



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Thomas S. Burack, Commissioner

WATER CONSERVATION PLAN APPROVAL

December 10, 2014

Slope N' Shore Club, Inc.
c/o John Filbin, President
P.O. Box 195
New London, NH 03257-0195

RE: New London – Slope N' Shore (PWS ID #: 1722020)
Water Conservation Plan, NHDES # 999900

Dear Mr. Filbin:

On November 7, 2014, the New Hampshire Department of Environmental Services (“DES”) Drinking Water and Groundwater Bureau received a Water Conservation Plan (the “WCP”), signed on October 31, 2014, for Slope N' Shore located in New London, 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 New London and the Upper Valley Lake Sunapee Regional 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 the source activation date, all source meters, distribution meters, and any other meters and data loggers proposed in the WCP shall be replaced, installed, and/or tested and calibrated in accordance with the WCP.
2. All meters shall be tested and maintained based on the schedule proposed in the WCP.
3. All meters shall be installed per the manufacturer's instructions or American Water Works Association standards.
4. Starting no later than the source activation date, all meters shall be read on a monthly basis, no sooner than 27 days and no later than 33 days from the last meter reading.
5. Starting no later than the final source approval date, the system shall begin reporting monthly production volumes to the NHDES Water Use Registration and Reporting

program on a quarterly basis. The system's registration number is **WUID #20885**. The total monthly volume withdrawn from each source shall be reported to DES on a quarterly basis. The first quarter report is due **January 15, 2016**. Slope N' Shore is already a registered water user. Jenn Hager is listed as the authorized data provider for Slope N' Shore. For your reference, instructions for using the tool are enclosed with this letter. If you have any questions about Water Use Registration and Reporting or changing the current data provider please call (603) 271-6685.

6. Every two years from the final source approval, a comprehensive leak detection survey shall be completed in accordance with "Manual of Water Supply Practices, Water Audits and Loss Control Programs", document identification number AWWA M36, American Water Works Association, 2009.
7. Leaks shall be repaired within 60 days of discovery.
8. Within one year of final source approval, an outreach and education program shall be implemented as proposed in the WCP.
9. 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.
10. Every three years from the date of this WCP Approval, a *Water Conservation Plan Ongoing Compliance 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), and the approximate size of the leak (gpm).
 - b. The title of water efficiency materials distributed and the date of distribution.
 - c. Date of installation and replacement of all meters and testing and calibration records.
 - d. Leak detection survey reports.
11. Revisions to the Plan shall not be implemented without further approval from DES.
12. Within 5 business days of obtaining final source approval, any consecutive water systems or privately owned redistribution systems receiving water from this system shall be contacted and informed of the proposed source activation date as well as a statement indicating that upon source activation, they will be required to comply with Env-Wq 2101.

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

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

Sincerely,

A handwritten signature in black ink, appearing to read "Stacey Herbold". The signature is written in a cursive style with a large initial "S" and "H".

Stacey Herbold
Water Conservation Program
Drinking Water and Groundwater Bureau

cc: Christine Bowman, NHDES
Steve Roy, NHDES
Town of New London
Sunapee Regional Planning Commission
Lynette Carney, Underwood Engineers
LD

Water Conservation Plan

For

Slope 'N Shore Club

New London, New Hampshire

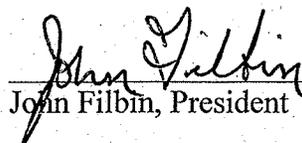
October 8, 2014

Prepared by:
Underwood Engineers
99 North State Street
Concord, NH 03301

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's Name: Slope 'N Shore Club

Owner's Signature: _____


John Filbin, President

Date: 10/31/14

This Plan has been organized in accordance with Section III, Water Conservation Plan Guidance Document for Existing Small Community Water Systems and Certain Landlord Owned Water Systems of the September 2011 NHDES document entitled "*Water Conservation Plan Guidance Document for Community Water Systems*". Items from the document's outline are included in *italics* below.

This report has been submitted to:

- NHDES
- Town of New London, via certified mail within 10 days w/ Water Conservation Rules Summary (Env-Wq-1201)
- Upper Valley Lake Sunapee Regional Planning Commission, via certified mail within 10 days w/ Water Conservation Rules Summary (Env-Wq-2101)

I. ***Introduction***

A. ***Contact Information***

1. *Name and location of System:*

Slope 'N Shore Club
Knollwood Road & Sugarhouse Road, New London, NH

2. *Owner of System and Mailing Address:*

Slope 'N Shore Club, Inc.
PO Box 195
New London, NH 03257-0195

3. *Plan Prepared by:*

Underwood Engineers
99 N. State Street
Concord, NH 03301



B. ***System Overview***

The water system at the Slope 'N Shore Club consists of an existing bedrock well located adjacent to the Inn at Pleasant Lake, and a new bedrock well (installed in 2014, but not yet on-line) located approximately 35 ft to the south of the Main Pump Station.

