

**Cubist Pharmaceuticals – Site Utilities Summary
Planned Commercial District Number CD-9
45-55 & 65 Hayden Avenue – Lexington, MA**

Sanitary Sewer/Wastewater

The municipal sewer collection system within the site area is connected to the regional MWRA sewer collection system, which ultimately flows to the Deer Island Wastewater Treatment Plant for treatment and disposal. Presently the district is served by an 8-inch gravity sewer main that originates on the 45-55 Hayden Avenue property, serving a portion of that building. This sewer flows from the east to the northwest across 65 Hayden Avenue and connecting to a municipal 16” dia. AC gravity sewer in the Hayden Woods Conservation Area. The municipal sewer continues to flow northerly to town.

The building addition and interior floors of the parking garage will be connected to the on-site sewer collector. Construction of the building addition and parking garage will require the relocation of a portion of the on-site sewer collector, including a modification to the existing sewer easement. This will be further detailed upon preparation of definitive engineering plans for the project.

Discussions with the Lexington Engineering Department indicate that the municipal sewer collection system has adequate capacity to serve the project, but that a capacity analysis will need to be performed and reviewed with the Engineering Department to confirm this assumption. The following tables summarize the existing and proposed flows associated with the discharges to the municipal sewer system immediately down gradient of the CD-9 District connection point. Estimates are based upon 314 CMR 7.00 - Sewer System Extension and Connection Permit Program:

Table 1 – Summary of Existing Sanitary Sewer Flows

Building Location	Existing Building Area	Sewage Flow Estimate	Projected Sewage Flow
45-55 Hayden Avenue	172,000 sf	75gpd/1000 sf	12,900 gpd
45-55 Hayden Avenue -arage	23,000 sf	0.5gpd/1000 sf	12 gpd
65 Hayden Avenue	94,000 sf	75gpd/1000 sf	7,050 gpd
Residential Area	28 homes/112 bedrooms	110gpd/bedroom	12,320 gpd
		Estimated Existing Sewage Flow	32,282 gpd

Table 2 – Summary of Proposed Sanitary Sewer Flows (CD-9 District)

Building Location	Proposed Building Area	Sewage Flow Estimate	Projected Sewage Flow
65 Hayden Avenue	110,000 sf	75gpd/1000 sf	8,250 gpd
65 Hayden Avenue - Garage	180,000 sf	0.5gpd/1000 sf	90 gpd
		Estimated Proposed Sewage Flow	8,340 gpd

In addition to the above estimated flows, the Engineering Department has noted that the Hayden Avenue Pump Station discharges at a rate of 750 gpm on average to the same sewer interceptor up-gradient from the CD-9 District connection point. Therefore, the following is a summary of the sewer flows contributing to the design sewer segment:

Summary of Sanitary Sewer Flows at design pipe segment (CD-9 District)

➤ Existing Sanitary Sewer Flows	= 32,282 gpd
➤ Proposed Sanitary Sewer Flows	= 8,340 gpd
<u>Total Projected Sewer Flows</u>	<u>= 40,622 gpd</u>
Converted Flows (GPM)	= 39.8 gpm
<u>Sewage Flow Peaking Factor</u>	<u>= 4.0</u>
<u>Projected Sewage Flow Rate</u>	<u>= 159.2 gpm</u>
➤ Estimated Flows from Hayden Avenue Pump Station	= 750.0 gpm
➤ Total Estimated Sewage Flow Rate	= 909.2 gpm
➤ Capacity of Design Pipe Segment	= 1510.0 gpm
<u>➤ Remaining Sewer Capacity</u>	<u>= 39.8%</u>

Based upon the above, the receiving sewer has adequate capacity to accommodate the additional sewage flows generated by the proposed project. The engineering calculations will be submitted to and reviewed with the Lexington Engineering Department under a separate correspondence.

Water Supply

The municipal water supply within the site area is connected to the Massachusetts Water Resource Authority (MWRA) regional water distribution system, which is controlled locally by the Lexington Water Department. A 12" dia. water main within Hayden Avenue provides water to the CD-9 district. An 8" dia. water main extends into the property from the 12" water in Hayden Avenue. The water main provides both domestic and fire protection water services to the existing building.

The domestic water demand is estimated to be 1.1 times the estimated sewage generation, or approximately 9,175 gpd of additional water demand is anticipated for the project. This does not include make-up water for building mechanical/cooling systems or irrigation.

Discussions with the Lexington Engineering Department indicate that there is adequate operating pressure and flow within the municipal system in this area of town. The applicant has requested record hydrant flow test data from the Engineering Department to confirm this assumption. It is our intention to conduct additional hydrant flow testing, to be performed and overseen by the Lexington Department of Public Works, to obtain water pressure and flow data for future design of the domestic and fire protection water systems.

Stormwater

The site is presently served by a series of stormwater management systems including wet ponds and pocket wetlands on 45-55 Hayden Avenue, a forebay and detention basin to the west of the 65 Hayden Avenue building, a collection and underground conveyance system to the east which discharges to Hayden Woods, and a roof drainage system which ties into the aforementioned conveyance system serving the eastern portion of the site. There are currently no stormwater management practices in use for the northern parking lot, where runoff flows over asphalt surfaces and land to the northwestern corner of the parking lot and discharges uncontrolled to the adjacent open space and wetland resource areas.

Under proposed conditions the project will maintain the existing drainage patterns with discharges located at the same general locations as those under existing conditions. A new stormwater management system will be established to enhance water quality, promote groundwater recharge, and attenuate peak runoff rates due to the building and garage expansion. A sediment forebay and extended detention basin will be constructed at the northwest corner of the site to collect, treat, and detain runoff from the top level of the garage and the surrounding driveway prior to discharging to the existing wetlands. Runoff from the new roof area will be connected to the existing roof drainage system.

Soil testing will be performed during the PSDUP review process to evaluate soil conditions and groundwater elevations to confirm the feasibility of the current stormwater management strategy. This strategy may be modified upon completion of the field investigation. In addition the final location of the stormwater management system will be subject to the approval of the delineated wetland line as will be confirmed through the filing of an Abbreviated Notice of Resource Area Delineation (ANRAD) with the Lexington Conservation Commission. The final stormwater management system will be required to conform to the design requirements outlined Massachusetts DEP - Stormwater Management Handbook, in addition to meeting the requirements of the Town of Lexington.

Electrical

NStar provides electrical service to the Town of Lexington. It is assumed that adequate electric grid capacity exists within South Lexington to service this project. Upon development of the building systems design, a calculation of electrical load projections and application for upgraded service will be made to NStar.

Gas

Keyspan provides natural gas service to the Town of Lexington. It is assumed that adequate natural gas pressure and capacity exists within South Lexington to service this project. Upon development of the building systems design, a calculation of gas load projections and application for upgraded service will be made to Keyspan.