



## TOWN OF MARSHFIELD

965 Plain Street  
MARSHFIELD, MA 02050

### Department of Public Works

Phone: 781-834-5575

Memorandum

August 25, 2022

To: Nancy Porreca, Zoning Board of Appeals

Fr: Rod Procaccino, Town Engineer

Thru Tom Reynolds, Supt. Department of Public Works

Re; Mill Creek 40 B Development

The Department of Public Works has the following comments regarding the potential impact from the proposed Mill Creek 300 unit development;

The proposed Mill Creek 300 unit development poses a significant impact to the Town's water system equivalent to the impact of approximately 90 single family homes being added to the system; which would normally occur over a 4 year period.

**The DPW is requesting mitigation to offset the demand and preferably that less units be developed.**

#### **System Capacity:**

**The Town's water system has the capacity to provide 40,000 gallons per day (gpd) demand from the proposed 300 unit Mill Creek development.** The proposed usage of 133 gpd per unit is consistent with the prior 248 unit Modera 1 development, which was constructed with a proposed usage of 33,000 gpd for 248 units at 133 gpd per unit.

The actual usage for the Modera 1 development over the past year has been less than proposed based on less than 100 % occupancy. The recent calculation prepared by Hancock Associates for actual water use from Modera 1 Apartments dated 7-26-2022 and projected water use for Mill Creek 300 unit development is inaccurate when they project use per bedroom based on percent occupancy for rented units without taking into consideration the number of occupied bedrooms.

It's imperative that the full impact be assessed. Also, the estimate did not include entire usage for Building 5 due to an unread meter. There should be approximately 180,000 gallons added to the total use or an increase of 6% used in their calculation. **The current average daily demand from the existing Modera 1 Apartments is approximately 21,000 gpd.** However, at full occupancy (bedrooms occupied) the demand should approach 33,000 gallons per day.

### **Water Management Withdrawal Permit:**

The Town's Water Management Withdrawal Permit authorizes the Town to withdraw 3.3MGD. There is approximately 662,000 gallons per day remaining capacity within the withdrawal permit to accommodate the 40,000 gallons per day projected use from the 300 unit Mill Creek development.

### **Pressure Drop in the Area:**

Based on additional recent static pressure measurements taken on Commerce Drive by DPW staff during the course of the day, there was a system pressure drop observed from the morning to noon time of about 7 psi and the system pressure remained at that pressure (60PSI at 12 Wood Lot) when taken at 6PM which would indicate that a significant demand occurs in Enterprise Park and surrounding area between noon and early evening given the size of water mains supplying the area.

At a recent BPW meeting residents from Old Woodlot Lane had complained about a drop in water pressure. There was a drop but most likely caused by the combined use of all development within the Enterprise Park and use along Route 139 Plain Street. **The water demand from Modera 1 is about 3 to 5 % of the flow demand in the area. The resulting incremental pressure drop would not be noticeable.**

The Town recommends having 30 psi minimum static pressure (with tank levels down 15 feet in the high zone) when approving new connections to the system. Existing houses along Old Woodlot Lane are among the highest elevations in the area. The estimated pressure on the second floor at house No. 2 Old Woodlot Lane would be at approximately 40 psi under periods of high demand which is acceptable. The 300 unit development being proposed may result in pressure drop approximately 1 psi during off peak demand and 2 to 4 psi during periods of high demand. Recent flow testing of 225 gallons per minute resulted in a system pressure drop in the area of about 2 psi.

### **Booster Pumps Required For 300 Unit Development:**

The proposed development at Mill Creek will require booster pumps to achieve minimum 30 PSI based on tank elevation hydraulic grade of 285 feet above MSL ( tank water level down 15 feet), system head loss of approximately 10 PSI ( 7 psi observed during testing) and elevation of proposed buildings. **The booster pumps would be outfitted with bladder tanks and should not have any effect on system supply pressure.**

### **Fire Flow:**

Additional Fire flow testing was conducted 8-24-22 resulting in better than expected results. The hydrant flowing on Commerce Way at the Mill Creek site yielded 2,685 GPM with a 37 PSI residual pressure.

**The Architect should provide the fire flow requirements and demand from fire sprinkler system, to determine adequacy. The Fire Chief should review what the Architect specifies. The hydrants within the development are at higher elevations and will have less available flow. If more than 2,500 gpm is required for both**

**available fire flow and flow for sprinkler systems, the homes at the higher elevations may experience pressures lower than 20 psi on the first floors during a fire event.**

**On-Site Irrigation:**

The Town will not supply water to any proposed on-site irrigation system. The Developer must supply irrigation water from private wells.

**Water Conservation Bylaw:**

**The Town water conservation bylaw requires water use demand from new connections to the system be offset by some form of water saving mitigation to the system to result in a net zero impact to the system.**

The proposed development will cause a significant impact to the system. The DPW is requesting mitigation for 40,000 gallons per day or 40 gpm over a 16 hour period as part of the approval of this project. The DPW would accept mitigation from the Developer in the form of an irrigation well or wells and pump system suitable to supply the Town's irrigation system at the Rockwood Road Ballfields or take any other equivalent mitigation. This would offset the water being used from the system to irrigate the fields. Our current use for irrigation approaches 25,000 gallons per day during summer months.

**Water Connection Fees:**

The estimated water permit fee for the development is \$227,273.00 based on 90.9 REU (Residential Equivalent Use) and \$2,500.00 per REU for 40,000 gallons per day usage from the 300 unit development.

No further Comment.

CC: Tom Reynolds, DPW Supt.  
Brian Murphy, ZBA  
Pat Brennan, Amory Engineers

