



The State of New Hampshire  
**DEPARTMENT OF ENVIRONMENTAL SERVICES**



**Thomas S. Burack, Commissioner**

**WATER CONSERVATION PLAN APPROVAL**

March 24, 2014

Robert Marquis  
Rockwood Construction  
73 Old Farm Road  
Exeter, NH 03833

**RE:** Raymond – Westgate Estates (PWS ID# 1972060)  
Water Conservation Plan, NHDES # 999866

Dear Mr. Marquis:

On March 11, 2014, the New Hampshire Department of Environmental Services (“DES”) Drinking Water and Groundwater Bureau received a Water Conservation Plan, signed and dated on March 11, 2014, for the Westgate Estates water system located in Raymond, New Hampshire (the “WCP”). 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 and specifically with Env-Wq 2101.06 requirements for existing small community water systems.

Pursuant to Env-Wq 2101.26, the Town of Raymond and the Rockingham Planning Commission were provided copies of the Plan.

DES approves the WCP based on the following conditions:

1. The DES Water Conservation Program shall be notified upon system transfer and provided the contact information for the new owner.
2. A new source meter shall be placed on the proposed well, Well #6, no later than the source activation date.
3. All existing source meters shall be tested or replaced within one year of receiving final source approval for Well #6.
4. The existing distribution meter shall be tested or replaced within one year of receiving final source approval for Well #6.

- All meters shall continue to be tested or replaced no less than the rate in the table below, unless otherwise specified by the meter manufacturer:

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

- The source meters and distribution meter shall be read monthly, no sooner than 27 days after and no later than 33 days after the previous reading.
- Leaks shall be repaired within 60 days of discovery.
- Water efficiency educational materials shall be distributed to residents twice a year as described in the WCP.
- An ongoing compliance report shall be submitted to DES every three years from the date of this approval. A copy of the *Water Conservation Plan Ongoing Compliance Form* may be located by going to the DES website, [www.des.nh.gov](http://www.des.nh.gov), clicking on the "A-Z List" in the top right corner of the page, and scrolling down to Water Conservation.
- The system shall report to the DES Water Use Registration and Reporting Program. DES has assigned **WUID # 20993** to the facility. The total monthly volume withdrawn from each source shall be reported to DES on a quarterly basis. The first quarter report is due **July 15, 2014**. The water system shall register as a data provider and utilize the DES OneStop reporting tool to submit water use data. Instructions for using the tool are enclosed with this letter. If you have any questions about Water Use Registration and Reporting or registering as a data provider please contact Derek Bennett at 271-6685 or [derek.bennett@des.nh.gov](mailto:derek.bennett@des.nh.gov).

To date, it has not yet been determined if the water system will be transferred to the Westgate Homeowners Association (HOA) or the Hampstead Area Water Company (HAWC). The WCP includes two proposals, a proposal for night flow analysis in the case the homeowner's association takes ownership and service metering if HAWC takes ownership.

#### HAWC Conditions

- Service meters shall be installed within three years of source approval.
- Service meters shall be tested or replaced every 10 years or per the manufacturer's recommendation.
- Billing shall be quarterly.

14. Billing shall begin within two years of service meter installation or within 5 years of final source approval.
15. A water balance shall be submitted to DES annually for the previous year by March 1. Reporting shall be done online by going to the "A-Z List" at [www.des.nh.gov](http://www.des.nh.gov) and scrolling down to "Water Conservation".

#### HOA Conditions

16. No later than one year final source approval, a 3/4" Neptune T-10 distribution meter and a data logger shall be installed on a bypass line parallel to the existing 3" Neptune HP Turbine meter to be used for night flow analysis.
17. By **March 25, 2015**, the baseline flow for the night time flow analysis shall be determined as described in the WCP and submitted to DES for review.
18. Beginning no later than one year from final source approval, night flow analysis shall be conducted twice a year, no sooner than 173 days after and no later than 187 days after the prior analysis.

