The State of New Hampshire
Department of Environmental Services
Thomas S. Burack, Commissioner

Celebrating 25 Years of Protecting New Hampshire's Environment

WATER CONSERVATION PLAN APPROVAL

November 27, 2012

Donald Ware
Pennichuck Water Works, Inc.
25 Manchester St.
PO Box 1947
Merrimack, NH 03054

RE: Milford – Badger Hill (PWS ID #: 1562030)
Water Conservation Plan, October 2012, NHDES # 998191

Dear Mr. Ware:

On October 30, 2012, the New Hampshire Department of Environmental Services ("DES") Drinking Water and Groundwater Bureau received a Water Conservation Plan (the "Plan"), dated October 2012 for the Badger Hill water system located in Milford, 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 Plan, DES has determined the Plan complies with Env-Wq 2101.06, *Requirements for Existing Small Community Water Systems.*

Pursuant to Env-Wq 2101.11, the Town of Milford and the Nashua Regional Planning Commission were provided the opportunity to comment on the Plan from October 30, 2012, the date of public notification, through November 22, 2012. DES received no comments.

On **November 27, 2015**, and every three years thereafter, the water system shall submit a detailed and completed compliance report form to DES documenting compliance with the Plan. Required information includes contact information for the water-system owner and for the individual responsible for carrying out plan tasks; dates tasks were performed; and data relating to meter reading, water audits, leak detection, and public outreach. A copy of the *Water Conservation Plan Ongoing Compliance 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 scrolling down to Water Conservation.

Revisions to the Plan shall not be implemented without further approval from DES.

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

Sincerely,

Stacey Herbold
Water Conservation Program
Drinking Water and Groundwater Bureau

ec: Diana Morgan, NHDES
Town of Milford
Nashua Regional Planning Commission
James Vernon, Nobis Engineering

RECEIVED
OCT 30 2012
DES/DWGWB
By

WATER CONSERVATION PLAN

BADGER MOUNTAIN PROPERTIES, LLC

MILFORD, NEW HAMPSHIRE

October 2012

I. Introduction

This Water Conservation Plan has been prepared by Nobis Engineering for the Small Community Water System (EPA ID # 1562030) that serves the Badger Hill development off Osgood Road in Milford, New Hampshire. The Plan has been prepared according to Env-Wq 2101.06, Water Conservation "Requirements for Existing Small Community Water Systems and Certain Water Systems Owned by Landlords" and the New Hampshire Department of Environmental Services (NHDES) guidance document, "Water Conservation Plan Guidance Document for Community Water Systems, September 2011". This Plan reflects an update of a Water Conservation Plan submitted in 2007 and approved by NHDES; the 2007 Plan was never implemented. The 2007 Plan was prepared according to the predecessor water conservation rule, Env-Ws 390.

The Plan is prepared and submitted at approximately the same time as a Preliminary Report for permitting new wells #6 and #7 to serve the system.

New bedrock Wells 6 and 7 were drilled in August 2007 by Contoocook Artesian Well Company of Henniker, New Hampshire to serve the existing Badger Hill water system in Milford, New Hampshire. Contoocook contracted directly with Starter Building and Development (SBD), the Badger Hill developer at the time. The wells were sited by Lewis Engineering as the consultant to SBD for water system design. The new wells are intended to provide an additional 30 to 40 gallons per minute (gpm) of water in order to accommodate additional homes to be built in the Badger Hill development.

Badger Mountain Properties, LLC (BMM) of Bedford, New Hampshire is the developer for the new homes at Badger Hill during this current and final phase of the development. Previous developers have been Milford Millbrook Development, Sevar NH Corporation, Sevar Corporation, SBD, and Badger Mountain of Milford, LLC. The existing water system is owned and operated by Pennichuck Water Works (PWW) of Merrimack, New Hampshire.

Well #6 and Well #7 have yet to be tested, permitted, or connected to the Badger Hill Community Water System. Once Well #6 and Well #7 are connected to the water system, PWW will own and operate the new wells.

