holistic view of sustainability, addressing equity, environment, and economy.

C. EQUITY/PEOPLE – "ENHANCE THE LIVES OF PEOPLE"

The project proposes a vibrant, walkable place with a diversity of uses, along with promotion of transportation alternatives and provision of appropriate public open spaces and trail connections to offsite open space resources. The submitted Sustainability Strategic Plan does not specifically address housing, public health, active lifestyles, social connectedness, or other equity/people impacts of the proposed project.

The project's location and commitment to multi-modal transportation connectivity (transit, walking, and bicycling) is consistent with the City's objectives, including emphasis of site redevelopment within the Comprehensive Plan. The basic commitments provided by the Petitioner summarized above and included in the plan are encouraged. Additional clarification and more detailed design development is required to confirm the following:

1. **As the design proceeds, more detailed design of public realm elements is needed to ensure streetscapes and spaces are properly detailed, accessible to all, and connected for users of all abilities – within the site and to adjacent neighborhoods and open space resources.**
2. **Proposed commitment to the design and implementation of offsite trail connections to the west and north must be reviewed in detail to ensure proper design, funding allocations, schedule commitments, etc.**

3. **The Petitioner proposes 17.5% of the number of dwelling units will be designated affordable housing units. 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.**

D. ENVIRONMENT/PLANET – "PROTECT THE PLANET'S RESOURCES"

LEED for Neighborhood Development

At the City/neighborhood scale, the proposed redevelopment of a currently highly impervious site connected to multiple public transportation options is a very positive sustainable growth strategy both environmentally and economically. LEED Neighborhood Development (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 five categories listed below. The Petitioner states a commitment to "follow LEED ND design strategies," however does not provide a commitment to certification.

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

Projects are certified at one of four levels listed below, and at Plan (no more than 75% of the project's total floor area constructed) and Built stages of development:

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

4. **The LEED ND rating system is a useful framework for evaluation of the Riverside Station sustainability goals. Will LEED ND certification be pursued? It is recommended that the Petitioner provide more information regarding LEED ND design strategies for review. Many LEED ND credit categories are "preset" based upon the 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.**

Zoning Section 5.12

Zoning Section 5.12 includes sustainable design requirements for "green building projects," including building design standards, certification requirements, and review procedures. Sustainable development requirements apply to any proposed development in any zoning

district that includes the construction or substantial reconstruction of one or more buildings totaling 20,000 sf or more of gross floor area that also requires issuance of a special permit under any provision of the Zoning Ordinance; therefore, the requirements apply to the proposed Riverside Station redevelopment.

5. **Design to meet the standards of an authorized green building rating system is required. The Petitioner's Sustainability Strategic Plan states a commitment to Passive House standards for residential portions of Buildings 4, 5, 6, 7, 8, and 10, with registration for certification by the Passive House Institute. Passive House certification meets Section 5.12 requirements and this commitment is strongly supported. Clarification of the Passive House commitment will be required as the project design has changed, for example noting the change in use of Building 3 to residential since the issuing of the Sustainability Strategic Plan.**
6. **Review procedures per Section 5.12.6 require submittal of additional Passive House information for review at the Special Permit application stage, including rating system checklists, narratives, energy narratives, credentials, and affidavits.**
7. **The Sustainability Strategic Plan states a commitment to "registration for certification" for Passive House. Note that Section 5.12.6 includes specific requirements at the Special Permit, Building Permit, and Certificate of Occupancy stages to ensure that the project has been designed and built to achieve the requirements of Section 5.12.**
8. **Clarification is required regarding a commitment to green building principles and certification for non-residential buildings and portions of buildings. Zoning Section 5.12.4 requires meeting the standards of an authorized rating system. Minimum LEED "Silver" level standard appears to apply to non-residential buildings and portions of buildings. Projects of greater than 50,000 sf of gross floor area must be designed to meet a minimum "Gold" level standard, which appears to apply to Building 1 and Building 2.**
9. **In addition to high performing thermal envelopes, continuous insulation, airtight construction, low air change rates, balanced mechanical ventilation systems, and high performance windows and doors, the Petitioner is encouraged to implement simple passive strategies such as tuning the mass of buildings for solar and wind orientation, idealizing apertures for daylighting without overheating, and promoting an approach to sustainable design throughout the projects that makes these efforts legible and consumable to occupants.**
10. **Design Guidelines should encourage and prioritize the strategic refinement of building forms to ensure ample daylight in open and landscaped spaces and the comfort of occupying these spaces.**
11. **The window-wall ratios of all buildings in the project should be tuned for their orientation, to achieve idealized levels of daylighting balanced with efforts to minimize overheating through solar gain.**
12. **Implementation of shading devices - both permanent, static externalized brise-soleil, boxed windows, and other such strategies as well as internalized shades controllable/deployable by occupants - should be carefully studied for optimization on each facade of each building as part of their design process.**
13. **We strongly support the petitioner's commitment to conducting embodied carbon analyses as part of the design process, and encourage the selection of materials,**

products, and wall assemblies that minimize the overall embodied carbon and maximize high thermal performance throughout the project.

14. **We suggest the petitioner investigate the potential of earth coupled systems particularly for Building 3, where three floors of the structure are against backfill potentially lending this building to unique sustainability opportunities.**
15. **The Petitioner has pledged EV stations for 10% of the project parking spaces, partially meeting the requirement of Section 5.12.4.B. Clarification is required regarding provision of an additional 10% of parking spaces to be EV charging station ready.**
16. **The Petitioner's plan to train and educate building operations staff and residents on the project's sustainable features and how to operate and maintain them is strongly supported. It is recommended that the Petitioner commit to conducting post-occupancy evaluations to ensure that buildings are performing to the standards to which they were designed and operating as efficiently as possible.**

Zoning Section 7.3.3.C.5

In cases involving construction of building or structures or additions to existing buildings or structures, if those proposed buildings or structures or additions contain individually or in the aggregate 20,000 or more square feet in gross floor area, the site planning, building design, construction, maintenance or long-term operation of the premises will contribute significantly to the efficient use and conservation of natural resources and energy.

Zoning Section 7.4.5.B.8

Significant contribution to the efficient use and conservation of natural resources and energy for projects proposing buildings, structures, or additions to existing buildings or structures, if those proposed buildings, structures, or additions contain individually or in the aggregate 20,000 or more square feet in gross floor area.

17. **The building rating and EV charging requirements of Zoning Section 7.3.3.C.5 and 7.4.5.B.8 are specified in more detail in Section 5.12. More information is required to review neighborhood scale impacts as well as construction, maintenance, and long-term operation to verify contributions to efficient use and conservation of natural resources and energy.**

Climate Action Plan

Newton's Climate Action Plan organizes strategies and actions into six areas (A-F below), with the goal of a carbon-neutral Newton by 2050.

A. Implementing Newton's Climate Action Plan
B. Promoting Clean and Renewable Energy
    - New buildings with a certain roof area are encouraged to be solar PV where technically feasible.
        18. **The Sustainability Strategic Plan states a commitment to solar ready design for building roofs, without a commitment to implementation of solar PV. More information is required regarding the feasibility of solar**

PV implementation, and we suggest investigation of ground source as well.

C. Greening Newton's Transportation and Streetscapes
- Increase biking, walking, telecommuting, shared rides, shuttles and public transit while reducing single-occupancy vehicle trips. (safe ped/bike, reduced parking)
- EV charging stations. (5% of parking, additional 10% EV ready)
- Green infrastructure and complete street projects, tree planting

19. **The Sustainability Strategic Plan Transportation section notes that it is expected the project will exhibit a substantial reduction in demand for automobile use. The project's density, mix of uses, and proximity to mass transit alternatives provide great potential in this regard. The proposed urban design and open space framework generally supports safe and comfortable bicycling and walking within the site and connecting to adjacent neighborhoods and open space resources. More information is required to verify that the detailed design elements will be properly implemented to fully realize the potential to reduce single-occupancy vehicle trips.**
20. **Clarification is required regarding compliance with EV charging station requirements per Zoning Section 5.12 requirements.**
21. **It is recommended that more information be provided regarding long-term efforts to support local-non profits, for-profits, and advisory groups in education, events, and literature dissemination regarding EVs, biking, walking, public transit, and shared transportation.**
22. **Transportation Demand Management (TDM) and parking reductions will be studied as part of transportation peer review.**
23. **The drainage peer review report provides more information regarding green infrastructure and tree planting recommendations.**
24. **The Petitioner notes green roofs "may" be planted in residential areas where roofs are visible to residential tenants. Further specificity is encouraged regarding commitment to green roof locations, design, and impact.**

D. Improving New Construction and Major Renovations
- "Maximize energy efficiency, maximize use of renewable energy including thermal, and use electricity for heating and cooling. Passive House and/or net-zero new construction
- Analyze costs, benefits, and GHG impacts of energy efficiency

25. **The Sustainability Strategic Plan provides a commitment to Passive House for residential portions of the project. More information is required per Zoning Section 5.12 to analyze cost, benefits, and GHG impacts of energy efficiency for all buildings.**

E. Improving Existing Buildings
F. Reducing Emissions associated with Consumption and Disposal

Hazard Mitigation Plan

Hazard Mitigation Plan Goal #7 “Ensure that future development meets federal, state, and local standards for preventing and reducing the impacts of natural hazards” and #9 “Consider the potential impacts of future climate change and incorporate climate sustainability and resiliency in hazard mitigation planning” are particularly relevant to the proposed Riverside redevelopment.

