



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Thomas S. Burack, Commissioner

WATER CONSERVATION PLAN APPROVAL

July 13, 2016

Christopher Miller
New Hampshire Housing Finance Authority
32 Constitution Drive
Bedford, NH 03110

**Subject: Hampton Falls – Meadows at Grapevine Run
Water Conservation Plan, NHDES # 150188**

Dear Mr. Miller:

On July 12, 2016, the New Hampshire Department of Environmental Services (“DES”) Drinking Water and Groundwater Bureau received a Water Conservation Plan (the “WCP”), signed on July 11, 2016, for the Meadows at Grapevine Run located in Hampton Falls, New Hampshire. Pursuant to RSA 485:61 and Env-Wq 2101, community water systems seeking permits from DES for new sources of groundwater shall submit a water conservation plan to DES. Based on review of the WCP, DES has determined the WCP complies with Env-Wq 2101, *Water Conservation* rules.

Pursuant to Env-Wq 2101, the Town of Hampton Falls and the Rockingham Planning Commission were provided a copy of the WCP, along with other required materials.

DES approves the WCP based on the following conditions:

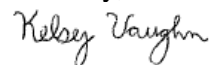
1. No later than source activation, all source meters, distribution meters, meters measuring water consuming processes, and any transfer meters and data loggers shall be installed.
2. All meters shall be installed per the manufacturer’s instructions or American Water Works Association standards.
3. Upon source activation, all meters shall be tested and maintained based on the schedule proposed in the WCP.
4. Upon source activation, source meters and any other meters measuring water consuming processes prior to distribution shall be read monthly, no sooner than 27 days and no later than 33 days from the last meter reading.
5. Upon source activation, a night flow analysis using the distribution meter shall be conducted at least twice a year in accordance with the night flow methodology in the WCP.
6. Leaks shall be repaired within 60 days of discovery.
7. Upon source activation, a water conservation outreach and education program shall be implemented in accordance with the WCP.

8. No later than source activation, the buildings shall be outfitted with WaterSense certified toilets, faucets, and showerheads, as described in the WCP.
9. Upon source activation, monthly source production volumes shall be reported to the DES Water Use Registration and Reporting program on a quarterly basis. Upon source activation, DES will assign the system a WUID number and provide instructions for registering as a data provider and utilizing the DES OneStop reporting tool.
10. Every three years from the date of this approval, a *Water Conservation Plan Ongoing Compliance Reporting Form* shall be submitted to DES documenting how the system has maintained compliance with the WCP. The following records shall be maintained by the water system to include with the report:
 - a. A leak log including the date a leak was discovered, the date a leak was repaired, the type of leak (ex. water main, service line, hydrant, valve), the approximate size of the leak (gpm), and the nearest address to the leak.
 - b. The title of water efficiency materials distributed and the date of distribution.
 - c. Date of installation and replacement of all meters as well as testing and calibration records.
 - d. Data from biannual night flow analysis and a brief summary of the analysis.
11. From the date of this WCP Approval, all new non-metallic pipes installed in the system shall be outfitted with detectable tracer tape or detectable tracer wire, or be GPS located and maintained in a GIS system.
12. Proposed changes to the WCP shall not be implemented unless approved by DES.

The *Water Conservation Plan Ongoing Compliance Reporting Form* may be located by going to the DES website (www.des.nh.gov), clicking on the "A-Z List" in the top right corner of the page, clicking "Water Conservation," and scrolling down to "Forms/Applications."

Please feel free to contact me with any questions at (603) 271-0659 or via e-mail at kelsey.vaughn@des.nh.gov.

Sincerely,



Kelsey Vaughn
Water Conservation Program
Drinking Water and Groundwater Bureau

cc: Abigail Fopiano, Epping Well & Pump Co., Inc.
Shreya Shah, Avesta Housing
Town of Hampton Falls
Rockingham Planning Commission
Christine Bowman, DES
Steve Roy, DES
Stacey Herbold, DES

WATER CONSERVATION PLAN

The Meadows at Grapevine Run, Hampton Falls NH (PWS TBD)

A water conservation plan is required for the Meadows at Grapevine Run (PWS TBD) community water system; a proposed senior residential community with a proposed small landlord-owned community water system. This water conservation plan has been developed following the New Hampshire Department of Environmental Services (NHDES) water conservation standards pursuant to Env-Wq 2101, *Water Conservation* rules. Activities outlined in this water conservation plan will be completed by water system personnel under the supervision of a certified water system operator.

