Existing Site Utilities and Municipal Demand

Stormwater

The property is located within the Residential Incentive Overlay Zoning District. The majority of the 1.42 acre-development area consists of the Delanson Circle cul-de-sac with five (5) single family homes, four (4) existing multi-family residential units at 12-18 Hollis Street, bituminous roadway and driveways, retaining walls, concrete walkways and associated landscaping. Currently, the site is comprised of approximately 22% impervious surfaces. The existing homes have either direct access to Delanson Circle or Hollis Street.

The existing topography generally ranges in elevation from approximately 200 ft. (Wellesley Vertical Datum) in the northwest portion of the site to an elevation of approximately 157 ft. (Wellesley Vertical Datum) in the southeast portion of the site. The parcel slopes in a southerly direction from its northern boundary towards Linden Street and an easterly direction towards Hollis Street.

Stormwater drains uncontrolled and untreated into the closed drainage system in Linden Street by entering an existing catch basin located at the northeast corner of the intersection of Hollis Street and Linden Street. The Linden Street drainage system consists of a 12-inch and 4-inch drain line with catch basins.

Sanitary Sewer

The existing single-family homes in Delanson Circle are currently serviced by five (5) existing sewer services from an existing six (6) inch clay sewer main located in Delanson Circle. Services for #2-4 and #6 Delanson Circle tie into existing manholes located within the common driveway for #2-4 and #6 Delanson Circle. Services for #1-3, #5-7 and #8 Delanson Circle tie into existing manholes located in Delanson Circle. The existing six (6) inch main located in Delanson Circle ties into the existing eight (8) inch sewer main located in Linden Street by entering an existing sewer manhole located at the intersection of Delanson Circle and Linden Street. The existing sewer flows are calculated as follows:

Number of Bedrooms (1)	Minimum Flow (2)	Calculated Flow	Design Flow	Adjusted Flow based on Peak Factor of 3.8 (3)
#2-4 Delanson 4 bedrooms	110/gpd/bedroom	440 gpd	440 gpd	1,672 gpd
#6 Delanson 6 bedrooms	110/gpd/bedroom	660 gpd	660 gpd	2,508 gpd
#8 Delanson 2 bedrooms	110/gpd/bedroom	220 gpd	220 gpd	836 gpd
#5-7 Delanson 6 bedrooms	110/gpd/bedroom	660 gpd	660 gpd	2,508 gpd
#1-3 Delanson 4 bedrooms	110/gpd/bedroom	440 gpd	440 gpd	1,672 gpd

(1) Based on Town of Wellesley Assessors Information

(2) 310 CMR Section 15.203 System Sewage Design Criteria

(3) Peak factor based on "TR-16: Guides for the Design of Wastewater Treatment Works - Prepared by the New England Interstate Water Pollution Control Commission

The four (4) existing multi-family residential units at 12-18 Hollis Street are currently serviced by two (2) 4-inch pvc existing sewer services. The service for 16-18 Hollis Street tie into and existing manhole located within the common driveway and then into an existing sewer manhole located in Hollis Street. The service for 12-14 Hollis Street tie into the existing manhole located in Hollis Street. The existing six (6) inch main located in Hollis Street ties into the existing eight (8) inch sewer main located in Linden Street by entering an existing sewer manhole located at the intersection of Hollis Street and Linden Street. The existing sewer flows are calculated as follows:

Number of Bedrooms (1)	Minimum Flow (2)	Calculated Flow	Design Flow	Adjusted Flow based on Peak Factor of 3.8 (3)
12 Hollis 2 bedrooms	110/gpd/bedroom	220 gpd	220 gpd	836 gpd
14 Hollis 2 bedrooms	110/gpd/bedroom	220 gpd	220 gpd	836 gpd
16 Hollis 2 bedrooms	110/gpd/bedroom	220 gpd	220 gpd	836 gpd
18 Hollis 2 bedrooms	110/gpd/bedroom	220 gpd	220 gpd	836 gpd

(4)   Based on Town of Wellesley Assessors Information

(5)   310 CMR Section 15.203 System Sewage Design Criteria

(6)   Peak factor based on "TR-16: Guides for the Design of Wastewater Treatment Works - Prepared by the New England Interstate Water Pollution Control Commission

The total estimated existing sewage flow is 12,540 gpd (0.02 cfs).

Water

The existing single-family houses are currently serviced by five (5) existing water services. The service for #2-4 Delanson Circle is off of the existing ten (10) inch water main located in Linden Street. The service for #1-3 Delanson Circle is off the existing six (6) inch water main located in Hollis Street. The services for #5-7, #6 and #8 Delanson Circle are off a two (2) inch water service off of the existing six (6) water main located in Hollis Street. The site is covered by an existing hydrant located at the northeast corner of intersection of Hollis Street and Linden Street.

The four (4) existing multi-family residential units at 12-18 Hollis Street are currently serviced by two (2) inch water services off of the existing six (6) water main located in Hollis Street.
Water usage is estimated by using the sewage flows. Therefore, the total estimated water usage is 12,540 gpd (0.02 cfs).

Proposed Site Utilities and Municipal Demand

Stormwater

Wellesley Square residences is proposed as a 35-unit redevelopment with 4 existing multi-family residential units at 12-18 Hollis Street and will consist of the construction of a three (3) story plus one (1) basement level parking building, sidewalks, roof-top courtyard, retaining walls, access drive, stormwater management systems, utilities and other related infrastructure.

The stormwater management system will be designed to fully comply with all standards of the Department of Environment Protection's Stormwater Management Regulations and will utilize the existing closed drainage system in Linden Street.