26. **The project is not located within flood zones or other specific high hazard areas.**
27. **The project is a redevelopment of an existing highly disturbed area, consistent with Hazard Mitigation Plan goals to maintain natural resources.**
28. **The following identified critical infrastructure sites are located within or next to the proposed redevelopment. The project does not appear to directly impact the three sites below.**
    a. **#35: Riverside garage**
    b. **#197: Green Line / Grove Street bridge**
    c. **#304: Riverside Station**
29. **Infrastructure vulnerabilities include the existing 48-inch MWRA main proposed to be relocated and the existing 60-inch drainage culvert on site. The 60-inch culvert conveys Runaway Brook and discharges into the Charles River. As noted in the drainage peer review memorandum, the culvert should be videoed prior to disturbance and at the end of construction to ensure it is structurally sound and has ample capacity.**
30. **The Hazard Mitigation Plan goal to improve the Charles River through design is partially addressed with the subsurface infiltration systems proposed to provide recharge and water quality treatment meeting State and City requirements. Investigation of other opportunities to provide green infrastructure consistent with the City’s Complete Streets Policy and as noted in the drainage peer review memorandum is encouraged.**
31. **The Hazard Mitigation Plan recommends incorporating more stringent stormwater standards and future precipitation projections. The Petitioner’s drainage report summarizes rainfall depths used in the drainage analysis based on NOAA Atlas 14 precipitation depths. HW has no objection to the depths utilized.**
32. **Undergrounding utilities will be required to provide resilience to wind and storms. More information will be required as part of future design development.**
33. **The site has minimal existing tree cover and is currently a “hot spot” with extreme temperatures as defined by the City Climate Action Plan (Appendix L, page 118). Significant opportunity exists to utilize green infrastructure and resilient building design to reduce heat island effect and extreme heat risks. More detailed drainage and landscape design information will be required as design development continues.**

E. ECONOMY – “GENERATE LONG-TERM PROSPERITY”

Economic impact and affordable housing review will be by others.

NEW ECOLOGY
Community-Based Sustainable Development

Sustainability Strategic Plan

Riverside Station Mixed-Use Redevelopment

Newton, MA
February 25, 2020

NEW ECOLOGY
Community-Based Sustainable Development

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PROJECT SUSTAINABILITY GOALS

The Riverside Station Mixed-Use Redevelopment project (the "Riverside Development") presents a unique and generational opportunity to transform the sprawling automobile parking lot located at the Riverside MBTA multi-modal transit terminal. The proposed project will create a compact, walkable, and transit-oriented development that will create a new energy-efficient neighborhood. It will also substantially improve and reduce the impacts to the surrounding environment created by the existing parking facility by reducing the amount of paved areas and incorporating green infrastructure as recommended in the City of Newton's *Climate Change Vulnerability Assessment and Action Plan*. By creating a dense community adjacent to multiple modes of transit, the project will reduce the automobile dependency of both new residents and commercial tenants.

In addition to both minimizing environmental impact and improving access to transit, indoor environmental air quality and occupant comfort are at the core of the community vision adopted by the design team for the Riverside Development. To implement these broad sustainability principles, the project will incorporate the Green Newton *Green Building Principles* including minimizing building operating energy by methods that include Passive House design principles, minimizing embodied carbon, incorporating all-electric mechanical systems, and minimizing the carbon footprint for transportation. These standards dovetail with the 30-year roadmap identified in the *Citizens Climate Action Plan*, which also has a specific focus on encouraging the transition to electric vehicles (EVs). Mark Development understands the importance of a holistic, integrated design approach in achieving such ambitious goals, and has assembled a design team that has the experience and expertise necessary to realize this vision.

Mark Development is committed to be a leader in sustainability in the Newton community and pledges the following commitments for the Riverside Development:

1. Passive House design principles for the residential portions of the project
2. Electrification for the residential portions of the project
3. Embodied Carbon analysis guiding material selection
4. Solar Ready design on all building roofs and parking garages
5. Rainwater Reuse for Irrigation
6. Electric Vehicle Charging stations for 10% of the project parking spaces[1]

Refer to Riverside Commitments Summary Table for building-by-building sustainability commitments.

[1] The quantity of EV charging stations within the MBTA parking spaces are to be determined by the MBTA

RIVERSIDE REDEVELOPMENT SUSTAINBILITY FEATURES

PASSIVE HOUSE DESIGN PRINCIPLES

The United Nations International Panel on Climate Change (IPCC) released a report in 2018 that clearly stated that eliminating greenhouse gas production by 2050 is needed in order to avoid catastrophic effects of climate change. As outlined in the Newton Citizens Climate Action Plan, the Newton Citizens Commission on Energy (NCCE) agrees with the IPCC and urges Newton developers to achieve these climate goals through Passive House design.

The Passive House building standards represent the future of building energy efficiency by encompassing stringent energy usage intensity thresholds combined with field performance testing to validate overall building performance.

The PHIUS mission statement clearly defines the goals of the standard which are directly aligned with the IPCC goals: "To develop and promote North American passive building standards, practices, and certifications for buildings, professionals, and products to create structures that are durable, resilient, comfortable, healthy, and super energy efficient."

The Riverside Development has made the commitment to design and build the residential portion of the buildings using Passive House Design Principles. These principles will include:

- High performing thermal envelope with continuous insulation
- Airtight construction with low air change rates
- Balanced mechanical ventilation systems for improved indoor air quality and comfort
- High performance windows and doors to manage solar energy and minimize leakage

The project team will conduct Passive House feasibility studies for all residential buildings and strive to achieve certification. The team has committed to achieving certification for two of the eight residential buildings with a goal of certification on all buildings.

ELECTRIFICATION

As outlined in the Carbon Free Boston Summary Report 2019, “Achieving carbon neutrality will require Boston’s buildings to be highly efficient and to move away from fossil fuel use for heating and other services. New buildings can be built to the highest possible performance standards, while avoiding the lock-in of fossil fuels.” The impact of building design on the total greenhouse gas emissions in Boston is identified further in the report, “The GHG emissions from the use of electricity, heating oil, natural gas, and steam in Boston’s buildings account for more than two-thirds of the city’s total emissions.”

Passive House design principles achieve the objective of reducing building energy usage intensity relative to code-compliant buildings. However, to minimize dependence on carbon fuel sources and corresponding GHG emissions, these buildings need to switch to all-electric design where feasible. Due to higher energy costs for electricity relative to natural gas, many projects face an innate challenge to overcome this imbalance to construct feasible projects. When Passive House design principles are coupled with electric heating, cooling, and domestic hot water generation, the impact of energy usage is reduced in overall life-cycle cost thereby increasing project feasibility.

The Riverside Development has made the commitment to design and build the residential portion of the residential buildings with all electric sourced heating and cooling systems (heat pumps, variable refrigerant flow systems, etc.) in addition to electric domestic hot water generation, where practicable, based on space type and utility metering. In addition, the Riverside Development will explore the feasibility of electrification for the hotel and office buildings.

EMBODIED CARBON

As project operational energy consumption is reduced through Passive House design principles and other sustainability measures, the carbon emissions occurring during the construction phase becomes more prominent in the overall building life-cycle emissions.

To further understand these impacts, a preliminary embodied carbon analysis was performed to evaluate various envelope wall assemblies implemented for a previous project constructed by Mark Development. New Ecology, Inc. (NEI) examined the thermal performance of numerous wall assemblies in conjunction with embodied carbon to compare the impact of various construction materials.