I. Introduction

A. Contact Information

1. Name and location of system:
**The Meadows at Grapevine Run
25 Brown Road
Hampton Falls, New Hampshire 03844**
2. Current owner of the property and mailing address:
**NH Housing Finance Authority
24 Constitution Drive
Bedford, New Hampshire 03110**
3. Future owner of the water system and mailing address:
**Avesta Housing
Attn: Shreya Shah
307 Cumberland Avenue
Portland, Maine 04101**
4. Name and mailing address of preparer of water conservation plan:
**Abigail Fopiano, P.G.
Water Systems Consultant
Epping Well and Pump Company, Inc.
337 Calef Highway
Epping, New Hampshire 03042**

B. System Overview

1. Brief description of the project and water sources, including water sources to be developed for non-potable uses such as irrigation:
The water system will be fed by one bedrock well (Well #1) located within 50 feet of a proposed Pump House. With the anticipated build out, the design flow for 72 1-bedroom units is 9,000 gallons per day (gpd, calculated as 72 bedrooms x 125 gpd). There are no in-ground irrigation uses; discretionary use of water is limited to indoor use only. The source capacity of the system (defined as twice the design flow) is 18,000 gpd. The proposed permitted production volume (PPV) is 21,600 gpd, or 15 gpm.
2. Name designation of each proposed water source and any existing sources: **Well #1 (BRW-1)**
3. Number of connections proposed for each of the following classes:
 - a) Residential: **72 (3 buildings with 24 units in each building)**
 - b) Industrial/commercial/institutional: **0**
 - c) Municipal: **0**
4. The water system does not provide water to any consecutive water systems or privately owned redistribution systems.
5. There are no proposed connections that will receive more than 20,000 gpd.

WATER CONSERVATION PLAN
The Meadows at Grapevine Run, Hampton Falls NH (PWS TBD)

C. Transfer of Ownership

1. The property/system ownership is proposed to be transferred. Property is owned by New Hampshire Housing Finance Authority, and Avesta Housing has a Purchase & Sales agreement to purchase subject to municipal approvals and financing. Date to purchase is to be determined (TBD).

II. System Side Management

A. Water Meters

1. Source Meters

- a) No later than the source activation date, a water meter will be installed on the incoming well line for the source well (Well #1/BRW-1).

- b) An irrigation well is not proposed.

- c) Source meter information for existing source and if known, for each proposed source:

Source Name:	BRW-1
Source Meter Make:	TBD
Source Meter Model:	TBD
Source Meter Size:	1-inch or 1.5-inch diameter
Source Meter Installation Date:	TBD – in 2016 prior to start-up
Last Meter Test/Calibration Date:	Within a year of installation

- d) No later than the source activation date, the source meter will be read at least every 30 days.

2. Meter Selection, Installation, and Maintenance

- a) All meters will be AWWA certified, with the exception of b), below.

- b) AWWA does not have standards for magnetic flow meters. If a magnetic flow meter is proposed, the meter make, model, size, and manufacturer specifications will be forwarded to the NHDES Water Conservation program for review. The meter will not be installed until receiving approval for its use from NHDES.

- c) The selected size of the meters will be based on projected flow rates.

- d) Meters will be installed as specified by the manufacturer including requirements for horizontal or vertical placement, distance of straight run of pipe upstream and downstream of the meter, and strainer installation. If the manufacturer does not supply installation specifics, meters will be installed in accordance with the “Manual of Water Supply Practices M6, Water Meters-Selection, Installation, Testing, and Maintenance” (American Water Works Association, 2012).

