

November 21, 2005

Allan Clark  
REI Land Development  
763 Chestnut Street  
Manchester, New Hampshire 03104

**Subject: CWS TILTON: Winnisquam Village Condos; EPA ID: New System  
New Bedrock Wells, 1, 2; NHDES #996082**

Dear Mr. Clark:

The purpose of this letter is to conditionally approve the subject wells for Winnisquam Village Condos in Tilton. This decision is based on a review of materials submitted to meet the requirements of New Hampshire Administrative Rules Env-Ws 390 & 378, *Water Conservation and Site Selection of Small Production Wells for Community Water Systems*. Approval is subject to the following.

**Water Conservation:**

The October 2005 Water Conservation Plan (WCP) for the subject water system is approved as proposed. Please note that the WCP referenced operational guidelines for a turf irrigation system, if such a system were to be installed at the development in the future. However, the source capacity estimates provided with the Preliminary and Final Well Siting Reports did not include an adequate assessment of volume requirements for this type of non-residential water use. If such a system is installed and an estimate of its volume requirements plus the drinking water system requirements exceeds the Permitted Production Volume (PPV) noted below, the system owner must request an increased PPV in accordance with Env-Ws 378.22.

The Plan shall be implemented at system start-up. Every three years from the date of this letter the water system shall supply the New Hampshire Department of Environmental Services (NHDES) with documentation of compliance with the plan. This information shall be supplied on a form provided by NHDES and shall include contact information for the water system owner and the person responsible for carrying out the tasks of the plan, all data relating to leak detection, water use audits, and meter reading, if applicable, and the dates these tasks were performed.

**Conditions of Well Siting Approval:**

- Total coliform bacteria were detected in the water withdrawn from Bedrock Well 1 (BRW 1). Upon connection of the new well to the water system; but prior to serving customers, disinfect the well per the requirements of Water Well Board Rule We 602.03, and provide water quality sampling results that indicate total coliform bacteria is absent from the well.
- Toluene was detected in the water withdrawn from BRW 1. Upon connection of the new well to the water system; but prior to serving customers, provide water quality sampling results that indicate toluene is absent from the water withdrawn from the well.
- If toluene is not absent from the water withdrawn from BRW 1, you must submit sampling results on a monthly basis until the concentration of this constituent drops below detection limits. If the

concentration of toluene increases, then the source of contamination must be identified and controlled or an alternate supply of water must be developed.

- Water quality sample results for total coliform bacteria and toluene must be submitted to Diana Morgan at Water Supply Engineering Bureau.

Within 60 days of receipt of this letter an emergency plan must be prepared for the water system in accordance with New Hampshire Administrative Rule Env-Ws 360.14. This plan must continue to be updated and submitted to New Hampshire Department of Environmental Services in March once every 6 years. This regulation also requires the plan to be reviewed annually by the system and updated as needed. Additionally, the plan will be a checklist item during each sanitary survey and lack of one will be a survey deficiency. Guidance documents and other emergency planning information are available at the following website: <http://www.des.state.nh.us/wseb/EmergencyPlanning/index.asp>. You may contact Johnna McKenna at 603-271-7017 or [jmckenna@des.state.nh.us](mailto:jmckenna@des.state.nh.us) for more information or assistance in completing emergency planning for your water system.

A copy of this letter should be kept on file with the water system's records for future reference and as an aid to meeting the NHDES source water protection requirements.

Please note that the well must be connected to a distribution system in accordance with Env-Ws 372, *Design Standards for Small Public Drinking Water Systems*. Contact Jim Gill at 271-2949 for further information about system design and connection requirements for new community water systems.

#### Source Specifications:

Well Number	Well Status	Permitted Production Volume	Sanitary Protective Area Radius	Wellhead Protective Area Radius	Source Description
BRW 1	New Well on New System	14,400 gallons	200 feet	3,600 feet	BRW 1, 128' W of pumphouse
BRW 2	New Well on New System	43,200 gallons	200 feet	3,600 feet	BRW 2, 88' W of pumphouse

The previous table outlines the specifications for the new wells. The Permitted Production Volume is the maximum volume that may be pumped from a well in any 24-hour period. The PPVs for the wells are as shown above. The combined volume for the system may not exceed 57,600 gallons in any 24-hour period. This volume includes water designated for irrigation water use.