The Riverside Development will continue to evaluate material selection during the design phase and consider both embodied carbon and thermal performance during the wall assembly selection process. High performance wall assemblies with low embodied carbon and high thermal performance will be identified and evaluated for use during individual building design.

SOLAR READY DESIGN

The Riverside Development team will build on the positive impacts of the efficiency described above by incorporating electrical, structural, and other design elements that make the building "solar ready" for renewable energy systems. Solar Ready design means that the project team will engage in a roof mapping exercise during individual building design to identify roof areas suited to renewable energy system integration, and that those areas of the roof to have the structural capability to carry the dead load and uplift loads of a renewable energy system. In addition, Solar Ready areas of the roof will be free and clear of any mechanical systems or plumbing penetrations, which are a major contributor to reduced potential in terms of system size and production. All required electrical chases from the roof into the electrical room will be included in the design and construction of the building, and space will be left free and clear in mechanical rooms for location of inverters. Roofs will be all white or light high solar reflectance index materials as well, to mitigate heat island impacts and significantly lower ground surface temperatures relative to the current site conditions.

Rooftop mechanical systems in all electric buildings are a significant barrier to available roof space for solar PV. Due to Massachusetts State prohibition of allowing residential Owners to directly charge tenants for heating or cooling usage, it is not feasible to pursue a more compact VRF system for the residential buildings at this project. VRF systems are all-electric systems that require significantly less rooftop equipment (e.g. 1 outdoor unit to 16 indoor units) than a comparable all-electric air source heat pump mini-split system (1 outdoor unit to 1 indoor unit). Therefore the available roof space to install solar PV is significantly reduced for mini-split systems.

The development of renewable energy systems in Massachusetts currently is also more challenging due to the end of the SREC market, the reduced incentives under the new SMART program, and changes to net metering caps and requirements. If feasible Mark Development will pursue the installation of solar PV systems through a third-party power purchase agreement. Due to the reduced financial incentives in the current solar PV market, third-party solar providers do not view smaller systems below approximately 50kW capacity to be economic. With the available roof space at the residential buildings at this development, systems are likely to be smaller than 50kW. Mark Development will continue to monitor the solar market and assess the feasibility of integration of renewable energy systems into the project. Mark Development is reviewing lease proposals from solar engineering, procurement, and construction (EPC) companies to install solar panels on building rooftop areas and install a solar canopy over parking garage top deck areas. This type of agreement would achieve the goal of implementing solar PV at the Riverside Development.

SITE DESIGN AND WATER REUSE

By the Riverside Development's very nature, it will present a substantial environmental benefit to both its immediate surroundings and the area as a whole. Located adjacent to the Charles River, the reduction of impacts from stormwater runoff are of key importance. The existing parking facilities at both the Riverside Terminal and the adjacent Hotel Indigo represent over 10 acres of asphalt pavement that contribute substantial amounts of stormwater runoff directly into the Charles River, which is essentially untreated. By relocating and consolidating the parking into multiple structures, automobiles will be parked where they are protected from the elements, and the salt, sand, and petroleum contamination associated with open-air parking will be drastically reduced.

The Riverside Development's site is currently a heat island hot spot, registering higher temperatures than the surrounding neighborhood due to the high percentage of impervious asphalt surface. The redeveloped site will provide more pervious green space and replace large sections of asphalt with buildings with high solar reflectance white roofs, reducing the heat island effect. In recent urban climate preparedness studies, large buildings with white roofs and pocket parks resulted in the most significant heat island reductions relative to other land cover types such as asphalt parking areas or low-density asphalt shingle-roofed houses (https://www.cambridgema.gov/CDD/Projects/Climate/~/media/A3977AB1B6AB47D7BEE02AE4D0B1410B.ashx).

The proposed redevelopment of the site will incorporate several Low Impact Development (LID) measures to promote the treatment and return of groundwater to the subsurface aquifer. Portions of the lower roof areas that are visible to residential tenants may include planted "green roof" systems. A "green roof" contains live plants in a lightweight soil medium that is designed to retain precipitation. The water is then absorbed by the plants and returned to the air through transpiration. This process removes dissolved contaminants including phosphorus when the roof is designed as a passive system that is not fertilized or watered. Phosphorus is a particular contaminant of concern in the Charles River watershed, of which the project site is a part. Additionally, on-street parking areas will be paved with pervious pavement to collect and infiltrate the "first flush" of stormwater from the streets before they reach the closed drainage collection system. The project will also include a subsurface stormwater retention and infiltration system designed to treat and retain stormwater within the site, further improving the water quality in the watershed and reducing the strain on the municipal drainage system.

A portion of the retained stormwater (cleaner roof drainage) will be utilized for site irrigation to reduce outdoor water consumption for the site.

LEED NEIGHBORHOOD DEVELOPMENT

The Riverside Development will follow the LEED Neighborhood Development design strategies to integrate ten buildings into one cohesive site. Sidewalks, intersections, perimeter landscaping, and main façade will welcome the community members and visitors based on LEED design criteria strategies. Landscaping and site improvements will further emphasize the social and environmental priorities of this project. Outdoor spaces will be designed to encourage social engagement, turf will be minimized on the project, and plantings will be drought tolerant and appropriate for the microclimates specific to each planting area.

To determine the feasibility of LEED ND certification, Mark Development completed an evaluation exercise to review the site design including a LEED ND scorecard checklist. It was determined that receiving LEED ND certification was achievable in practice as many of the credit requirements have already been incorporated into the site design. Due to the extensive certification cost to pursue LEED ND, the team opted to follow the design strategies listed below without pursing certification.

The following LEED Neighborhood Development credit design strategies will guide the site design and construction:

Smart Location & Linkage

- Smart Location
- Wetland and Water Body Conservation
- Agricultural Land Conservation
- Floodplain Avoidance
- Preferred Locations
- Access to Quality Transit
- Bicycle Facilities
- Site Design for Habitat or Wetland and Water Body Conservation

Neighborhood Pattern & Design

- Walkable Streets
- Compact Design
- Connected and Open Community
- Mixed-Use Neighborhoods
- Access to Civic & Public Space
- Access to Recreation Facilities

Green Infrastructure & Buildings

- Minimum Building Energy Performance
- Indoor Water Use Reduction
- Construction Activity Pollution Prevention
- Rainwater Management
- Heat Island Reduction

ELECTRIC VEHICLE CHARGING STATIONS

As outlined in the Carbon Free Boston Summary Report 2019, electric vehicle infrastructure needs to be drastically improved to meet the cities goals. "*Any remaining cars and trucks driving into and around Boston in 2050—including ride-hailing services—must run on low- or zero-GHG fuel or electricity. The City, region, and Commonwealth, along with utilities and other private sector partners, must help accelerate an affordable market transformation toward electric vehicles. Programs to support electric vehicle purchases and to build out local and regional electric vehicle infrastructure will help make EVs a more economic, convenient, and accessible solution.*"

Riverside Development residential and commercial tenants, visitors, and the community alike will desire access to EV charging parking spaces for both convenience and climate change mitigation. Mark Development understands that provisions for electric vehicle charging stations need to be implemented during construction to avoid extensive costs of upgrading the electrical infrastructure at a future date. Therefore, Mark Development is planning to implement EV charging parking spots at the Riverside Development for at least 10% of the project parking spaces, to be located in preferred locations for various users. This does not include the MBTA parking spaces, however it is anticipated that the MBTA will choose to include a significant quantity of EV charging spaces as well.

In addition Mark Development is committing to an additional 10% of parking spaces to be electric vehicle-ready to allow simple conversion to EV parking spots in the future.

TRANSPORTATION

It is expected that by its design, the project will exhibit a substantial reduction in demand for automobile use with many residents opting to forgo car ownership altogether and office tenants reverse-commuting from the Boston area. The site boasts extreme proximity to the adjacent light rail Riverside Terminal, which makes the site an appealing candidate for a development of this scale. In addition to the light rail facility, several bus and shuttle lines will reward residents, hotel

guests and commercial employees with easy, affordable, and clean transportation methods to the surrounding communities, downtown Boston, and even New York City.

The Riverside Development is planned as a full-service neighborhood and will include a variety of amenities including restaurants, retail spaces, and other services. This will ultimately mitigate the need for site occupants to depart the Riverside Development. A new connection to the surrounding Charles River Reservation will afford residents and employees access to acres of parks, trails, cross country skiing, golf and other recreational opportunities all without the need for an automobile.