WATER CONSERVATION PLAN
The Meadows at Grapevine Run, Hampton Falls NH (PWS TBD)

e) The following meter testing and calibration schedule or meter change-out schedule will be implemented. If the manufacturer’s accuracy warranty extends beyond the below schedule, the meter will be tested or changed-out no later than the warranty expiration date.

Meter Size (inches)	Testing Rate (yr)
<1"	10 yrs
1" - 2"	4 yrs
3"	2 yrs
>3"	yr

f) A log of the date meters were installed, tested, calibrated, repaired, and replaced will be maintained and calibration certificates will be kept on file.

B. Pressure Management

1. The design pressures of the system are from **40 psi** to **70 psi**.

C. Leak Detection and Repair

1. **General Leak Management**

- a) Leak detection methodologies will be conducted in accordance with “Manual of Water Supply Practices M36, Water Audits and Loss Control Programs” (American Water Works Association, 2009).
- b) Leaks will be repaired within 60 days of discovery unless a waiver is obtained in accordance with Env-Wq 2101.09.
- c) A log of all leaks will be maintained including the date the leak was discovered, the date the leak was repaired, the type of leak (ex. service, main, hydrant, valve), the size of leak (gpm), and the nearest street address to the leak.

2. **Leak Detection: Night Flow Analysis**

- a) **Distribution Meter**

- (1) A distribution meter capable of measuring low flows will be installed on the distribution line as it leaves the pump house (after any storage, treatment, or other water consuming process). The meter make, model, and size will be forwarded to NHDES prior to purchase/installation for review and approval. The make, model, and size of the proposed distribution meter is TBD.

- b) **Determining Baseline Flow**

- (1) When the system is approved for operation and pressure tested to ensure for no leaks, the night flow analysis will be conducted as described in II.C.2.c), below. The baseline flow will be the lowest flow recorded.

- (2) The results of the analysis and the proposed baseline flow will be submitted to NHDES for review.

WATER CONSERVATION PLAN

The Meadows at Grapevine Run, Hampton Falls NH (PWS TBD)

c) Night Flow Analysis

(1) The system will conduct a night flow analysis at least **twice per year** no sooner or later than 6 months apart. Night flow analysis will be implemented no later than the source activation date.

(2) Water usage will be recorded every minute for one hour between 1 am and 3 am using a distribution meter. Prior to the night flow analysis, users of the system will be requested to refrain from using water between 1 am and 3 am on this date. (Nighttime flow analysis will be conducted prior to sprinkler season.)

(3) If flows are above the baseline, then flows will continue to be recorded for an additional hour.

(4) If flows are 5 gpm or more above the baseline, a leak will be suspected and step 6 will be taken immediately.

(5) If flows remain above the baseline, but no more than 5 gpm above the baseline, all residents will be asked to check their units for leaks, including running toilets, and refrain from using water during the next night flow analysis, to be repeated again within 3 days.

(6) If again flows are above the baseline, the leak will be isolated by closing valves to isolate select portions of the system, such as the three buildings and the line to the buildings, while evaluating the change in flow as measured by the distribution meter. For example, when one valve is closed, one person in the field (operating the valves) will then communicate with a second person observing the distribution meter to monitor for a change in the background flow.

(7) No later than two weeks from isolating the leak to a certain branch of a system, an inspection of units for leaks in the building to which the leakage has been narrowed down will be conducted to find the leak or a sub-contractor skilled in acoustic leak detection will be retained and assist with pinpointing the leak on the main line.

(8) Records will be maintained of each night flow analysis, including recorded flows and leak detection results.

III. Consumption Side Management

A. Educational Outreach Initiative

1. No later than the source activation date, the system will begin distributing water efficiency outreach materials **twice a year** in the Spring and Fall. The materials distributed will be either NHDES Water Efficiency Fact Sheets located at <http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm#efficiency> or EPA WaterSense materials located at <http://www.epa.gov/watersense/>.

2. The system will maintain a log indicating how the system has complied with III. A.1., above. The log will include dates the outreach and education actions were taken and what was done.

