The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

January 16, 2019

Kim Devanney
Chester Brook Estates Association
88 Lady Slipper Lane
Chester, NH 03036
kdevanney@llbean.com

Transmitted via Email

Subject: **Amended Water Conservation Plan Approval**
Chester – Chester Brook (PWS ID #: 0432030)

Dear Ms. Devanney:

On September 26, 2017, the New Hampshire Department of Environmental Services ("DES") Drinking Water and Groundwater Bureau approved a Water Conservation Plan for Chester Brook, located in Chester, New Hampshire. On January 8, 2019, DES received an Amended Water Conservation Plan (the "Amended WCP"), signed on January 8, 2019.

DES approves the Amended WCP based on the following conditions:

1. All meters shall be installed per the manufacturer's instructions or American Water Works Association standards.

2. All meters shall be tested and maintained based on the schedule in the Amended WCP.

3. Source meters and any other meters measuring water consuming processes prior to distribution shall continue to be read monthly, no sooner than 27 days and no later than 33 days from the last meter reading.

4. The system shall continue to report monthly source production volumes to the DES Water Use Registration and Reporting Program on a quarterly basis.

5. Night flow analysis shall be conducted at a rate of twice a year in accordance with the methodology in the Amended WCP.

6. The baseline flow for the night flow analysis shall be 0.3 gallons per minute.

7. Leaks shall be repaired within 60 days of discovery.

8. All 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.

9. A water conservation outreach and education program shall continue to be implemented in accordance with the Amended WCP.

10. A *Water Conservation Plan Ongoing Compliance Reporting Form* shall be submitted every three years from the date of the original Water Conservation Plan Approval, September 26, 2017. The report shall be submitted to DES documenting how the system has maintained compliance with the Amended WCP. The next ongoing compliance report is due on September 26, 2020**.** 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 analyses and a brief summary of the analyses.

11. Proposed changes to the Amended WCP shall not be implemented unless approved by DES.

A copy of the Amended WCP and 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, and clicking "Water Conservation."

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

Kelsey Vaughn
Water Conservation Program
Drinking Water and Groundwater Bureau

ec: Brett Hathaway, Chester Brook Estates Association
Steve Fournier, Hampstead Area Water Services, Company

HAWSCO
HAMPSTEAD AREA WATER SERVICES, CO.
Serving the Water Community for over 40 years

AMENDED WATER CONSERVATION PLAN FOR CHESTER BROOK ESTATES

Prepared for:
CHESTER BROOK ESTATES ASSOCIATION
CHESTER, NH

Prepared by:
STEPHEN FOURNIER, PROJECT MANAGER
HAMPSTEAD AREA WATER SERVICES, CO.
54 SAWYER AVENUE
ATKINSON, NH 03811

WATER CONSERVATION PLAN: Chester Brook Estates

A community water system seeking authorization for a new source of water must submit a water conservation plan (WCP) to the New Hampshire Department of Environmental Services (NHDES) for approval, demonstrating how the water system proposes to comply with water conservation standards pursuant to Env-Wq 2101, *Water Conservation* rules. Chester Brook Estates is an existing small community water system. A WCP for Chester Brook Estates was approved on September 26, 2017. The main revision reflected in this Amended WCP is a change to the leak detection approach.

Activities outlined in the WCP 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: Chester Brook Estates- Chester, NH

2. Owner of system and mailing address: Chester Brook Estates Association, PO BOX 26, Chester, NH 03036

3. Name and mailing address of preparer of water conservation plan: Hampstead Area Water Services, Co., 54 Sawyer Avenue, Atkinson, NH 03811

B. System Overview

1. Description of the community being served: Approximately 40 single 3-4 bedroom homes

2. Description of water sources, including water sources to be developed for non-potable uses such as irrigation: Three wells were drilled in 1999 (BRW1, BRW2, and BRW3). BRW2 was deactivated in September 2016 due to low yield. The new well (BRW4) was connected to the system in January 2017 with temporary, emergency approval and received final Small Well Siting Approval on September 28, 2017.

3. Name designation of each water source: BRW1, BRW3, & BRW4. Note: BRW2 is inactive.

4. Number of connections proposed for each of the following classes:
   a) Residential: 40
   b) Industrial/Commercial/Institutional: 0
   c) Municipal: 0

5. The water system does not provide water to any consecutive water systems or privately owned redistribution systems.

6. There are no proposed connections that receive more than 20,000 gpd.

C. Transfer of Ownership

1. The system ownership is not proposed to be transferred.

II. System Side Management

A. Water Meters

1. Source Meters

a) No later than the source activation date, meters will be installed on each new and any existing water source.

b) An irrigation well is not proposed.

c) Source meter information for each source:

Source Name: BRW1
Source Meter Size: 1”
Source Meter Make: Neptune
Source Meter Model: T-10
Source Meter Installation Date: February 2018 (new)

Source Name: BRW3
Source Meter Size: 1”
Source Meter Make: Neptune
Source Meter Model: T-10
Source Meter Installation Date: February 2018 (new)

Source Name: BRW4
Source Meter Size: 1”
Source Meter Make: Neptune
Source Meter Model: T-10
Source Meter Installation Date: February 2018 (new)

d) Source meters will continue to be read at least monthly.