In addition, the design team will employ a Transportation Demand Management (TDM) plan including short term and long term bike parking, Zip Car availability on the property, and designated spots and charging stations for low emitting vehicles and electric cars (and financial incentives for use of public transit by residents and commercial users).

Bicycle Facilities

Bicycle use shall be encouraged throughout the development through the provision of 680 safe, convenient, covered and secure long term bicycle parking areas. This amounts to more bicycle storage facilities than residential units in the development resulting in a bicycle parking to residential unit ratio of 1.17.

In addition to interior bicycle parking spaces, bicycle racks will be provided at a minimum of one per approximately 200 linear feet of sidewalk edge at all retail frontages to promote community bicycle travel. Additionally, a well-lit bicycle rack will be provided adjacent to each major entrance to office and residential buildings at the nearest advantageous location (no further than 75').

MECHANICAL SYSTEMS

Mechanical systems selected and sized to meet the minimal heating and cooling loads and ensure comfort will complement the advanced building envelopes incorporated in the design. The design team has performed a life cycle cost analysis of the preliminary design for the first residential building to facilitate informed decision-making around envelope design and mechanical system selection. This analysis provides a more holistic view of the implications of the performance, operating cost, and carbon impacts of options under consideration.

The life cycle cost analysis includes all-electric systems (heat pump and VRF) compared against natural gas-based hydronic systems. This evaluation informed preliminary mechanical system design options and allowed the MEP consultants to understand the design principles early in the design stage.

The design team included Massachusetts incentive programs during the life cycle cost analysis that support installing VRF and air-source heat pump systems for mixed use buildings.

Low flow, high performance fixtures that meet or exceed the EPA WaterSense standards will also be integrated to reduce water and energy use while maintaining tenant comfort.

LIGHTING AND ELECTRICITY

Appliances will be top performers in function, design, energy, and water efficiency. Electrical load will be reduced through smart lighting design that takes full advantage of the efficient, reliable, and attractive LED fixtures and lighting controls that are now available.

INDOOR AIR QUALITY

Of equally important consideration are the indoor air quality impacts of our approach. Mark Development is committed to providing individuals and families with a living environment that enhances their lives and health. Mark Development will accomplish this through two methods: ventilation and material selection. Ventilation systems will be designed to provide fresh supply air directly to each apartment. Toxins and contaminants will be minimized through careful specification of low VOC and no added urea formaldehyde materials.

TRAINING, TESTING, AND VERIFICATION

Managing the transition from modeled performance to achieving real world performance is a main focus for this project. A series of on-site trainings, inspections, testing, and continuous feedback to the team will be the primary tools used to ensure designed and modeled approaches translate to performance achievement.

As part of this process, the Riverside Development team will:

- Hold a pre-construction trades training focused on trade specific best practices around performance based construction;
- Review submittals for greening compliance;
- Conduct testing and inspections by certified HERS and PHIUS raters that include:
    - Foundation insulation inspections
    - Insulation and air barrier inspections
    - Mock-up level duct leakage and compartmentalization testing
    - Final duct leakage testing
    - Final compartmentalization testing
    - Flow testing on water use fixtures
- Train and educate the buildings operations staff on the green features of the building and how to operate and maintain them; and
- Train and educate the residents of the buildings on the green features and how to minimize environmental footprint.

FUNDAMENTAL COMMISSIONING

Fundamental commissioning provides another critical layer of oversight that will be integrated into the Riverside Development. Heating, cooling, ventilation, domestic hot water, lighting, and other mechanical systems will be submitted to performance testing and verification process to ensure proper installation and operations. As part of this process, a certified commissioning agent will:

- Develop and implement a commissioning plan
- Verify installation and performance of systems to be commissioned
- Provide a summary commissioning report to the building owner

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Riverside Redevelopment - Sustainability Commitments Summary

Building	Building Type			Secondary Use		Newton Ordinance Sustainability Pathway		Construction Standards	Electrification	Embodied Carbon	Electric Vehicle Chargers	Electric Vehicle Ready	Solar PV	Solar PV Ready
[#]	[Type]	[Units]	[sf]	[Type]	[sf]	[12.4.A.1 - LEED Gold Certifiable]	[12.4.A.2 - Passive House]	[-]	[Yes/No]	[-]	[%]	[%]	[Y/N]	[Y/N]
1	Office	0	243,387	-	-	Certifiable	-	Market Standards	Explore Electrification	Guiding Material Selection	-	-	No	Yes
2	Hotel	150	77,300	-	-	Certifiable	-	Market Standards	Explore Electrification	Guiding Material Selection	-	-	No	Yes
3	Residential	137	153,683	-	-	Certifiable	Explore Certification	Passive House Principles	Yes	Guiding Material Selection	-	-	No	Yes
4	Residential	107	122,810	Retail	3,792	Certifiable	Explore Certification	Passive House Principles	Yes	Guiding Material Selection	-	-	No	Yes
5	Residential	50	57,200	-	-	Certifiable	Explore Certification	Passive House Principles	Yes	Guiding Material Selection	-	-	No	Yes
6	Residential	57	65,135	Retail	6,886	Certifiable	Explore Certification	Passive House Principles	Yes	Guiding Material Selection	-	-	No	Yes
7	Residential	46	54,265	Retail	7,785	-	Certification	Passive House Principles	Yes	Guiding Material Selection	-	-	No	Yes
8	Residential	76	62,146	Retail	3,218	-	Certification	Passive House Principles	Yes	Guiding Material Selection	-	-	No	Yes
9	Residential	44	42,330	Retail	21,561	Certifiable	Explore Certification	Passive House Principles	Yes	Guiding Material Selection	-	-	No	Yes
9G	Garage	852 Spots	369,678	-	-	-	-	-	-	-	10%	10%	No	Yes
10	Residential	100	96,002	-	-	Certifiable	Explore Certification	Passive House Principles	Yes	Guiding Material Selection	-	-	No	Yes
10G	Garage	1138 Spots	293,512	-	-	-	-	-	-	-	10%	10%	No	Yes

February 25, 2020

Ref: 10865.03

Mr. Barney Heath, Director
City of Newton Planning & Development
1000 Commonwealth Avenue, Room 202
Newton, Massachusetts 02459

Re: Riverside Station Redevelopment – Peer Review Response to Stormwater Comments

Dear Mr. Heath:

On behalf of our client, Mark Development, we respectfully submit the following responses to comments provided by the Horsley Witten Group, Inc. (HW) in a letter dated January 16, 2020 regarding the Riverside Station Stormwater Peer Review. For clarity, the peer review comments have been repeated in italics preceding each response in bold type.

General

1. *The Applicant states that it has reduced the overall impervious area however the HydroCAD model does not support this statement. The overall watershed area of 30.95 acres appears to increase the total impervious area by 1.29 acres and the project site also appears to have a slight increase. HW recommends that the Applicant clarify its statement and document the impervious area within the total project area under existing and proposed conditions.*

   VHB has taken a conservative approach to the Project's stormwater management system by assuming all areas between the roadway curb and the buildings are impervious, rather than a mix of impervious and pervious material as shown on the detailed landscape design plans. Thus, much of the proposed surface types that are listed as impervious in the proposed HydroCAD models are a mix of porous pavement, sidewalk, pavers, planters, and tree pits. The existing impervious area is approximately 11.8 acres. Based on the proposed design as shown on the Site Plans dated December 9, 2019, the proposed impervious area within the Site is approximately 11.2 acres resulting in a net reduction of approximately 5%. It is also important to note that there is a substantial reduction in impervious paved areas as a result of the construction of the parking structures and buildings which will now occupy the site. The reduction in paved area will result in significant water quality benefits.

2. *The majority of the site will be piped towards the existing 60-inch culvert, crossing the site in a drainage easement controlled by the City of Newton. The 60-inch culvert conveys Runaway Brook and discharges into the Charles River. HW recommends that this culvert be videoed prior to any earth disturbance to verify it is structurally sound and has ample capacity. If maintenance or repairs of this culvert are*

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required, the work should be conducted prior to any land disturbance. HW recommends that the culvert be videoed at the end of construction as well to verify that the culvert has not been negatively impacted during construction.

So noted. The culvert will be videoed before and after construction. An associated note will be added to the plans.