B. Water Conservation and Efficiency Best Management Practices

1. To conserve water in these new buildings, all unit faucets, toilets, and showerheads will be WaterSense® certified models.

WATER CONSERVATION PLAN
The Meadows at Grapevine Run, Hampton Falls NH (PWS TBD)

IV. Reporting and Implementation

- A. The water system will submit a form supplied by NHDES once every three years from the date of the water conservation plan approval documenting how compliance with the requirements of Env-Wq 2101 *Water Conservation* are being achieved.
- B. The data collected with each night flow analysis from the previous three years, as well as a statement as to whether a leak was suspected or not, will be submitted with the report form in IV.A., above.
- C. The water system will report monthly production volumes, quarterly to the NHDES Water Use Registration and Reporting Program upon receiving a Water Use ID number from NHDES. Monthly means once every calendar month, but not sooner than 27 days after and no later than 33 days after the previous reading.

V. Notification Process

A. Public Notification Instructions

- 1. Within 10 days of submitting the conservation plan to NHDES, the applicant is required to provide a copy of the plan via certified mail with return receipt requested to the governing board of the municipality in which a proposed source is located, all municipalities that will receive water from the water system (if any), all wholesale customers (if any), and the regional planning commission serving the location of the proposed source. In most cases, only the municipality and the regional planning commission will require notification. All signed copies of the certified mail return receipt (the green card) must be forwarded to NHDES.

B. Additional Attachments

- 1. The applicant must provide the governing boards with a summary of the requirements of Env-Wq 2101, which may be found at http://des.nh.gov/organization/divisions/water/dwgb/water_conservation/index.htm, and request that the governing board amend local site planning requirements to reflect the requirements of Env-Wq 2101 or to promote water efficiency.

C. Notification of Consecutive Water Systems and Privately Owned Redistribution Systems

- 1. Within 5 working days of obtaining final approval of the source from NHDES, the system is required to notify any consecutive water system or privately owned redistribution system receiving water from the system, that pursuant to Env-Wq 2101.13, the systems must implement a water conservation plan and should contact the NHDES Water Conservation Program using the contact information below.

I certify that I have read this Water Conservation Plan, understand the responsibilities of the water system as referenced in the plan, and that all information provided is complete, accurate, and not misleading.

Owner Name (print): Christopher Miller
Title: Managing Director of Management & Development, New Hampshire Housing Finance Authority

Owner Signature:  Date: 6/28/16

Owner Name (print): Seth Parker - Director of Real Estate Devel.

Owner Signature:  Date: 7/11/16

WATER CONSERVATION PLAN
The Meadows at Grapevine Run, Hampton Falls NH (PWS TBD)

Appendix A
Definitions

Authorized metered consumption: billed metered water plus unbilled metered water.

Community water system (CWS): a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

Consecutive water system: a public water system that buys or otherwise receives some or all of its finished water from one or more wholesale systems for at least 60 days per year.

Final Source Approval: the date of final well siting approval or the date of issuance of the large groundwater withdrawal permit.

Large community water system: a community water system that serves more than 1,000 persons.

Privately owned redistribution system (PORS): A system for the provision of piped water for human consumption which does not meet the definition of a public water system and meets all of the following criteria:

(1) Obtains all of its water from, but is not owned or operated by a public water system; (2) serves a population of at least 25 people, 10 household units, or 15 service connections, whichever is fewest, for a least 60 days per year; and (3) has exterior pumping facilities, not including facilities used to reduce pressure, or exterior storage facilities which are not part of building plumbing.

Public water system (PWS): a system for the provision to the public of piped water for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

Small community water system: a community water system that serves 1,000 people or less.

Source activation date: the date the source is placed into use.

System input volume: the volume of water input to the water supply system after treatment, analysis, and storage.

Water balance: the difference between the system input volume and authorized metered consumption.

Water conservation: any beneficial reduction in water losses, waste, or use.

Wholesale system: a public water system or an industrial, commercial, or institutional (ICI) water user that treats source water and then sells or otherwise delivers finished water to a consecutive water system or privately owned distribution system.