SUNNYSIDE HEIGHTS
IMPACT ANALYSIS ON STORMWATER MANAGEMENT NARRATIVE
ARLINGTON, MA

July 2023

1.0 Introduction

The Sunnyside Heights residential building to be located at 10 Sunnyside Avenue in Arlington, MA (Zoning District: B4 – Vehicular Oriented Business) is an affordable housing project consisting of a proposed 49,500 gross square foot (GSF) 5-story new building with 43 residential units. Additionally, the project will include covered vehicular parking spaces and covered bicycle parking spaces.

1.1 Physical Environment

Existing Conditions

The existing project site is 16,500 sf in size with 150 feet of frontage. It is bounded by Sunnyside Avenue to the southeast, an industrial service building to the northeast, the Beth Israel Lahey Medical Center and retail developments to the northwest, and retail building to the southwest. The existing site consists of an automotive repair shop with primarily impervious land coverage areas. The impervious areas consist of an existing building along the southwest side, parking to the northeast, an access drive, walkways, ramps, and retaining walls starting from the building at the west corner of the site, running along the perimeter to the east corner of the site at Sunnyside Avenue. The pervious grassed/ landscaped areas are proposed along the perimeter of the site.

In the current conditions, the on-site tributary stormwater from the building is managed/ conveyed by roof drains and piped underground. The stormwater from the surrounding site sheets overland into Sunnyside Avenue to the east.

This site is not deemed a habitat (priority or estimated) of rare wildlife per the Natural Heritage & Endangered Species Program (see Appendix).

The existing slopes range from 1% to 5% where the overall grade slopes at approximately 1% toward Sunnyside Ave.

The Alta Land Title Survey, prepared by CHA Consulting, Inc., illustrates the existing site, including surface features, topography, utilities, and landscaping.

Regional Context

Land use surrounding the property is primarily populated by retail and commercial establishments. Other nearby land use includes a medical facility, fitness center, industrial service company, Alewife Greenway Bike Path, and a residential neighborhood. Figure SKCE-001 (Site Locus Plan included in the Appendix) depicts the context of the property in relation to the surrounding area.

Project Description

The proposed project will consist of the demolition of the current auto repair building and site features to allow for the construction of a 43-unit affordable housing building. The new covered parking will be located in the north, northeast, and northwest portions of the site ground floor. Stormwater management for the proposed project is designed to mitigate the peak stormwater rate of runoff resulting from the full build-out of the project.

2.0 Water and Soils

Existing Soils

Soil types have been identified based on the information contained in the Natural Resources Conservation Services Web Soil Survey. Based on the available soil information provided in the appendices of this report, we have determined that the soils are consistent with Hydrologic soil type "B" which require runoff to be infiltrated (as listed in the table below) from new impervious areas. The soils report is located in the Appendix of this report. The infiltration on the site was determined by using the value of a "B" soil from the MA Stormwater Handbook Rawl's Rates.

Erosion and Sediment Control

Disturbed areas during construction will be protected by temporary erosion control measures to control erosion at its source with temporary control structures, minimize the runoff from areas of disturbance, and de-concentrate and distribute stormwater runoff through natural vegetation before discharging offsite.

Stormwater Management

Stormwater runoff from the building rooftop will be conveyed to a drywell where it will overflow to an existing stormwater pipe in the east corner of the lot.

The objective of the stormwater management for the site is to mitigate any increase in peak storm runoff rates, while meeting/exceeding established stormwater quality thresholds, due to the construction of the proposed project.

All new stormwater collection and conveyance infrastructure will be provided to route water effectively to the municipal system at the east corner of the site. An Operation & Maintenance Plan along with a cleaning of all drainage structures and pipes at project closeout will be introduced as part of this project to improve the efficiency of the stormwater system.

Watershed Routing

Below is a summary of the various existing and proposed watersheds with a brief narrative describing the routing. The descriptions of the watersheds are depicted in sketches Ex-HYD and P-HYD located in the Appendix.

Existing Watersheds:

Ex-Watershed-1: This watershed includes the entire project site which generally slopes from west to east. The impervious areas include the building, concrete ramps, paved parking lot, driveway, walkways and walls. Pervious areas include planters and landscaped areas. Stormwater runoff from this watershed is conveyed/sheet flows towards the existing catch basin in Sunnyside Avenue west of the site depicted as POA-1.