3. *The Applicant is proposing three subsurface infiltration systems to recharge stormwater beneath the site. HW recommends that the Applicant investigate other opportunities to implement green infrastructure within the project limits, including:*
    - *Bioretention basins, planters and curb bump-outs*
    - *Permeable pavement*
    - *Street trees with sand based structural soil*
    - *Cisterns to enable rainwater harvesting*
    - *Reducing impervious surfaces*
    - *Increasing the tree canopy to reduce the heat island effect*
    - *Landscape with drought resistant plants*

    The various practices are dependent on-site conditions including soils, topography, depth to groundwater, and proposed surface uses. The final design will need to consider functionality, constructability and long-term maintenance requirements

    The Project will restore the ecological and hydrologic functions that have been lost due to an expansive paved parking area and bus depot while adopting best practices and principles of green infrastructure consistent with MassDEP regulations and the City of Newton Street Guide. 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 Charles River Basin. Sustainability, livability and resilience are used as guiding principles used throughout the design.

    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.

    Situated within the Charles River Watershed and Runaway Brook sub-watershed, the Project provides a unique 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 groundwater recharge, which has been lost through prior development. To do this, the Project will reduce impervious cover, increase tree canopy, store and reuse roof runoff for irrigation and integrate green infrastructure throughout the site to slow, filter, collect, and infiltrate rainwater.

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 targeted reductions in 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 below.

The Project site has been historically mined for gravel and subsequently occupied by expansive paved parking areas supporting the MBTA bus and rail operations. Under existing conditions, the Site is developed and is predominately impervious, except for a small wooded areas or planted areas along the perimeter of the site.

The Project proposes to remove existing paved parking areas and a bus depot facility and replace the majority of existing utility and roadway infrastructure. In their place, the Project proposes new buildings, roadways, sidewalks, streetscape, a consolidated parking area within a new parking structure and green space, as illustrated 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.

The overall principles of the conceptual green infrastructure plan are:

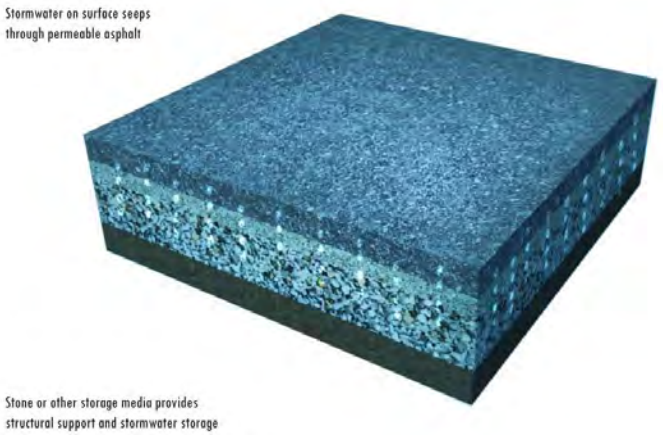
1. Prioritize infiltration facilities where conditions are most amenable. Infiltration facilities maximize groundwater recharge and phosphorus reduction.
2. Divert runoff from sidewalks, bike path, and streets into permeable pavement and recharge facilities and bioretention areas integrated into the streetscape and transportation design.
3. Capture portions of the roof runoff in rainwater cisterns, to be used for landscape irrigation.
4. Maximize tree canopy, and support tree health by extending sand-based structural soil under the sidewalk adjacent to tree wells.
5. Design with maintenance and longevity in mind.
6. Reduce runoff volume and peak discharge rates to the municipal drainage system.

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 on-street parking, office and hotel plazas 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-propriety mix of stone and soil that supports the sidewalk while allowing tree roots to grow normally. A SBSS system, located adjacent to a tree wells, 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 all buildings will be routed to a prefabricated stormwater chambers. This system will serve two functions: 1) storage for rainwater harvesting, and 2) infiltration for groundwater recharge, water quality treatment, and peak rate reduction.

Regulatory Compliance

Through the integrated green infrastructure approach described above, the Project will exceed 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.

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 a significant reduction in paved surfaces (parking lots and drive aisles) from approximately 68% to 37%, not accounting for areas with porous pavement. When including the approximately half an acre of proposed permeable pavers as pervious area within limits of vehicular accessible pavement, the impervious cover is reduced to 33% of the site area. When

combined with other BMPs, the reduction in paved surface will dramatically reduce the potential sediment load. Under proposed conditions, new pervious surfaces will also 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 MassDEP, prior to connecting into the municipal drainage system.

4. *The proposed contours adjacent to Grove Street appear to need adjustment. It does not appear that the height of the curb has been properly incorporated.*

   The elevations depicted within Grove Street are not final and the design of the off-site improvements, including that of Grove Street, are still in progress. The proposed contours shown along Grove Street will be adjusted as the profile of Grove Street is further developed.

5. *An existing concrete vault is noted on the 60-inch culvert adjacent to Grove Street. HW recommends that the Applicant discuss this vault and whether it will remain under proposed conditions.*

   The existing vault will remain under proposed conditions. The proposed bike path will be running over the vault, leveling the surrounding area and physical modifications will be completed such that the rim is flush with the proposed conditions. Also, please note that an intermediate structure will be provided at the site connection location to improve access pursuant to a comment by the Assistant City Engineer. A note and corresponding details will be added to the plans indicating the structure the measures to maintain the structure.

6. *HW recommends that the Applicant confirm that the catch basins at the low point of Grove Street in the vicinity of the 60" culvert will remain.*

   The existing catch basins at the low point of Grove Street by the 60-inch culvert are to remain. Rim elevations may be adjusted as the final profile of the Grove Street mill and overlay is developed.

7. *HW recommends that additional soil testing be conducted in the exact locations of the infiltration chambers prior to installation however the assumptions made by the Applicant for the StormTech chambers P102 and P103 appear reasonable.*

   Soil tests were previously performed within the limits of P101 and P102, which were included in the Stormwater Report. Additional soil testing will be scheduled within the limits of P103 (if necessary) to be performed by Sanborn Head. As discussed, we are contemplating an adjustment of the current system that may introduce a new LID feature and/or expansion of the main recharge system to replace the P103 system.

8. *HW recommends that the Applicant provided the invert and top of culvert elevations to verify that the proposed grades and inlets are reasonable.*

   The Plans will be updated to show the invert and top of culvert elevations at the proposed connection points to the 60-inch culvert.

9. *The Applicant has indicated that the roof runoff from the various buildings will be directed into the infiltration systems. HW recommends that a condition be including in any approvals requiring that the Applicant infiltrate the roof runoff from all proposed buildings.*

   The proposed infiltration system P101 within the Building 9 garage has been designed to collect the roof runoff from all ten proposed buildings, which will allow roof runoff from all proposed buildings to infiltrate. Roof drain connection locations will be added to the plans as the building and associated plumbing designs are further developed.

Subcatchment 1S and Subsurface System P101:

10. *The Applicant has referenced the test borings and infiltration rates recommended by Kevin Stetson in an email dated November 8, 2019. The email recommends that 1.02 in/hour be utilized for proposed systems P101 and P102. For the proposed StormTrap system (P101) the Applicant is proposing to over excavate 4 feet of material corresponding to the slower infiltration rate of 1.02 inches/hour and utilize the faster infiltration rate of the sandy gravel soil beneath the sandy loam of 8.27 inches/hour. HW recommends that a condition be included in any approvals requiring that the Applicant remove the layer of existing unsuitable material and back fill the area beneath the Storm Trap system with well graded washed crush stone. A letter with photographs certified by a professional engineer should be provided to the City confirming that the StormTrap system was properly installed as designed.*

    So noted. A certified letter will be provided to the City after installation, if such a condition is included.

11. *The rim of drain manhole (DMH) 13 is listed as 56.11, however the adjacent garage entrance is listed at elevation 62.8. HW recommends that the Applicant revisit the DMH rim.*

    The rim of DMH-13 was interpreted from the 3D model incorrectly. The plans will be updated to reflect a rim of 62.8.

12. *HW recommends that the Applicant confirm that the drainage structures inside the parking garage will not be connected to the stormwater system.*

    The drainage structures that service the garage will connect to oil-gas separators within the garage and discharge into the sanitary sewer system and reflected on the plumbing plans that accompany the Building Permit submission. Only internal roof drains will connect to the drainage infrastructure associated with the subsurface infiltration system P101. The drains servicing the garage will connect to the sanitary sewer system.