Watershed areas were analyzed in the post-development condition to design low impact stormwater management facilities to mitigate impacts resulting from redeveloping the property. The objective in designing the proposed drainage facilities for the project was to maintain existing drainage patterns to the extent practicable and to ensure that the post-development rates of runoff are less than pre-development rates at the design points.

The watershed consists of two sub-catchment areas and three design points Linden Street, Hollis Street and the closed drainage system in Linden Street. The design point for the post-development design conditions correspond to those analyzed for the pre-development design condition.

In the pre-development and post-development stormwater analysis, the watershed area analyzed was approximately 3.1 acres consisting of the subject parcel to be developed and offsite tributary areas. Drainage calculations were performed by employing SCS TR-20 methods for the 2, 10, 25, and 100-year Type III storm events. Refer to Appendix A and B for computer results. The stormwater management systems were designed to accommodate peak flows generated by a 100-year storm event.

The impervious area for post-development conditions vs existing conditions is as follows:

Existing vs Proposed Impervious Surfaces

	Exiting Conditions	Proposed Conditions
Impervious Area	*29,412 SF*	*46,690 SF*
Increase		*+17,278 SF*

Impervious areas- roofs, pavement, sidewalks, walls, gravel, pavers

A comparison of the pre-development and post-development peak rates of runoff indicates that the peak rates of runoff and runoff volumes for the post-development condition will be equal or less than the pre-development condition for all storm events.

Please refer to the following tables:

The peak rates of runoff are as follows:

Pre-Development vs. Post-Development Peak Rates of Runoff

Design Point	2 Year Storm (3.20 Inches)		10 Year Storm (4.70 Inches)		25 Year Storm (5.50 Inches)		100 Year Storm (6.70 Inches)	
	Exist. (CFS)	Prop. (CFS)	Exist. (CFS)	Prop. (CFS)	Exist. (CFS)	Prop. (CFS)	Exist. (CFS)	Prop. (CFS)
Design Point 1 Linden Street	*2.63*	0.47	*4.81*	0.93	*6.01*	1.19	*7.82*	1.59
Design Point 2 Hollis Street	*2.76*	1.59	*5.05*	2.89	*6.31*	3.61	*8.21*	4.68
Design Point 3 Closed Drainage System	*5.39*	5.38	*9.86*	9.84	*12.31*	12.28	*16.03*	15.84

A comparison of the pre-development and post-development peak rates of runoff indicates that the peak rates of runoff for the post-development condition will be equal or less than the pre-development condition for all storm events.

Pre-Development vs. Post-Development Volume in ac-ft

Design Point	2 Year Storm (3.20 Inches)		10 Year Storm (4.70 Inches)		25 Year Storm (5.50 Inches)		100 Year Storm (6.70 Inches)	
	Exist. (ac-ft	Prop. (ac-ft)	Exist. (ac-ft)	Prop. (ac-ft)	Exist. (ac-ft)	Prop. (ac-ft)	Exist. (ac-ft)	Prop. (ac-ft)
Design Point 1 Linden Street	0.191	0.034	0.349	0.066	0.439	0.085	0.576	0.113
Design Point 2 Hollis Street	0.201	0.113	0.367	0.206	0.460	0.258	0.605	0.338
Design Point 3 Closed Drainage System	0.392	0.335	0.716	0.656	0.899	0.837	1.181	1.117

Sanitary Sewer

The proposed project will include abandoning all five (5) existing sewer services, retaining the existing two (2) sewer services for 12-18 Hollis Street, and one (1) new proposed sewer connection. The proposed sewer connection will be via a new six (6) inch PVC (SDR-35) sewer pipe connection into the existing sewer manhole in Delanson Circle that will be removed and replaced. The proposed sewer flows are calculated as follows:

Number of bedrooms	Minimum Flow (1)	Calculated Flow	Design Flow	Adjusted Flow based on Peak Factor of 3.8 (2)
64	110/gpd/bedroom	7,040 gpd	7,040 gpd	26,752 gpd
Existing				
12 Hollis Street 2 bedrooms	110/gpd/bedroom	220 gpd	220 gpd	836 gpd
14 Hollis Street 2 bedrooms	110/gpd/bedroom	220 gpd	220 gpd	836 gpd
16 Hollis Street 2 bedrooms	110/gpd/bedroom	220 gpd	220 gpd	836 gpd
18 Hollis Street 2 bedrooms	110/gpd/bedroom	220 gpd	220 gpd	836 gpd
TOTAL				**30,096 gpd**

(1) 310 CMR Section 15.203 System Sewage Design Criteria

(2) Peak factor based on "TR-16: Guides for the Design of Wastewater Treatment Works - Prepared by the New England Interstate Water Pollution Control Commission

The total estimated proposed sewage flow is 30,096 gpd (0.05 cfs). This is an increase of 17,556 gpd over pre-development conditions.

The proposed sanitary sewer flow from the redevelopment of the property will not adversely impact the Town of Wellesley municipal sanitary sewer system.

The proposed flows will exceed 15,000 gallons per day therefore provisions must be made for an I/I removal rate of 4:1.

Total GPD		Removal Rate 4:1		Total Infiltration GPD
30,096 gpd		4		120,384 gpd

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Water

The proposed project will include abandoning all existing water service connections for Delanson Circle, retaining the two (2) water services for 12-18 Hollis Street and proposing two (2) new connections to the existing ten (10) inch main in Linden Street. Sizes of the domestic water and fire protection services are to be determined. The daily water usage for the project is estimated by using the proposed sewage flow. Therefore, the total estimated water usage for the project is 30,096 gpd (0.05 cfs).