Proposed Watersheds:

PR-Watershed-1:This watershed consists of the majority of the Sunnyside Heights site including all the building roof, and paved pedestrian walkways. The stormwater runoff within the roof of the building is

conveyed by the roof leaders and piped to a drywell in the east corner of the site before tying into the existing 10" PVC pipe at the property line.

PR-Watershed-2: This watershed consists of a small area to the east of the building with the impervious areas consisting of the driveway to the parking garage and concrete sidewalks. Pervious area within this watershed includes landscaped areas along the perimeter of the site. The stormwater runoff within this watershed will sheet flow to the existing catch basin in Sunnyside Avenue.

Analysis:
The analysis was based on the pre- and post-development peak discharge rates at the Point of Analysis. The proposed construction of Sunnyside Heights will result in a decrease in impervious area; therefore, the proposed stormwater management system will be designed to mitigate any increase in the rate of runoff and improve stormwater quality. Rainfall amounts used for the design and analysis are based on the NOAA Atlas 14+ Point Precipitation Frequency Estimates for Arlington.

Results/ Summary

Results of Analysis:
Through the use of the HydroCAD Software, the curve numbers, times of concentrations, and peak discharge rates were determined for both the existing conditions and the proposed conditions. The results of the study shows that both the post-development peak rates of runoff are equal or less than the existing rates.

As shown in Table A, the post development peak rates of runoff from the site will be mitigated.

Table A – POA 1 Sunnyside Ave
Peak Rates of Runoff (cfs)

	2-year storm	10-year storm	25-year storm	100-year storm
Existing	1.16	1.86	2.29	2.96
Proposed	1.10	1.81	2.25	2.92

Untreated Stormwater

The project is designed so that stormwater conveyances (outfalls/discharges) do not discharge untreated stormwater.

Post-development peak discharge rates

The proposed project will result in a decrease in impervious area. The proposed stormwater management system has been designed so that there is no increase in post construction discharge rates from the site. See Table A above.

Recharge to groundwater

Loss of annual recharge to groundwater shall be eliminated or minimized through the use of environmentally-sensitive site design, Low Impact Development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge

from the post- development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

The proposed development does not add any impervious area and promotes additional infiltration by adding a drywell for roof drains, therefore the post-construction recharge volume will be greater than the pre-construction volume.

TSS removal

The site watersheds contain "clean" roof runoff areas that are excluded from this calculation.

Higher potential pollutant loads

The proposed project site does not contain Land Uses with Higher Potential Pollutant Loads. The site improvements will reduce the potential pollutant loads from the existing automotive mechanic use building to a residential building.

Protection of critical areas

Critical areas are Outstanding Resource Waters (ORW) as designated in 314 CMR 4.00, Special Resource Waters as designated in 314 CMR 4.00, recharge areas for public water supplies as defined in 310 CMR 22.02 (Zone Is, Zone IIs and Interim Wellhead Protection Areas for groundwater sources and Zone As for surface water sources), bathing beaches as defined in 105 CMR 445.000, cold-water fisheries as defined in 314 CMR 9.02 and 310 CMR 10.04, and shellfish growing areas as defined in 314 CMR 9.02 and 310 CMR 10.04.

The site is not located within critical areas.

Construction Period Pollution Prevention and Erosion and Sedimentation Control

Soil Erosion and Sediment Control Plan:
The objectives of the Site Preparation and Soil Erosion Control Plan are to control erosion at its source with temporary control structures, minimize the runoff from areas of disturbance, and de-concentrate and distribute stormwater runoff through natural vegetation before discharge to critical zones such as streams or wetlands. Soil erosion control does not begin with the perimeter sediment trap. It begins at the source of the sediment, the disturbed land areas, and extends down to the control structure.

The Site Preparation and Soil Erosion Control Plan will be enacted in order to protect the resource areas during construction. The erosion control devices will remain in place until all exposed areas have been stabilized with vegetation or impervious surfaces.

The objective of the Site Preparation and Soil Erosion Control Plan that will be enacted on site is to control the vulnerability of the soil to the erosion process or the capability of moving water to detach soil particles during the construction phase(s).

Operation/Maintenance Plan

An Operation and Maintenance plan for both construction and post-development stormwater controls has been developed. The plan includes owner(s); parties responsible for operation and maintenance;

schedule for inspection and maintenance; routine and non-routine maintenance tasks. A copy of the O&M is included in the Appendix.

Illicit Discharge

Illicit discharges to the stormwater management system are prohibited. It is not anticipated that there will be any Illicit discharges for the project.