Water is pumped from the wells to the Main Pump Station where it runs through a cartridge filter, Uranium absorbers, and into a hydropneumatic tank. Water flows from the hydropneumatic tank into the lower distribution system, which includes the system below the Mid-Station Booster Pump Station. The well pump(s) are controlled by pressure in the hydropneumatic tank.

The service area of the system is located on a large hill. The Mid-Station Booster Pump Station is located at approximately the mid-point of the system on the hill. The Mid-Station takes water from the lower zone and pumps it to a 30,000 gallon cistern located near the top of the hill. The cistern provides pressure for the upper-pressure zone of the system (that portion of the system located above the Mid-Station Booster Pump Station). The two booster pumps are constant speed and controlled (on-off) by the level in the cistern. The Mid-Station Booster Pump Station is being replaced as part of a system upgrade currently in design. Minor piping changes at the Main Pump Station and connection of the new well are also part of the planned upgrade, which is anticipated to be completed in the summer of 2015.

1. *Reason for the new source.*

The new well was installed to provide a back-up source to the existing well.

2. *Number of connections existing and proposed for each of the following classes: a) residential, b) Industrial/commercial/institutional; and c) Municipal.*

The Slope 'N Shore Club system services approximately 70 residential homes in the housing development around Knollwood and Sugarhouse Roads. Twenty (20) are year-round, full-time residences. There is one commercial property serviced by the system, the Inn at Pleasant Lake. There are no industrial, institutional or municipal users on the system.

3. *Description of any connections that currently receive or will receive more than 20,000 gpd.*

There are no connections to the system that use over 20,000 gpd.

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

1. *Existing, if applicable, and anticipated seasonal fluctuation in water use and reason for fluctuation.*

The area serviced by the system is seasonal, and fluctuations in water use include higher water use during the summer. Over the period 2009-2013, summer water use was typically 1.64 times that of the yearly average use. Historic water use is tabulated below:

Year	Main Pump Station		
	Yearly Average (gpd)	Summer Average (gpd)	Summer Average/Yearly Average
2009	7,745	10,822	1.4
2010	7,007	11,997	1.7
2011	7,558	12,422	1.64
2012	8,083	14,718	1.8
2013	7,375	12,229	1.66
Ave. 09-13	7,554	12,438	1.64

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

There is no anticipated growth in population of the system; however, it is anticipated that over time more homes will change from seasonal to year-round usage, which may affect the seasonal fluctuation of flows. There is only 1 lot remaining in the subdivision that has not been developed.

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

The original well is believed to have been drilled in approximately 1964 and approved by NHDES in 1970. The yield of the existing well is 75 gpm according to a 2010 Sanitary Survey by the NHDES. This is in agreement with information from the original well pump information, which had a capacity of about 85 gpm, according to replacement records from 1988. There are no records of a 24-hour pump test.

4. *Average daily water use.*

Average Daily Water use, based on historical data over the last 5 years is approximately 7,554 gpd. See historic data provided in Item I.C.1 above.

5. *Maximum daily water use.*

The existing distribution meter at the Main Pump Station records total flow and is read on a monthly basis. As such, there is no historic data to determine Maximum Daily water use. Based on historic average day use, and using a peaking factor of 2.5 (AWWA Manual M32), the estimated average Maximum Daily use is 18,884 gpd (7,554 gpd x 2.5).

6. *Minimum hourly flows (if known).*

Minimum hourly flows are unknown.

D. *Source Meters*

1. *Name designation of each water source.*

System Water Sources:

Well #1 –Inn at Pleasant Lake – Current main water source

Well #2 – New well; installed July 2014

Both are bedrock wells.

2. *Meter make, model, size, flow range and date of last calibration for each existing source meter.*

The existing source meter is a 3” Hays meter that is believed to be a turbine meter. It is assumed that the meter was installed in 1997 when the Main Pump Station was constructed. There are no records of meter calibration. In addition, the meter installation is not optimal for accuracy, being installed immediately downstream of a 90 degree bend. This meter is located on the pipeline entering the Main Pump Station from the well and will be replaced and re-piped as part of the system upgrade.

There is also currently a 3” Badger Recordall II turbo meter on the Main Pump Station discharge line to the system. It is assumed that this meter was also installed in 1997 when the Main Pump Station was constructed. This meter is also not installed for optimal accuracy, as it has a 90 degree bend immediately downstream of the meter. This meter will also be replaced and re-piped as part of the system upgrade.

