

**Water Use Study**  
Wilton, CT  
November 3, 2023

Introduction

This Water Use Study is provided to document how much potable water is used in residential apartment buildings on an average annual basis, and how that water use relates to the available contractual capacity set forth in the intermunicipal sewer agreement between Wilton and Norwalk given the projected number of development projects underway or proposed in Wilton.

Background

The Norwalk Water Pollution Control Authority accepts, conveys, and treats sewage effluent from the Town of Wilton. The current agreement between Norwalk and Wilton has a contractual limit of 650,000 average annual daily gallons. The current actual sewage flow from Wilton is between 520,000± to 530,000± average annual daily gallons based on the meter data. The term Average Annual Daily Gallons (AADG) is the key parameter under the agreement, and it represents the total amount of effluent conveyed to Norwalk during a full year, divided by the number of days in that year. Based on a recent Inflow & Infiltration Study conducted by Wright-Pierce, a portion of this flow is clean groundwater or surface waters entering the system through deficiencies or improper connections.

This leaves roughly 125,000± AADG of capacity available pursuant to the current intermunicipal agreement. This is a contractual limit and does not represent the physical capacity of the main sewer lines within the conveyance system. The Town of Wilton is proceeding with further inflow & infiltration investigations to isolate areas of inflow and generate priorities for system maintenance and improvements. Eliminating inflow & infiltration will reduce the quantity of effluent flowing to Norwalk and maintain or increase the remaining available contractual capacity.

The Town of Wilton has adopted a Plan of Conservation and Development and Zoning Regulations that set out goals and parameters for increased development in certain locations. The goal of diversifying available housing types and attracting economic investment is being realized and there are a number of projects under construction, approved, or proposed. Seven of these projects are multi-family apartment buildings, but also include a hotel, industrial expansion, commercial space, and an institutional use. Each of these projects will connect to or increase flow to the sanitary sewer system and thereby use an incremental portion of the available contractual capacity.

### Water Use in Apartment Buildings

Average Annual Daily Gallons is a parameter unique to the agreement between Wilton and Norwalk and is different from typical Gallons Per Day guidance issued in the State Health Code. The State Health Code guidance of 150 gallons per day per bedroom is based on projecting a maximum single day flow and assumes double occupancy of all bedrooms in residential settings. This is helpfully conservative when sizing pipes or pumps or septic systems, but it is not helpful to project average water use over the course of a full year. The Average Annual Daily Gallons is much lower, but since it is not a typical design parameter there is little useful published guidance to estimate it.

To determine how much water is used on an average annual basis in newer residential apartment buildings, water records were collected from fifteen apartment buildings in six different communities as presented on Table 1. These records were provided by four different developers and include data from 1,784 apartments in projects ranging in size from 15 units to 325 units. The analysis indicates an actual water use of 54.5 gallons per day per bedroom on an average annual basis.

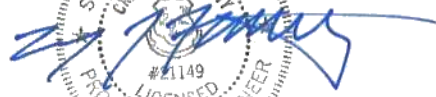
### Projected Water Use from Proposed Development

A list of contemplated future projects is presented in Table 2. The list includes projects under construction (141 Danbury Road), projects approved and not yet built (300 Danbury Road, 12 Godfrey Place, 1 Cannondale Way, 241 Danbury Road), and projects proposed (ASML, 131 Danbury, 66 Danbury, 15 Old Danbury, and 5-21 River Road). In total the projected development includes 931 apartments, 120 hotel rooms, 167,000sf of industrial use, and 33,000sf of commercial use. The value of Average Annual Daily Gallons of 55 was applied to each proposed bedroom. This value was also applied to the hotel with King rooms being calculated as one-bedroom and the Queen-Queen rooms being calculated as two-bedrooms. A 50% conversion rate was applied to the daily flows for commercial, industrial, institutional uses to account for the significant difference between calculated maximum daily flows and the key parameter of Average Annual Daily Gallons. Based on the calculations performed, the total contemplated future flow from the proposed developments is projected to be 107,682 AADG.

Several of these projects involve demolition of existing structures and the uses therein that are currently, or were previously, connected to the sewer system. The effect of removing uses is examined in Table 3. In total, 331,448 square feet of office and commercial space and 8 bedrooms are proposed to be demolished. Using the same calculations as above, it is projected that 17,012 AADG of potential use is being removed from the system. Many of these buildings are underutilized and partially or mostly vacant, therefore, the flow from these existing uses is not deducted in the final analysis.

Summary

An analysis of fifteen apartment buildings containing 1,784 apartments found that the average annual water use per bedroom in an apartment building is 55 gallons per day. A compilation of future approved or proposed development in the Town of Wilton is estimated to have an average annual water use of 107,682 gallons per day, not factoring in the existing buildings and uses to be removed. This is less than the currently available contractual capacity with the City of Norwalk (125,000± AADG) which capacity is likely to increase once inflow & infiltration mitigation projects are completed.