None

3. **Connections receiving more than 20,000 gpd:**
   None

C. **Water Use Trends and Supporting Data/Population Trends**

1. **Existing and anticipated seasonal fluctuation in water use and reason for fluctuation:**

   Badger Hill is a year-round residential community. In 2009 – 2011, the greatest monthly water usage occurred in July or August. The lowest monthly water usage occurred in November in 2009 and 2011 and in February in 2010. (See Attachment A.) Similar patterns are expected as the system grows.

2. **Anticipated growth in population and seasonal fluctuations in population:**

   As noted above, 178 residential connections are anticipated at full build out (74 more than the current connections) representing an estimated 576 bedrooms. Based on the year-round residency, no significant seasonal fluctuations in population are anticipated.

3. **Maximum day yield of existing sources based on 24-hour pumping**

   The permitted production volume of Wells #1 and #3 is 40 gpm each. Information at the pump house states that the yield of Well #1 was 20.57 gpm on 10/8/10, and the yield of Well #3 was 52.36 gpm on the same date. It is unknown whether these are instantaneous yields or yields that can be sustained for 24 hours. According to NHDES records (Cindy Klevens, personal communications), Well #1 and Well #3 are permitted at 40 gpm each.

4. **Average daily water use:**

   For 2009, 2010, and 2011 (Attachment A), the average daily water use was 19,961, 23,440, and 27,292 gallons per day (gpd) respectively, for an overall average of 23,564 gpd over the three-year period. The increase in use between 2009 and 2011 is probably due to two factors, according to Pennichuck. First, 2009 was a dry year, 2010 was relatively dry, and 2011 was about normal in terms of precipitation, so more water was available. Since in-ground irrigation systems are not allowed, the trend toward greater water use that occurs in dry years for other water systems does not apply at Badger Hill. Second, in January, February, and March 2011 flows were much higher than usual in the winter, probably due to a leaking pressure reducing valve in a meter pit.

- 4"-6" meters = 1 year

5. **Frequency that source meters will be read:**

   The source meters are read during routine station checks and read monthly concurrent with the reading of all retail meters.

6. **Statement regarding source meters:**

   Source meters will be selected, installed, and maintained in compliance with "Manual of Water Supply Practices M6, Water Meters – Selection, Installation, Testing, and Maintenance," (American Water Works Association, 1999).

II. System Side Management

Note: Existing Small Community Water Systems may select either Option A (Metering and Water Accounting) or Option B (Leak Detection). Pennichuck has selected Option A (which it is already doing) for Badger Hill's water system.

A. Option A: Metering and Water Accounting

Metering and water accounting is the System Side Management option selected.

1. **Service Meters**

   a) How many unmetered connections exist? None

   b) Separate irrigation meters will not be installed and are not allowed by Pennichuck.

   c) All existing service connections have meters, and all new service connections will be metered immediately upon connection.

   d) Service meters will be read monthly.

   e) Describe all methods that will be used to read service meters. All retail service meters, well meters and production meters are radio equipped and read monthly.

   f) Meter reading is anticipated to take less than one hour per cycle.

   g) Proposed rate of meter testing and/or meter change-out? All Pennichuck meters are tested and calibrated in accordance with the New Hampshire Public Utilities Commission rules Chapter 600 Part Puc 605 METER ACCURACY AND TESTING. Meters are tested or replaced every 10 years.

   h) Service meters will be selected, installed, and maintained in accordance with "Manual of Water Supply Practices M6,

2. **Existing maximum distribution pressure:**

   80 per NHPUC regulations

3. **How is pressure currently monitored and how will pressure continue to be monitored?**

   Station gauges and SCADA

4. **What method will be used to reduce pressures in zones found to be in excess of 80 psi?**

   Three master pressure reduction valves (PRVs) already exist within the distribution system and several existing house service connections have PRVs.

5. **What will be the time frame for reduction?**

   A PRV is planned within the distribution piping for Phase 4 of the development and will be located at the northwest corner of the northerly intersection of Badger Hill Drive and Timber Ridge Drive. Household PRVs will be installed along Timber Ridge Drive if needed during Phase 5 construction.