2. Meter Selection, Installation, and Maintenance

a) All meters will be American Water Works Association (AWWA) certified.

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

c) 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” (AWWA, 2012).

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

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

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

B. Pressure Management

1. The design pressures of the system are from 50 psi to 65 psi.

C. Leak Detection and Repair

1. Leak detection methodologies will be conducted in accordance with the "Manual of Water Supply Practices M36, Water Audits and Loss Control Programs" (AWWA, 2016).

2. Leaks will be repaired within 60 days of discovery unless a waiver is obtained in accordance with Env-Wq 2101.23.

3. 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 the leak (gpm), and the nearest street address to the leak.

D. Night Flow Analysis

1. The system will conduct a night flow analysis at least twice a year.

2. A distribution meter capable of reading low flows was installed on the distribution line after treatment and storage in September 2018. The distribution meter is a 2" Badger M2000.

3. See Appendix B for the night flow analysis methodology.

III. Consumption Side Management

A. Educational Outreach Initiative

1. The system will distribute water efficiency outreach materials twice a year with Consumer Confidence Reports and emails. The materials distributed will be either EPA WaterSense materials located at http://www.epa.gov/watersense/ or NHDES Water Efficiency Fact Sheets located at http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm#efficiency.

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.

IV. Reporting and Implementation

A. The water system will submit a form supplied by NHDES once every three years from the date of the original water conservation plan approval, documenting how compliance with the requirements of Env-Wq 2101, *Water Conservation* rules, is 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 continue to report monthly production volumes quarterly to the NHDES Water Use Registration and Reporting Program. Monthly means once every calendar month, but no sooner than 27 days after and no later than 33 days after the previous reading.

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): Brett D. Hathaway

Owner Signature: Brett D. Hathaway Date: 01/08/2019

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 at 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.

Appendix B
Night Flow Analysis Methodology

1. Distribution Meter

    a. A meter capable of measuring flows less than 2 gallons per minute (gpm) will be installed on the distribution line and located after treatment, any other water consuming processes, and storage. The meter make, model, and size will be forwarded to NHDES prior to purchase/installation for review and approval.

        1. The proposed meter make, model, and size were forwarded to NHDES on August 20, 2018 and approved on August 28, 2018. The 2" Badger M2000 was installed in late September 2018.

2. Determining Baseline Flow

    a. Baseline flow will be determined when the system is tight. The system will be considered tight when (this may vary based on the size and age of the system):
        1. A leak detection survey is conducted and all leaks discovered are repaired; or
        2. An initial night flow analysis is conducted and night flow decreases to 0 gpm.

    b. The results of the initial night flow analysis and the proposed baseline flow will be submitted to NHDES for review.

        1. The results of a night flow analysis conducted on October 16, 2018 were submitted to NHDES on November 7, 2018. Based on the results of that analysis, the baseline flow will be 0.3 gpm.

3. Night Flow Analysis

    a. Night flow analysis will be conducted at least twice a year and no sooner or later than 6 months apart.

    b. Water usage will be recorded every minute for one hour or every 15 minutes for three hours during a period of anticipated low water demand using a distribution meter (between 1 am and 3 am is recommended). Prior to the night flow analysis, users of the system will be requested to refrain from using water during the date and time of the scheduled night flow analysis. Night flow analysis will be conducted prior to sprinkler season.

    c. If the lowest flow is above the baseline flow, then water usage will continue to be recorded for an additional hour.

    d. If the lowest flow is more than 2 gpm above the baseline, a leak will be suspected.

        1. All residents will be asked to check their homes for leaks, including running toilets and outdoor spigots. The previous steps will then be repeated in 3 days. If the lowest flow is still above the baseline flow, the actions in Steps 2 and 3 below will be taken.

        2. Select portions of the system will be isolated and evaluated by closing valves while monitoring the change in flow as measured by the distribution meter. For example, when one valve is closed, the person in the field operating the valve will then communicate with a second person observing the distribution meter to monitor for a change in the background flow.

3. No later than two weeks after isolating the leak to a branch of the system, a sub-contractor skilled in acoustic leak detection will be retained and will assist with pinpointing the leak.

e. Records will be maintained of each night flow analysis, including recorded flows and leak repair results.