Underwood Engineers is in the process of designing an upgrade to the Main Pump Station that will include replacement of the flowmeters (source and distribution) in the station with meters capable of instantaneous flow reading, and re-piping to provide proper lay lengths for the meters. The new well will be tied into the existing piping outside the pump station, and the PLC will be programmed to record flow from each well. A single flowmeter will be used to measure source water flow entering the Main Pump Station from the wells. The PLC will monitor the source well in operation and the metered flow and store historic flow for each source.

A new magnetic flowmeter will be installed on the distribution line leaving the Main Pump Station to monitor system consumption.

As part of the upgrade, a new 1” meter will also be installed on the service to the Inn at Pleasant Lake, which is the single commercial user in the system.

There will also be two new meters installed at the new Mid-Station Booster Pump Station to monitor the flow pumped to the upper pressure zone and any water that is allowed to backflow to the low pressure zone through a by-pass in the pump station.

3. *Meter make, model, size and flow range for each new water source (if known).*

The new well source will be metered by the Main Pump Station source meter, which will be replaced next year as part of the system upgrade, as described in #2 above.

4. *Frequency that source meters and distribution meters will be tested/calibrated?*

The source meter and distribution meter (located on the pump station discharge) will be tested, and if necessary, calibrated based on the following AWWA schedule:

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

If the meter accuracy warranty extends beyond the meter testing rate, the meter will be tested upon warranty expiration and continue in accordance with the above table.

5. *Frequency that meters will be read (at least every 30 days).*

Meter flows will be recorded continuously by the PLC. The cumulative total flow by source will be recorded monthly by the system operators.

6. *Statement that “The 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*

A. *Option B: Leak Detection*

Slope N' Shore has proposed to choose the acoustic leak detection option. An acoustic leak detection survey will be conducted every two years.

1. *Summary of findings for the most recent leak detection surveys including the following information:*
 - a.) *Years Conducted*
 - b.) *Number of Leaks Found*
 - c.) *Estimated losses recovered*
 - d.) *Percent of system surveyed*

A previous system evaluation report in 1993 recommended the completion of a leak detection program. Meters were installed at the pump stations as a result of this, and informal weekly readings of the meters lead to the identification of some leaks. The Club reports conducting informal periodic monitoring of weekly distribution flows to monitor the system for leaks.

2. *Are pipe locations known? If not, include a statement that a pipe location survey will be conducted in order to perform leak detection.*

The approximate location of pipes is known. The Club has a map showing the approximate location of the water lines (attached).

3. *Breakdown of pipe material, age and length.*

6-inch AC, approximately 7,200 ft, estimated 1970
 4-inch PVC, approximately 5,300 ft, estimated late 1970's
 Services are believed to be 3/4-inch or 1-inch HDPE.

4. *Availability of contact points and adequacy of spacing.*

Contact points include several gate valves at various intersections and at curb stops for each of the 71 services.

5. *Is pipe material non-metallic? If yes, as leaks are difficult to acoustically detect in non-metallic systems, what additional measures will be taken to detect leaks?*

Pipe material is non-metallic. Slope 'N Shore Club will contract with Granite State Rural Water (GSRW), or another contractor, to perform an acoustic leak detection survey.

6. *Will zone meters be installed to assist with leak detection, identification and location?*

No. A new distribution meter will be installed in the Main Pump Station that can be used to aid in leak detection in the lower system.

Although two new flowmeters will be installed at the new Mid-Station Booster Pump Station, which is located approximately at the mid-point of the distribution system, they will not be useful for leak detection. One meter at this location will measure pumped flow to the cistern (from the low pressure zone to the upper pressure zone). The other will measure any 'bypass' flow returned to the low pressure zone through the by-pass piping.

Although these flowmeters will allow total system use to be divided between the low pressure zone and the upper pressure zone, the pumped system is not conducive to using these flowmeters for any low-flow or leak detection work in the upper pressure zone.

7. *Will future leak detection surveys be conducted in-house or contracted out?*

It is anticipated that leak detection surveys will be contracted out.

8. *If in-house, what equipment will be used and what training will be required?*

NA.

9. *If in-house, describe the leak detection method to be used.*

NA.

10. *Statement that a comprehensive leak detection survey will be conducted every two years.*

As stated.

11. *Will leak detection be done all at one time or staggered throughout the two years? If staggered, what is the timeline and what percentage of the system will be surveyed during each initiative?*

It is anticipated that the leak detection survey will be completed all at one time.

12. *Statement that leak detection will be conducted in accordance with "Manual of Water Supply Practices M36, Water Audits and Loss Control Programs" (AWWA, 2009).*

As stated.