6. **If pressure reduction is not technically feasible, please explain why and describe what additional steps the water system will take to monitor and repair leakage within these zones:**

   Not applicable.

D. Intentional Water Loss

1. **Are there "bleeders" used within the system at dead ends to improve water quality or prevent freeze-up? If yes, what looping opportunities exist?**

   There are no bleeders.

2. **Are storage tanks intentionally allowed to overflow because of system hydraulics or water quality concerns? If yes, what opportunities exist for the installation of altitude valves or tank mixing systems?**

   No

III. Consumption Side Management

A. Educational Outreach Initiative

1. **Informational materials:**

   Information regarding water conservation and efficient water use will be provided to Badger Hill water users. Information will include the following conservation materials from the NHDES (Attachment D).

and any expansion to create a greater number of bedrooms must have approval of the Water Supply and Pollution Control Division or other appropriate governmental authority.

V. Water Use Restrictions

A. What is the system's plan relative to implementing water restrictions?

The existing homes are on odd/even restrictions in case of an emergency or drought, with no in ground irrigation.

B. Who is responsible for enforcing restrictions?

Pennichuck

VI. Reporting and Implementation

A. Reporting

Pennichuck Water Works, on behalf of the Badger Hill Estates system, will submit a "Water Conservation Plan Ongoing Compliance Form" once every three years documenting how compliance with the requirements of Env-Wq 2101 is being achieved. The form may be located on the DES Water Conservation webpage found at www.des.nh.gov – go to the A-Z List and scrolling down to Water Conservation. Activities outlined in the Water Conservation Plan will be completed by PWW under the supervision of a certified water system operator.

B. Implementation

Activities outlined in the Water Conservation Plan will be completed by water system personnel under the supervision of a certified water system operator.

VII. Public Notification

Within seven days of submitting the Water Conservation Plan to NHDES, Pennichuck Water Works will send a copy of this Conservation Plan, a copy of NHDES's water conservation rules summary, a cover letter, and standard water conservation education/outreach materials (NHDES Fact Sheets cited in Section III A.1.) obtained from the NHDES website to the following entities for their review.

Board of Selectmen
Town Hall
1 Union Square
Milford, New Hampshire 03055-4240

ATTACHMENT A

Water Use Data, 2009 – 2011

Badger Hill

Annual Station Flow

2009

Month	Total Flow (gallons)	Minimum Daily Flow (gallons)	Maximum Daily Flow (gallons)	Average Daily Flow (gallons)	Average Weekly Flow (gallons)
January	476,348	7,373	23,615	15,366	107,562
February	550,026	14,757	29,033	19,644	137,506
March	491,073	15,430	16,135	15,841	110,887
April	544,373	15,516	25,250	18,146	127,020
May	814,198	20,281	31,982	26,264	183,851
June	666,635	16,285	31,512	22,221	155,548
July	652,505	16,325	24,887	21,049	147,340
August	962,537	23,615	48,844	31,050	217,347
September	675,369	18,871	25,731	22,512	157,586
October	507,477	15,526	21,724	16,370	114,592
November	464,056	14,704	15,947	15,469	108,280
December	483,765	14,894	16,336	15,605	109,237
Annual	7,288,362 (Total)	7,373 (Minimum)	48,844 (Maximum)	19,961 (Average)	

Badger Hill

Annual Station Flow

2010

Month	Total Flow (gallons)	Minimum Daily Flow (gallons)	Maximum Daily Flow (gallons)	Average Daily Flow (gallons)	Average Weekly Flow (gallons)
January	493,210	15,120	17,111	15,910	111,370
February	427,151	14,223	16,018	15,255	106,788
March	490,186	15,409	16,018	15,812	110,687
April	573,357	15,986	25,872	19,112	133,783
May	974,623	22,173	42,967	31,439	220,076
June	1,060,840	22,921	49,186	35,361	247,529
July	1,081,458	22,867	61,069	34,886	244,200
August	1,087,539	20,506	45,468	35,082	245,573
September	795,605	21,500	39,217	26,520	185,641
October	557,890	16,606	21,500	17,996	125,975
November	496,840	16,061	16,915	16,561	115,929
December	537,633	16,766	19,288	17,343	121,401
Annual	8,576,333 (Total)	14,223 (Minimum)	61,069 (Maximum)	23,440 (Average)	