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**TABLE 1: AVERAGE ANNUAL WATER USE FOR EXISTING RESIDENTIAL APARTMENT BUILDINGS**

	Community	Units	Bedrooms	Dates	Annual Usage (Gallons)	Usage/Bedr./Day (Gal)	SOURCE
1	Atlantic Station, Stamford, CT	325	475	Annualized from Jan-Sep 23	8,644,885	50	AMS, Greystar & Conservice Report
2	Atlantic Station West, Stamford, CT	325	477		8,203,067	47	AMS, Greystar & Conservice Report
3	Vela on the Park, Stamford, CT	209	268		6,328,080	65	AMS, Greystar & Conservice Report
4	Woodside, Trumbull, CT	199	294		6,730,005	63	AMS, Greystar & Conservice Report
5	ShorePointe, Stamford, CT	38	38	Extrapolated from Monthly Averages between 2022 & 2023	648,000	47	Hathaway, Aquarion Summary
6	Glenbrook Commons, Stamford, CT	17	24		540,000	62	Hathaway, Aquarion Summary
7	Elmcrest Manor, Norwalk, CT	19	20		408,000	56	Hathaway, SNEW Summary
8	Wall Street Manor, Norwalk, CT	15	15		348,000	64	Hathaway, SNEW Summary
9	nineteenday, Norwalk, CT	57	74	Sep 22-Aug 23	1,711,220	63	Spinnaker, Water Records
10	Shirt Factory & Platform, Norwalk, CT	122	150	Sep 22-Aug 23	2,485,240	45	Spinnaker, Water Records
11	Corset Factory, Norwalk, CT	81	93	Sep 22-Aug 23	2,647,560	78	Spinnaker, Water Records
12	1115 Main Street, Bridgeport, CT	70	83	Sep 22-Aug 23	1,930,588	64	Spinnaker, Water Records
13	Canfield Park, Bridgeport, CT	69	96	Sep 22-Aug 23	1,782,484	51	Spinnaker, Water Records
14	Park & Main, Hartford, CT	126	162	Sep 22-Aug 23	2,661,010	45	Spinnaker, Water Records
15	120 Trapelo, Belmont, MA	112	159	Sep 22-Aug 23	3,242,281	56	Toll Brothers, Town of Belmont Invoice
TOTAL IN STUDY:		1,784	2,428		48,310,420		
<b>WEIGHTED AVERAGE ANNUAL GALLONS PER DAY PER BEDROOM =</b>						<b>54.5</b>	

**TABLE 2: CONTEMPLATED FUTURE PROJECTS ASSEMBLED FROM AVAILABLE PUBLIC RECORDS**

	Project Address	Status	Units	Studios & One Bedrooms	Two Bedrooms	Three Bedrooms	Total Bedrooms	Other Flow Health Code Max Day (GPD)	Projected Average Annual Flow (AAGPD)	COMMENTS
1	141 Danbury Road Residential	Construction	173	44	113	14	312		17,160	55 gpd/bedroom
2	300 Danbury Road Residential	Approved	74		74		148		8,140	55 gpd/bedroom
3	300 Danbury Road Commercial	Approved						2,300	1,150	50% of 23,000sf at .1gal/sf for retail
4	12 Godfrey Place Residential	Approved	42	13	19	10	81		4,455	55 gpd/bedroom
5	1 Cannondale Way, Hotel	Approved	120	87	33		153		8,415	King Rm = 1; Queen/Queen Rm = 2
6	241 Danbury Road, Church	Approved					-	2,429	1,215	50% of value used in WPCA presentation
7	ASML Expansion, Industrial	Pending						16,704	8,352	50% of 167,040sf at 0.1gal/sf for industrial
8	131 Danbury Road Residential	Applications Filed	208	95	105	8	329		18,095	55 gpd/bedroom
9	64 Danbury Road Residential	Pre-Application	116	36	75	5	201		11,055	55 gpd/bedroom
10	15 Old Danbury Road Residential	Pre-Application	207	85	95	27	356		19,580	55 gpd/bedroom
11	5-21 River Road Front Residential	Pre-Application	111	50	50	11	183		10,065	55 gpd/bedroom
12	5-21 River Road Front Commercial	Pre-Application						1,000	500	50% of 10,000sf at .1gal/sf for retail
13	5-21 River Road Rear Residential	Pre-Application	70	30	30	10	120		6,600	55 gpd/bedroom
<b>Totals</b>			<b>1051</b>	<b>410</b>	<b>564</b>	<b>75</b>	<b>1763</b>		<b>107,682</b>	Total Contemplated Future Flows

**TABLE 3: APPROVED AND PROPOSED BUILDING DEMOLITION & DISCONNECTS**

	<b>Project Address</b>	<b>Commercial Floor Area</b>	<b>Bedrooms</b>	<b>Projected Average Annual Flow (AAGP)</b>	<b>COMMENTS</b>
1	141 Danbury Road Demolition	47,000		2,350	0.1gpd/sf x 50%
2	300 Danbury Road Demolition	22,440	8	1,562	0.1gpd/sf x 50% + 55gpd/bed
3	12 Godfrey Place Demolition	11,162		558	0.1gpd/sf x 50%
4	131 Danbury Road Demolition	50,953		2,548	0.1gpd/sf x 50%
5	64 Danbury Road Demolition	43,400		2,170	0.1gpd/sf x 50%
6	15 Old Danbury Road Demolition	81,699		4,085	0.1gpd/sf x 50%
7	5-21 River Road Front Demolition	74,794		3,740	0.1gpd/sf x 50%
	<b>Total</b>	<b>331,448</b>	<b>8</b>	<b>17,012</b>	<b>Average Annual Gallons Per Day by Use</b>