The sanitary protective areas for the new wells are circles, centered on each well, with the radii listed above. The sanitary protective areas shall remain in a natural state and under the water system's control at all times. Please note that NHDES may initiate enforcement action if the system does not maintain the SPAs in a natural state.

The Wellhead Protection Areas for the new wells are circles, centered on each well, with the radii shown above. This is the area within which educational materials must be periodically distributed as part of the wellhead protection program. The first round of educational materials must be distributed within 90 days of system startup.

Allan Clark  
Winnisquam Village Condos/Tilton  
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**Chemical Monitoring Program:**

Well Number	Well Status	Laboratory Name and Sample Numbers
BRW 1	New Well on New System	Granite State Analytical: 509-612-2, 3, 4, 5
BRW 2	New Well on New System	Granite State Analytical: 509-616-1, 2, 3, 4

The September 21, 2005 water quality sample results for the new wells will be forwarded to the NHDES Chemical Monitoring Program. The sample identification numbers are listed in the table above. Chemical Monitoring staff will be contacting you shortly with a Master Sampling schedule. You must add sampling taps to the new wells and you must contact staff so that the schedule will accurately reflect the correct sampling locations.

If you have any questions about the Chemical Monitoring requirements, contact Allyson Gourley at 271-0655 or by email at [agourley@des.state.nh.us](mailto:agourley@des.state.nh.us). Please note that NHDES may initiate enforcement action if the system fails to implement a chemical monitoring program that includes the new well.

If you have any questions about this approval or any other well siting issues feel free to call me at **271-2947** or email me at [dmorgan@des.state.nh.us](mailto:dmorgan@des.state.nh.us).

Sincerely,

Diana W. Morgan, Professional Geologist  
Water Supply Engineering Bureau

Cc: Allyson Gourley, Laurie Cullerot, Johnna McKenna, NHDES  
Kimon Koulet, LRPC

Electronic Copies:  
Jim Gill, Kevin Riel, Deb McDonnell, Ben Gauthier, NHDES

**WATER CONSERVATION PROGRAM**

**PURSUANT TO RSA 485:61**

**FOR THE**

**WINNISQUAM VILLAGE CONDOMINIUM  
TILTON, NH**

**COMMUNITY WATER SYSTEM**

**October 2005**

*rec'd  
10/20/05*

**Prepared by:**

**REI SERVICE CORPORATION  
768 Chestnut Street  
Manchester, NH 03104**

# WINNINSQUAM VILLAGE WATER SYSTEM CONSERVATION PROGRAM

## INTRODUCTION

The Winnisquam Village Condominium Water System is a small community water system which is not yet developed. When complete it will be owned by the Winnisquam Village Homeowner's Association to serve the domestic water needs of 86 townhomes and a population of approximately 200 individuals. This conservation program is intended to comply with NHRSA 485:61 and Env-Ws 390. To be effective, the Conservation Program will require continued monitoring on part of the water system operator.

Efficient water use can have major environmental, public health and economic benefits by helping to improve water quality, maintain aquatic ecosystems, and protect drinking water resources. As the state faces increasing risks to ecosystems and their biological integrity, the inextricable link between water quality and quantity becomes more important. Water efficiency is one way of addressing water quality and water quantity goals. The efficient use of water can prevent pollution by reducing wastewater flows and result in the use of less energy.

The members of the Homeowner's Association and society at large benefit from conservation. Conservation benefits society by preserving environmental resources and the Homeowner's Association by lowering energy costs, capital costs and maintenance cost of the water system.