13. *The StormTrap Details provided on Sheet C-11.3 are samples only and not specific to this design. HW recommends that the Applicant provide site specific details consistent with the HydroCAD model.*

    As the Project is further developed and as Building Permit and construction drawings are progressed, site specific details for the proposed StormTrap will be included. We are coordinating with the manufacturers to confirm the size, location, and design of the systems.

14. *The Applicant has provided values for water quality volume required and provided for subcatchment area 1S. HW is in agreement the water quality volume required however we were not able to confirm the volume provided. HW recommends that the Applicant document the provided water quality volume below the outlet weir elevation.*

    The weir elevation of P101 was adjusted up to elevation 57.0. This increased the water quality volume below the weir, as shown in the attached revised BMP Sizing Calculations. The volume below the weir was extracted from the HydroCAD storage table for System P101, which has been added to the BMP Sizing Calculations.

Subcatchment 2S and Subsurface System P102:

15. *The rims and inverts for the outlet control structure (OCS-2) for subsurface infiltration system P102 is not consistent between the Site Plans (sheet C-9.2), Detail (sheet C-11.4), and proposed HydroCAD model (page 35). HW recommends that the Applicant revisit the design and verify that all documents are consistent.*

    The weir elevation shown in the HydroCAD model is correct. The plans and detail will be updated to reflect a weir elevation of 57.0.

16. *It appears that the Applicant has provided the required water quality volume however HW recommends that the calculations provided in Appendix C of the Stormwater Report be reviewed once the final outlet control elevations are determined.*

    The provided water quality volume has been adjusted to reflect the corrected weir elevations.

17. *The Applicant has proposed a trench drain along the property boundary in the transit area south of Building 7. The location of this trench drain will need to be coordinated between the landscaped area and the sidewalk. Routine maintenance will be critical for long term functionality.*

    The trench drain is located within an area of proposed pavers, not in conflict with any proposed landscaping. The Applicant will ensure that maintenance is performed regularly.

Subcatchment 3S and Subsurface System P103:

18. *The delineation of the proposed subcatchment area of 3S is confusing as well as the area east of 3S and north of Recreation Road. This area appears to be included in subcatchment area 1S. The grading and proposed surface materials in this area are not clear on the Site Plans.*

    The design of the area west of Building 1, noted as the MBTA as the "Southern Yard" may be used for a variety of needs to be established by the MBTA. This area is outside the limits of the development parcel. It is assumed that a portion of the Southern Yard will contribute runoff to the Site, as delineated by 3S and 1S. The Southern Yard will consist of a mix of surface parking spaces and landscaped areas. For the HydroCAD model, a conservative assumption was made to make the Southern Yard entirely impervious. The preliminary concepts of the Southern Yard graded the area with a high point that focused a small amount of the lot to drain to the loading area of Building 1, which is delineated as 3S. The design of the Southern Yard will be included on the plans as the area moves beyond its current conceptual phase. As the Southern

Yard continues to be developed, the proposed stormwater management system to treat this area will be revised accordingly.

19. *The HydroCAD for subcatchment area 3S states that the entire area is paved roads w/curbs. The time of concentration calculation lists grass in the description of the flow path. HW recommends that the Applicant revisit the HydroCAD model for subcatchment area 3S.*

    To be conservative, the cover type for subcatchment area 3S was considered entirely impervious, even though landscaped areas are proposed within the area. The time of concentration will be updated to be consistent with the assumption that the subcatchment is entirely impervious.

20. *The subsurface infiltration chambers listed as P103 located behind Building 1 does not have an emergency overflow. HW recommends that the Applicant clarify where the water will pond if the system fails.*

    If the system fails, the runoff will pond within one of the entrances to the Southern Yard parking lot. As the Southern Yard is further developed and coordinated with the MBTA, additional stormwater infrastructure will be proposed to mitigate any potential ponding in the area.

21. *The Applicant has included 6-inches of stone beneath the subsurface infiltration system P103. This is a relatively large system 138 feet long with 76 chambers. HW suggests that the Applicant consider increasing the depth of stone.*

    So noted. The depth of stone beneath subsurface infiltration system P103 will be increased to 12-inches.

Recharge Calculations:

22. *The Applicant has provided Recharge Calculations in Appendix C of the Stormwater Report. HW was not able to confirm the Proposed impervious area by area. HW recommends that the Applicant clarify how these values were determined.*

    The "Net Proposed Impervious Areas" were calculated by subtracting the existing impervious area found within each proposed subcatchment from the proposed impervious areas. These area takeoffs were performed using AutoCAD.

23. *The Applicant has provided the Provided Recharge Volume calculations in Appendix C of the Stormwater Report. HW was not able to confirm the values listed and the values do not appear to be consistent with the values provided under the Water Quality Calculations. HW recommends that the Applicant clarify how the Provided Recharge Volumes were calculated.*

    The Provided Recharge Volumes were determined by using the stage storage volume for each subsurface system at the respective weir elevation in HydroCAD. The volume provided at the weir elevation was used for the Provided Recharge Volume. Because no weir is proposed as part of subsurface infiltration system P103, the total provided volume of the system was used.

The BMP sizing calculations have been revised to reflect the same provided volume for both recharge and water quality.

Phosphorus Removal:

24. *The Applicant has provided Phosphorus Loading and Phosphorus Removal calculations in Appendix C of the Stormwater Report. HW is in agreement that the proposed development will reduce the proposed phosphorus loading by approximately 85%. This is a reduction of 80% over the existing phosphorus load. In accordance with the MS4 permit the City of Newton is required to reduce its phosphorus load to the Charles River by 50%.*

    So noted.

We trust the comments have been addressed satisfactorily and we are available at your convenience if you wish to discuss further.

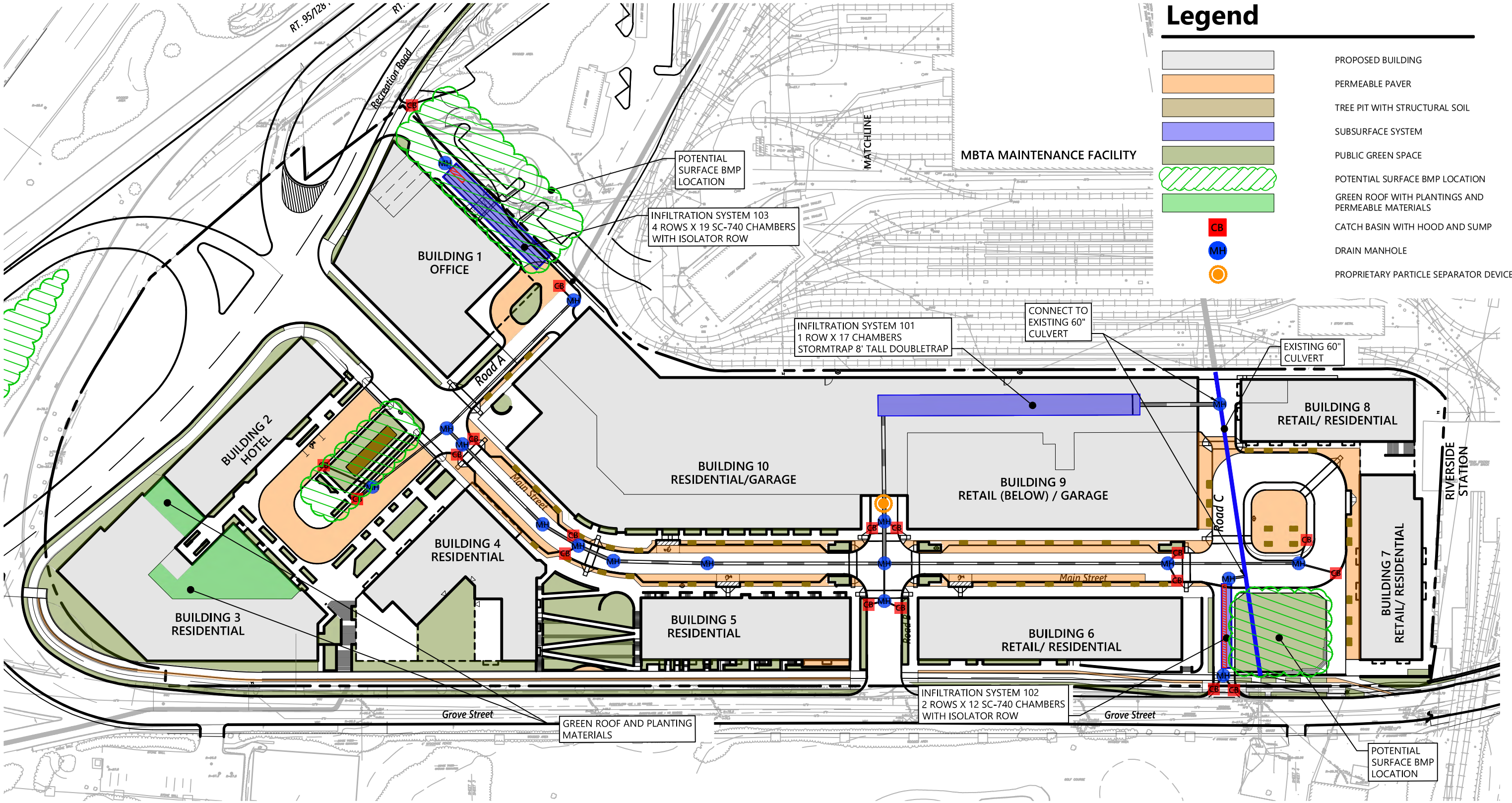
Sincerely,
VANASSE HANGEN BRUSTLIN, INC.