13. *Statement that leaks will be repaired within 60 days of discovery unless a waiver is obtained in accordance with Env-Wq 2101.09.*

As stated.

B. *Pressure Management*

1. *Existing minimum distribution pressure (anticipated pressure for new landlord owned systems).*

The distribution system consists of two pressure zones, the low-pressure zone and the upper pressure zone.

The high pressure zone is established by the water elevation in the cistern. There are 5 homes located in the upper pressure zone, at the top of the hill near the cistern that have individual booster pumps because the elevation of the homes is at or just below the overflow elevation of the cistern. The discharge pressure of the booster pumps is 115 psi. The suction pressure is approximately 20 psi.

The pressure in the lower pressure zone is established by the pressure in the hydropneumatic tank at the Main Pump Station. The hydropneumatic tank pressure is about 65 psi.

2. *Existing maximum distribution pressure (anticipated for new landlord owned systems).*

The existing maximum distribution pressure in the low pressure zone is approximately 65 psi at the hydropneumatic tank in the Main Pump Station (the lowest point in the system being at the Main Pump Station).

The maximum distribution pressure in the upper pressure zone is approximately 115 psi at the Mid-Station pump discharge. These pumps pump to the cistern at the high-point of the system.

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

Pressure is currently monitored manually using a pressure gauge on the hydropneumatic tank in the Main Pump Station and pressure gauges in the Mid-Station Booster Pump Station.

Pressure will continue to be monitored manually in the Main Pump Station. New pressure gauges and pressure transducers that will report and record pressure at a new PLC will be installed at the new Mid-Station Booster Pump Station as part of the system upgrade.

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

The only pressure zone in excess of 80 psi is the lowest portion of the upper pressure zone, above the Mid-Station Booster Pump Station. It is not possible to lower the pressure in this area. The booster pumps are designed to pump water to the cistern near the top of the hill.

5. *What will be the timeframe for the reduction (at least within 1 year of source water approval)?*

NA.

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?*

The booster pumps are designed to pump water to the cistern near the top of the hill. Therefore, it is not possible to lower the pressure on the discharge side of the Mid-Station pumps. The suction pressure at the Mid-Station is approximately 20 psi, so the station cannot be located any further up the hill.

The new Mid-Station will have PLC controls that will record and store operating pressures and flows. This data will allow operators to better monitor water use over time, and compare with previous years flows. The availability of this data will allow operators to more quickly identify changes in the system and possible leaks.

C. *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 known “bleeders” within the system.

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, the cistern is not intentionally allowed to overflow.

III. **Consumption Side Management**

A. **Educational Outreach Initiative**

1. *Informational materials that will be used.*

Informational materials used will be selected from the DES fact sheets titled "Water Efficiency for the Home" located at <http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm#efficiency> and from the EPA WaterSense Program "Saving Water" fact sheets located at http://www.epa.gov/watersense/our_water/learn_more.html.

2. *Rate of dissemination.*

One of the conservation-related fact sheets included in the Appendix will be included with the consumer confidence report that is distributed to residents on an annual basis.

3. *Does the water system intend to become a WaterSense partner (www.epa.gov/watersense)?*

Not at this time. The administrative capacity of this small system is very limited.

4. *Will a rebate program be offered to replace older fixtures were WaterSense certified fixtures?*

Not at this time. The administrative capacity of this small system is very limited.

5. *Will customer audits be offered?*

Not at this time. The administrative capacity of this small system is very limited.

6. *Other outreach plans?*

None are planned.

IV. **Water Use Restrictions**

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

Water restrictions are not planned. Slope 'N Shore Club will promote water conservation by educating users.

B. *Who is responsible for enforcing restrictions?*

The Slope 'N Shore Club.

V. **Record Keeping, Reporting, and Implementation**

A. *Include the following statements:*

1. The system will maintain the following records:
 - a. A leak log with the date a leak was discovered, the date the leak was repaired, the type of leak (ex. main, service, hydrant, valve), estimated size of leak (gpm) and the closest address to the leak.
 - b. Reports prepared by the leak detection consultant.
 - c. Testing and calibration records of meters.
 - d. A list of educational materials distributed and dates of distribution.
2. The water system will submit a form supplied by DES once every three years documenting how compliance with the requirements of Env-Wq 2101 is being achieved, which will be based on the above records.
3. The system will report monthly production volumes on a quarterly basis to the DES Water Use Registration and Reporting Program upon receiving a WU ID# from DES.
4. "Activities outlined in the water conservation plan will be completed by Slope 'N Shore personnel, or an outside contractor, under the supervision of a certified water system operator".