ESTIMATED Water and Sewer Flow Calculations
Schoolyard Properties Residential Subdivision
Newport, Rhode Island

Water Flow Demand

The following calculation determines the estimated maximum hourly water flow for the residential subdivision using the method provided in the International Plumbing Code (2015). The development consists of five (5) single family residences. Counts below are estimated based on typical 4-bedroom architectural designs.

Fixture	No.	Water-Supply Fixture Unit Value (WSFU)	Total
Bathroom Group (private)	10	3.6	36.0
Bathtub (private)	10	1.4	14.0
Dishwasher	5	1.4	7.0
Kitchen Sink	5	1.4	7.0
Laundry (private)	5	1.4	7.0
Water closet (private)	5	2.2	11.0
		Total =	82.0 WSFU

(Taken from Table E103.3 (2))

The maximum water demand (taken from Table E103.3 (3)) is approximately equal to:

82.0 WSFU = 38.3 gpm

Maximum Water Demand (MWD) = 38.3 gpm x 60 = 2,298 gallons per hour
= 27,576 gpd (12 hour average schedule)

Average Day Water Demand (ADD_{OS}) = MWD /2.5

ADD_{OS} = 27,576 gpd /2.5 = 11,030 gpd

Average Day Water Demand (Annualized) (ADD_{OS}) = ADD = 11,030 gpd

Peak Day Water Demand = ADD X 1.6 = 11,030 X 1.6 = 17,649 gpd

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Sewer Flow

The existing 8-inch sewer main in Harrison Avenue has the following capacity. A conservative manning's roughness coefficient has been selected.

$Q = 1.49 \times A \times R^{(2/3)} \times S^{(1/2)} / n$

$Q = 1.49 \times (0.34) \times (0.481) \times (0.0894) / 0.014$

$Q = 1.56$ cfs

Assuming that the max peak hourly discharge flow corresponds to the max peak hourly water demand, the maximum capacity needed for the pipe is 0.085 cfs (38.3 gallons per minute). This is approximately 5% of the existing sewer main capacity.