Richard S. Hollworth, PE

Principal
rhollworth@vhb.com

cc: Mark Development

Schlesinger and Buchbinder



0 50 100 200Feet

Figure 7.3.1
Proposed Green Infrastructure

Riverside Station Redevelopment
Newton, Massachusetts

Horsley Witten Group
Sustainable Environmental Solutions
294 Washington Street • Suite 801 • Boston, MA 02108
857-263-8193 • horsleywitten.com

MEMORANDUM

To: Neil Cronin, Jennifer Caira – City of Newton

From: Bryan Massa, LSP

Date: February 24, 2020

Re: Riverside Station Summary of Environmental Due Diligence and Pre-Characterization Activities Memorandum Peer Review

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The intent of this memorandum is to provide a peer review of environmental due diligence and pre-characterization activities associated with the Riverside Station Grove Street Development Project located in Newton, Massachusetts (the "Development Project"). The Applicant is proposing to redevelop a portion of the existing Massachusetts Bay Transportation Authority (MBTA) property and Hotel Indigo property located off Grove Street. The proposed Development Project includes ten mixed use buildings with roadways, parking areas, landscaping and utility improvements.

The MBTA property includes a maintenance facility, several buildings, paved parking areas, and railroad spurs. The MBTA property is the subject of three reported releases to the Massachusetts Department of Environmental Protection (MassDEP). The releases are identified as Release Tracking Numbers (RTNs) 3-10565, 3-18969, and 3-18501. All three releases achieved regulatory closure consistent with the Massachusetts Contingency Plan (MCP). Only one of these releases (3-10565) includes a disposal site (defined by the MCP as "*a place or area where an uncontrolled release of oil and/or hazardous material from or at a site or vessel has come to be located*") that extends into the Development Project. The Development Project and locations of the three RTNs are included on the attached Figure 1 prepared by Sanborn, Head and Associates, Inc (Sanborn Head). There are no reported releases for the Hotel Indigo property.

According to the MassDEP Priority Resource Map and details provided by Sanborn Head, the Development Parcel is located within 500-feet of a residence and is not located within a current or potential drinking water source area. Therefore, the applicable Massachusetts Contingency Plan (MCP) soil category for the Development Parcel is Reportable Concentration (RC) S-1 and the groundwater category is RCGW-2. As part of the peer review, HW has reviewed the following documents associated with the Development Project and MBTA property:

- *Response Action Outcome Statement*, prepared by Rizzo Associates, Inc. and dated December 30, 1998 (the "Rizzo Report").

- *Release Abatement Measure Completion Statement and Class A-2 Response Action Outcome Statement,* prepared by ATC Associates, Inc. and dated November 2000 (the "ATC Report").
- Phase I Initial Site Investigation and Response Action Outcome Report, prepared by Weston & Sampson Engineers, Inc. and dated December 2000 (the "Weston & Sampson Report").
- *Summary of Environmental Due Diligence and Pre-Characterization Activities Riverside Station Redevelopment*, prepared by Sanborn Head and dated January 28, 2020 (the "Sanborn Head Memorandum").

General Summary of Historical MassDEP Reports for RTNs 3-10565, 3-18969, and 3-18501

1. The Rizzo Report for the MBTA property appears to include the northern portion of the Development Project within the limits of the disposal site boundary for RTN 3-10565. This property was identified by the MassDEP as a release site due to the generation of approximately 2,000 tons of oil contaminated soil and rail ballast for recycling in 1993. Several soil and groundwater samples were subsequently collected from the MBTA property including one soil boring (RIZ-4) that was advanced within northeastern corner of the Development Project. A groundwater flow survey determined that groundwater flows to the west which is generally away (hydraulically downgradient) from the Development Project. Analytical testing of soil and groundwater from RIZ-4 for metals, polynuclear aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPH), volatile petroleum hydrocarbons (VPH) and/or volatile organic compounds (VOCs) did not identify any concentrations above the applicable MCP Method 1 Standards. The Rizzo Report concluded that a condition of no significant risk exists, and the disposal site meets the requirements for a Class B-1 Response Action Outcome without the need of any activity and use limitations (AUL).
2. The ATC Report for the MBTA property (RTN 3-18969) identifies the disposal site boundary as located approximately 300 feet west of the Development Project. This property was identified as a release site when impacted soil was encountered during selective demolition of the platforms between tracks 2, 3, 6, and 7 and at the north end of the existing carthouse. Several soil and groundwater samples were collected from this area for select metals, semi-volatile organic compounds (SVOCs), VOCs, total petroleum hydrocarbons, EPH, VPH, and/or polychlorinated biphenyls (PCBs). A groundwater flow survey determined that groundwater flows to the northwest which is generally away (hydraulically downgradient) from the Development Project. Additionally, no EPH, VPH, VOCs, or RCRA 8 metals were detected in groundwater above the applicable RCGW-2. The ATC Report concluded that a condition of no significant risk exists, and the disposal site meets the requirements for a Class A-2 Response Action Outcome without the need of an AUL.
3. The Weston & Sampson Report for the MBTA property (RTN 3-18501) identifies the disposal site boundary as located approximately 285 feet west of the Development Project. Several soil and groundwater samples were collected from this area for EPH, PAHs, VPH, and target VOCs. A groundwater flow survey determined that groundwater

flows to the west/northwest which is generally away (hydraulically downgradient) from the Development Project. Additionally, no EPH, VPH, target VOCs, or PAHs were detected in groundwater above the applicable MCP Method 1 Standards. The ATC Report concluded that a condition of no significant risk exists, and the disposal site meets the requirements for a Class B-1 Response Action Outcome without the need of an AUL.

General Summary of Development Parcel Memorandum

1. The Sanborn Head Memorandum includes details of subsurface investigations conducted at the Site by Sanborn Head and Haley & Aldrich as part of due diligence investigations. The subsurface investigations included the advancement of 27 soil borings and the collection of 16 soil samples for laboratory analysis of SVOCs, PCBs, 14 MCP metals, VOCs, TPH, VPH and/or EPH. Ten of the soil borings were converted to groundwater monitoring wells. Six select groundwater samples were collected and submitted for laboratory analysis of VOCs, select metals (total and dissolved), EPH, PAHs, VPH, and/or VOCs.
2. A petroleum like odor was observed in soil borings HA09-12 at 4.5 to 5 feet below grade and HA09-13 from 9.5 to 11.5 feet below grade. Analytical testing of soil samples obtained from these locations and depths were below the applicable RCS-1.
3. Analytical results from soil borings SH-108, SH-109 and SH-110 identified exceedances of the RCS-1 for select PAHs. Arsenic was also detected above the applicable RCS-1 in soil boring SH-108. These exceedances are consistent with the levels documented in the MassDEP technical update document titled *Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil* for soil containing coal ash or wood ash. Boring logs for all three locations indicate that ash was observed. Pursuant to 310 CMR 40.0319 (9), releases associated with coal, coal ash or wood ash, excluding wood ash resulting from the combustion of lumber or wood products that have been treated with chemical preservatives are exempt from reporting.
4. A groundwater elevation survey conducted at the Site determined that groundwater flows in a northerly direction and is located approximately 13.87 to 37.91 feet below grade. No RCGW-2 exceedances were identified in any of the groundwater samples collected.
5. Sanborn Head concluded that “the recent soil detections in slight excess of the RCS-1 soil standards are exempt from notification to DEP and *“the proposed redevelopment project is unlikely to adversely impact human health, safety, public welfare, or the environment”.* Construction activities are proposed to be managed under a Release Abatement Measure (RAM) prepared consistent with the MCP. The RAM will detail soil and groundwater management activities in addition to ambient air monitoring requirements. The air monitoring will ensure that construction workers and other surrounding receptors are not adversely impacted during redevelopment of the Site.