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

Sincerely,



Stacey Herbold  
Water Conservation Program  
Drinking Water and Groundwater Bureau

ec: Diana Morgan, Steve Roy, Derek Bennett, NHDES (*Pending: AC or LD*)  
Town of Raymond  
Rockingham Planning Commission  
Neil Helberg, Lewis Engineering

RCD 3/11/14

**WATER CONSERVATION PLAN**

**WESTGATE ESTATES**

**COMMUNITY WATER SYSTEM**

**PWS 1972060**

**RAYMOND, NEW HAMPSHIRE**

**February 2014**

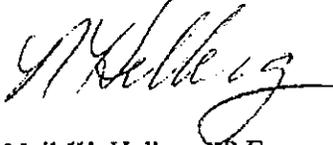
Please communicate your comments in writing to NHDES at your earliest convenience and address all comments to:

Stacey Herbold  
NHDES – WSEB  
P.O. Box 95  
Concord, NH 03302-0095

In addition, if you wish to review the preliminary well siting application, you may contact the above NHDES staff at 603-271-0659 or email at [stacey.herbold@des.nh.gov](mailto:stacey.herbold@des.nh.gov)

Thank you for your time and cooperation.

Sincerely,  
**Lewis Engineering, PLLC**



Neil W. Helberg, P.E.

Cc: Stacey Herbold  
Diana Morgan, DWGB

2011.011WestgateRC

## **System Overview:**

A Preliminary Well Siting Report was submitted to the NHDES DWGB for Westgate Estates Bedrock Well No. 6 on November 19, 2013. The completed single-family housing development will add 5 - three-bedroom homes to the existing 30 - three-bedroom homes. Four (4) bedrock wells with 200-foot and 150-foot sanitary protective areas were approved for the development in October 2003. Bedrock Well No. 6 will be tested at 3.5 gpm. The approval of the Bedrock Well No. 6 will provide the required water to meet the 32,400 gpd (22.5 gpm) Source Capacity required for the completed community water system.

The completed community water system will provide domestic water and fire protection only. There will be no users who will be using more than 20,000 gallons per day. The pump house includes booster pumps, automatic controls, a 45KW LPG Backup Generator and 50,000 gallons of storage for domestic and fire protection needs. Ownership of the water system will be transferred to Westgate Estates Homeowners Association or to Hampstead Area Water Company of Atkinson, NH upon approval of Well No. 6. Pennichuck Water Services is presently the certified operator for the Westgate Estates Homeowners Association. The following Water Conservation Plan provides the information for either future water system owner.

The plan outlined below addresses the requirements of the NHDES Water Conservation Plan.

### **Project Owner.**

Name:	<b>Robert Marquis</b>
Address:	73 Old Farm Road, Exeter, NH 03833
Company:	<b>Rockwood Construction</b>
Phone Number:	603-498-2568

### **Project Contact**

Name:	<b>Neil W. Helberg, P.E.</b>
Address:	44 Stark Lane, Litchfield NH 03052
Company:	<b>Lewis Engineering, PLLC</b>
Phone Number:	603-886-4985

### **Water System Owner (Present)**

Name:	<b>Janee Shaw</b>
Address:	PO Box 30, Candia NH 03034
Company:	Westgate Estate of Raymond HOA
Phone Number:	603-244-2434

### **Water System Owner (Proposed)**

Name:	<b>Harold Morse</b>
Address:	54 Sawyer Avenue, Atkinson, NH 03811
Company:	Hampstead Area Water Company
Phone Number:	603-362-4299

**Water System Operator (Present)**

Name: **Bernie Rousseau, Vice President**  
Address: **P. O. Box 1947  
Merrimack, New Hampshire 03054**  
Company: **Pennichuck Water Services, Inc.**  
Phone Number: **603-913-2328**

In accordance to NHDES Administrative Rule Env-Wq 2101.04, Water Conservation Rules, Westgate Estates will conduct the following water conservation measures subsequent to the approval of the final new bedrock well.

Westgate Estates has 4 bedrock wells presently in use:

Westgate Well 2	9 gpm	12,960 gpd	ON
Westgate Well 3	4 gpm	5,760 gpd	ON
Westgate Well 4	3 gpm	4,320 gpd	ON
Westgate Well 5	3 gpm	4,320 gpd	ON
<i>Existing Wells</i>	<i>19 gpm</i>	<i>27,360 gpd</i>	
Westgate Well 6	3.5 gpm	5,040 gpd	Proposed
<i>Completed System Wells</i>	<i>22.5 gpm</i>	<i>32,400 gpd</i>	

The completed Westgate Estates Water System will include five bedrock wells.