The goals of the Winnisquam Village Water Conservation plan are:

- Reducing the need for capital improvements to the water system.
- Extending the life of the water system.
- Lowering variable operating costs.
- Avoiding new source development costs.
- Improving drought or emergency preparedness.
- Educating Association members about the value of water.
- Improving reliability and margins of safe and dependable yields.
- Protecting and preserving environmental resources.

The primary method of obtaining these goals is a program that incorporates the following:

- A comprehensive metering program.
- A water usage audit program
- A water usage pricing program
- An educational program
- A water efficient plumbing fixtures program
- A water conserving landscaping program.

## **DESCRIPTION OF THE WATER SYSTEM**

The Winnisquam Village Condominium Association Water System consists of two deep bedrock wells which collectively produce approximately 40 gallons per minute. In addition to the two wells, there is a 30,000 gallon atmospheric water tank and a pressure booster tank with associated pumps. The system is designed to provide 25,800 gallons per day at 60 psi and actual use is expected to be substantially less than the design capacity.

## **CONSERVATION MEASURES**

### **Metering**

Metering is a very fundamental tool of water system management and conservation and is the primary method of monitoring water usage and determining the integrity of the Water System.

***Source metering.*** The Water System will have a 6" meter at the source discharge. This meter will record all usage from the system and be installed in accordance with the procedures and protocols of the American Water Works Association.

***Service-connection metering.*** Service-connection metering will be provided at all water service connections. Domestic water for each unit will be via a 1.25" service connection with a 1.25" meter. All service connections will be metered in accordance with the procedures and protocols of the American Water Works Association. By measuring the water utilized at all service connections and comparing it to the source meter it will be possible to determine any unaccounted water.

***Fixed-interval meter reading.*** A program of fixed-interval meter reading will be implemented to determine the amount of system water being used. Source meter and service connection meters will be read at the same relative time in order to facilitate accurate comparisons and analysis. Once the entire system is complete and all connections are made meter readings will occur at the source meter every 30 days and at each service connection every 90 days.

***Meter accuracy.*** Since water meters can be damaged and deteriorate with age, it is possible to have inaccurate readings which will give misleading information regarding water usage, make leak detection difficult. Since all meters are new it is anticipated that the accuracy of the meters will not need to be verified for ten years unless there is a discrepancy between the summation of the Service-connection meters and the Source Meter. If there are discrepancies the meters shall be recalibrated as needed to ensure accurate water accounting.

### **Water-Use Audits**

Water-use audits will provide the Water System with information about how water is used and how usage might be reduced through specific conservation strategies. This accounting exercise will provide a basis for a strategy to control losses over time and will be in compliance with the "Manual of Water Supply Practices, Water audit and Leak Detection" document identification number AWWAM36, American Water Works Association, 1999.

***Periodic-interval system audits.*** Once the system is complete and all connections are made the water system operator will estimate the volume and percentage of unaccounted water annually using protocols and procedures as described in the "Manual of Water Supply Practices, Water Audits and Leak detection" document identification number AWWAM36, American Water Works Association, 1999. If the amount of unaccounted water exceeds 15% the water operator will prepare and submit a response plan to the Department of Environmental services within 60 days of the audit. The water system operator will make any necessary repairs to leaks within the Water System within 60 days of detection

***Periodic-interval townhome audits.*** Once the Water System is complete and all connections are made, the water system operator will annually compare the consumption of each connection to determine any anomalies. Should there be an anomaly within a Townhome unit consumption, the Association will request that the homeowner perform an audit using the form which is attached as Exhibit 1. The audit of individual homes will determine if there are any circumstances within the Townhome such as leaky faucets or toilets to cause the anomaly. The Association would request the homeowner make any required repairs noted from the audit.

***Other Leak detection.*** The water operator will institute a comprehensive leak detection program on a quarterly basis to determine that components prior to the Source water meter are not leaking or malfunctioning. The water operator will repair any leak within 60 days of detection.

### **Water Pricing**

The cost of operating the water system will be included as an association expense and will be paid from the Association dues. It is anticipated that the Winnisquam Village Condominium Water System will likely be conveyed to a private or municipal water system once the system is complete and all connections are made. It is expected at that time that water will be billed by usage.