Conclusion

1. The Horsley Witten Group concurs with Sanborn Head's conclusion that the recent soil detections in slight excess of the RCS-1 soil standards are exempt from notification to MassDEP and that the management of soil and groundwater under a RAM is appropriate. Air monitoring during the RAM for particulate mater and volatile organic compounds will ensure that construction workers and other surrounding receptors are not adversely impacted during redevelopment.

Attachment:

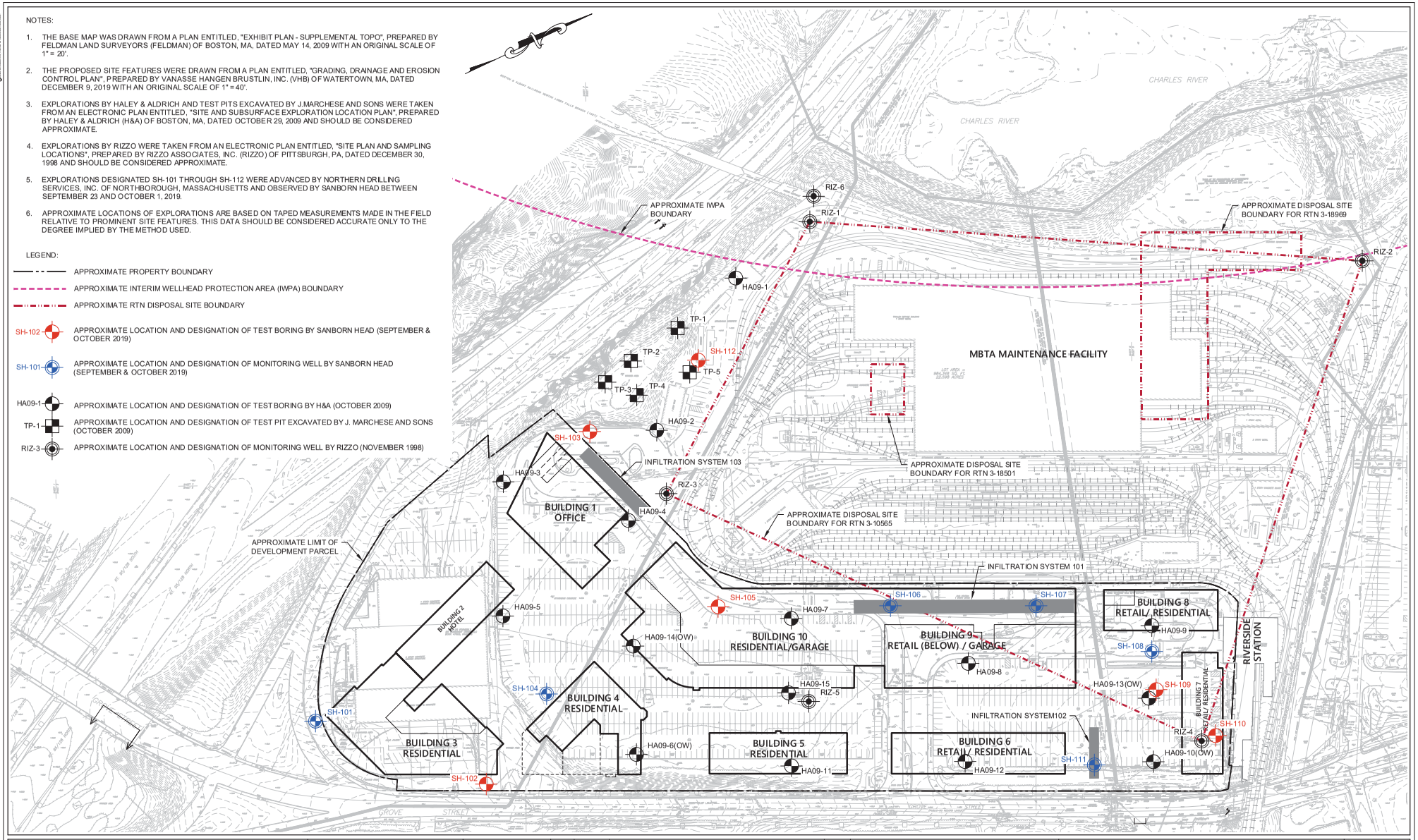
Figure 1

NOTES:

1. THE BASE MAP WAS DRAWN FROM A PLAN ENTITLED, "EXHIBIT PLAN - SUPPLEMENTAL TOPO", PREPARED BY FELDMAN LAND SURVEYORS (FELDMAN) OF BOSTON, MA, DATED MAY 14, 2009 WITH AN ORIGINAL SCALE OF 1" = 20'.
2. THE PROPOSED SITE FEATURES WERE DRAWN FROM A PLAN ENTITLED, "GRADING, DRAINAGE AND EROSION CONTROL PLAN", PREPARED BY VANASSE HANGEN BRUSTLIN, INC. (VHB) OF WATERTOWN, MA, DATED DECEMBER 9, 2019 WITH AN ORIGINAL SCALE OF 1" = 40'.
3. EXPLORATIONS BY HALEY & ALDRICH AND TEST PITS EXCAVATED BY J.MARCHESE AND SONS WERE TAKEN FROM AN ELECTRONIC PLAN ENTITLED, "SITE AND SUBSURFACE EXPLORATION LOCATION PLAN", PREPARED BY HALEY & ALDRICH (H&A) OF BOSTON, MA, DATED OCTOBER 29, 2009 AND SHOULD BE CONSIDERED APPROXIMATE.
4. EXPLORATIONS BY RIZZO WERE TAKEN FROM AN ELECTRONIC PLAN ENTITLED, "SITE PLAN AND SAMPLING LOCATIONS", PREPARED BY RIZZO ASSOCIATES, INC. (RIZZO) OF PITTSBURGH, PA, DATED DECEMBER 30, 1998 AND SHOULD BE CONSIDERED APPROXIMATE.
5. EXPLORATIONS DESIGNATED SH-101 THROUGH SH-112 WERE ADVANCED BY NORTHERN DRILLING SERVICES, INC. OF NORTHBOROUGH, MASSACHUSETTS AND OBSERVED BY SANBORN HEAD BETWEEN SEPTEMBER 23 AND OCTOBER 1, 2019.
6. APPROXIMATE LOCATIONS OF EXPLORATIONS ARE BASED ON TAPED MEASUREMENTS MADE IN THE FIELD RELATIVE TO PROMINENT SITE FEATURES. THIS DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE INTERIM WELLHEAD PROTECTION AREA (IWPA) BOUNDARY
- APPROXIMATE RTN DISPOSAL SITE BOUNDARY
- SH-102 — APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING BY SANBORN HEAD (SEPTEMBER & OCTOBER 2019)
- SH-101 — APPROXIMATE LOCATION AND DESIGNATION OF MONITORING WELL BY SANBORN HEAD (SEPTEMBER & OCTOBER 2019)
- HA09-1 — APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING BY H&A (OCTOBER 2009)
- TP-1 — APPROXIMATE LOCATION AND DESIGNATION OF TEST PIT EXCAVATED BY J. MARCHESE AND SONS (OCTOBER 2009)
- RIZ-3 — APPROXIMATE LOCATION AND DESIGNATION OF MONITORING WELL BY RIZZO (NOVEMBER 1998)



SANBORN HEAD

GRAPHICAL SCALE
70' 35' 0' 70' 140'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: D.DOMBROWSKY
DESIGNED BY: M.RUBERTI
REVIEWED BY: M.HEIL
PROJECT MGR: M.RUBERTI
PIC: K.STETSON
DATE: JANUARY 2020

ENVIRONMENTAL ENGINEERING SERVICES
RIVERSIDE STATION
NEWTON, MASSACHUSETTS

EXPLORATION LOCATION PLAN

PROJECT NUMBER: 4575.00
SHEET NUMBER: 1