Badger Hill

Annual Station Flow

2011

Month	Total Flow (gallons)	Minimum Daily Flow (gallons)	Maximum Daily Flow (gallons)	Average Daily Flow (gallons)	Average Weekly Flow (gallons)
January	677,293	19,288	25,945	21,848	152,937
February	805,318	25,945	32,036	28,761	201,330
March	1,066,892	29,537	39,370	34,416	240,911
April	530,485	15,641	31,728	17,683	123,780
May	834,146	21,168	38,351	26,908	188,356
June	1,350,621	29,567	65,578	45,021	315,145
July	1,493,884	40,018	65,578	48,190	337,329
August	889,981	20,677	40,018	28,709	200,963
September	683,026	19,411	23,733	22,768	159,373
October	576,110	15,322	20,463	18,584	130,089
November	514,628	15,322	18,114	17,154	120,080
December	561,033	15,866	22,919	18,098	126,685
Annual	9,983,417 (Total)	15,322 (Minimum)	65,578 (Maximum)	27,345 (Average)	

ATTACHMENT B

Water Audit Results

Cycle	Munis Account Number(s)	System Name	Water Supply	Previous Read Date	Present Read Date	# of read days	Billed Cons	Pumpstation Cons	Unacct for %
38	400103 + 400104 + 400105 or MM 400106	Badger Hill	Milford	7/31/2012	9/5/2012	36	1255	1380	10%
38	400103 + 400104 + 400105 or MM 400106	Badger Hill	Milford	7/3/2012	7/31/2012	28	1807	1870	3%
38	400103 + 400104 + 400105 or MM 400106	Badger Hill	Milford	6/5/2012	7/3/2012	28	1216	1310	8%

ATTACHMENT C

Pennichuck Water Rates

PENNICHUCK™

weather forecast

Pennichuck Water Works, Inc. Core Rates

Notice to Customers

RATES APPROVED BY THE NHPUC

On June 9, 2011, the New Hampshire Public Utilities Commission (NHPUC) approved a permanent rate increase of 11.95% for all customers for service rendered effective June 16, 2010. The following schedule shows the rates for each category of service:

MONTHLY GENERAL METERED RATE

METER	RATE
5/8"	$ 20.34
3/4"	$ 29.28
1"	$ 47.16
1 1/2"	$ 91.91
2"	$150.47
3"	$275.93
4"	$455.09
6"	$903.02
8"	$1,440.68
10"	$2,067.77

In addition to this standard customer charge, the monthly volumetric charge is:
$3.30 per 100 Cubic Feet
100 Cubic Feet = 748 gallons

MONTHLY PRIVATE FIRE PROTECTION

The charge shall be determined by the size of the pipe entering the property as follows:

SIZE	CHARGE
4" connection or smaller	$ 55.88
6" connection	$93.77
8" connection	$138.06

Customers may direct any questions concerning rates or service to Pennichuck at its company's Customer Service Department, PO Box 1947, Merrimack, NH 03054-1947, by calling 603-882-5191 or 1-800-553-5191 or via email at customer-service@pennichuck.com. Customers may also contact the NHPUC at their offices at 21 S. Fruit Street, Concord, NH 03301, or by phone at 1-800-852-3793.

MISCELLANEOUS UTILITY SERVICE FEES

Service Connection and Disconnection *	
Regular Hours	$ 46.00
Night/Weekend	$ 63.00
Collection Charge *	
Regular Hours	$ 46.00
Night/Weekend	$ 63.00
Initiation of Service	$ 20.00
Return Check Fee	$ 15.00
Service Pipe Connection *	$160.00
Inspection Fee of Main Pipe Extension (per foot)	$ 3.00

* The New Hampshire Public Utilities Commission (NHPUC) approved an increase on Miscellaneous Utility service Fees for service rendered effective August 13, 2009.

ATTACHMENT D

Educational Material