The pricing strategy would be designed to encourage water conservation with low base rates and increasing costs for higher volumes. The pricing program will be used as a conservation incentive and will serve as a reminder to the homeowner of the costs associated with water.

### **Information and Education**

Information and education are critical to the success of any conservation program. Information and education measures can directly produce water savings, and result in a change in water-use habits. Homeowner's that are informed and involved are more likely to support the Water System's conservation programs.

The Winnisquam Village Homeowner's Association water system operator will prepare and provide information pamphlets to all homeowner's connected to the water system. The information pamphlets will explain to the homeowner's the costs involved in supplying drinking water and demonstrate how water conservation practices will result in long term savings. The educational materials will be in compliance with Env-WS 390.

### Low Water Usage Plumbing Fixtures

The Winnisquam Village Condominium Water System will serve 86 new townhomes to be constructed over the next three years. In order to conserve water shower heads and toilets in all homes will be low water usage fixtures. Homeowners will be encouraged to utilize similar fixtures when it is necessary to replace the fixtures.

### Landscape Efficiency

Outdoor water usage will increase maximum daily demand for the overall water system. Reducing outdoor usage is an effective conservation strategy and water use will be reduced through efficiency-oriented landscaping principles.

*Landscape design efficiency.* The developer will incorporate water conserving principles into the planning, development and management of the landscaping associated with the Winnisquam Village Condominium.

Over 86% of the condominium area will be left natural. The landscaped areas have been minimized and are estimated to represent 7.5% of the condominium area. The landscaped areas incorporate a water efficient approach to landscaping that encompasses seven essential principles:

- Planning and design to be water saving
- Limited turf areas
- Efficient irrigation
- Soil improvement
- Mulching
- Use of lower water demand indigenous plants
- Appropriate maintenance

*Irrigation management.* Turf irrigation is not anticipated, but should turf areas be irrigated with an irrigation system, the irrigation system will utilize metering, timing, and water-sensing devices. If the Association determines that it will have a turf irrigation program and once the Water System is complete and all connections have been connected will annually in the spring:

- Measure the flow rate of sprinklers
- Check for leaks in the sprinkler system
- Check the position of sprinklers
- Schedule the watering schedule based on specific areas:
  - ◆ Best time of day for watering
  - ◆ Frequency of watering
  - ◆ Length of time for watering

### Water Use Standards and Regulations

The Association has the authority to pass rules affecting the use of common areas within the Winnisquam Village Condominium Association legal documents. The Board of Directors of the Association shall adopt rules to manage water use during droughts or other water-supply emergencies. These could include:

- Restrictions on lawn watering.
- Restrictions on car washing
- Other restrictions as may be appropriate

### CONCLUSION

The Winnisquam Village Condominium Association Water System is a small system that has been designed initially to utilize water efficiently. Through monitoring of this Conservation Plan it is anticipated that the Water System will operate at a high efficiency rate. The primary responsibility of implementing and monitoring this Conservation Plan will be with the NH Certified Water Operator hired initially by the developer and later by the homeowner's association. The ultimate responsibility for monitoring compliance with this Conservation Plan will rest with the Homeowner's Association Board of Director's.

EXHIBIT 1

Checklist for a Residential Water Audit

<b>Service Meter</b>	<b><u>OK</u></b>
Calibration/flow test	
Leak test	
Report findings to maintenance personnel	
<b>Kitchen</b>	
Check faucet flow rate	
Offer to install aerator or flow restrictor	
Check for drips and leaks	
<b>Bath</b>	
Shower	
Check showerhead flow rate	
Offer to install low-flow showerhead or flow restrictor	
Check for drips and leaks	
Sinks	
Check faucet flow rate	
Offer to install aerator or flow restrictor	
Check for drips and leaks	
Toilets	
Check for leaks (dye test)	
Clean or replace flapper	
Check the adjustment of the float arm	