- Total Source Capacity Required under Env-Ws 372 32,400 gallons (22.5 gpm)
- Average Daily water has been calculated at 16,200 gallons per day (11.25 gpm).
- Total water system pumpage per day shall not exceed 32,400 gallons (22.5 gpm).

**Source Meters:**

- Raw water from the existing four (4) wells is presently being metered using ¾-inch Neptune T-10 positive displacement meters. The meters are installed prior to reaching any future treatment equipment required at the pump-house. The meters have been in use since the completion of the pump house in mid 2004. The existing ¾-inch meters will be replaced within one year of the approval of new Well No. 6. A new ¾-inch meter will be installed for Well No. 6 upon approval of the new source.
- The water meter for water pumped from the storage tanks to the distribution system is a 3-inch Neptune HP Turbine Meter with a Tricon-E transmitter. The pump house control panel for the water system controls the operation of the booster pumps based a 4-20mA

signal from the turbine meter's Tricon-E head. The 3-inch meter will be tested or replaced within one year of the approval of new Well No, 6.

- A data recorder shall be connected to the water meter leaving the pump house. The data recorder shall record water usage leaving the pump house each day.
- Positive Displacement Meters for the wells will be tested or replaced every 5 years per AWWA Standards
- The Pump Station Discharge Meter shall be tested per manufacturer's recommendations or every three years.
- The Pump Station Discharge Meter and the individual well meters shall be read at least once a month. If household service meters are installed by Hampstead Area Water Company upon purchasing the water system, the Pump House source meter will be read on the same day as the house service meters are read in order to calculate an accurate water balance.
- The source water meters for the wells and station discharge will be selected, installed and maintained as described in "Manual of Water Supply Practices, Water Meters Selection, Installation, Testing and Maintenance", document identification number AWWA M6, 1999 as required by (EnvWq 2101.04 (d)).

### **Household Meters (Hampstead Area Water Company):**

- Household service meters will be installed in each home if Hampstead Area Water Company becomes the owner of the water system and no later than within 3 years of obtaining approval of the new source. Meters shall be 5/8-inch Neptune T-10 positive displacement meters.
- Household service meters will be read every month.
  - Meters will be read monthly.
  - It will take approximately 15 minutes to read all service meters via radio read equipment.
- Residents will be billed at least quarterly.
- Billing will begin within at least two years of service meter installation or within 5 years of obtaining approval for a new source, whichever is earlier.
- Water will be billed according to usage and rates will either be flat or increasing.
- Service meters will be tested or replaced every 10 years per AWWA Standards or per the manufacturers meter accuracy warranty period.
- The household service water meters will be selected, installed and maintained as described in "Manual of Water Supply Practices, Water Meters Selection, Installation, Testing and Maintenance", document identification number AWWA M6, 1999 as required by (EnvWq 2101.04 (d)).

### Water Audit and Leak Detection:

Hampstead Area Water Company will submit a water balance to DES by March 1 of each year for the previous year. (Water Balance = System input volume – (Billed metered use + Unbilled metered use). HAWC will prepare and submit a water audit and response plan if more than 15% of system input volume cannot be accounted for by authorized metered consumption.

- The response plan shall identify how the water system intends to reduce the percentage to below 15% within two years.
- The water audit will be calculated in accordance with “Manual of Water Supply Practices M36, Water Audits and Loss Control Programs” (American Water Works Association, 2009).
- Upon receipt of NHDES approval of the response plan, the water system will conduct the activities outlined in the response plan following the approval schedule.

Hampstead Area Water will repair all leaks found during the water audit and leak detection program within 60 days of their discovery unless a waiver is obtained as required by (EnvWq 2101.04 (h)).

### Night Flow Leak Detection Methodology- Westgate Estates HO Association:

- Distribution Meter

A ¾-inch Neptune T-10 water meter with a Tricon-E transmitter capable of measuring low flows will be installed on the distribution line following the water system booster pumps. The night flow meter will be installed on new meter bypass piping installed in parallel with the existing 3-inch Neptune HP Turbine Meter with a Tricon-E transmitter. Each meter will have valves installed on each side of the meter to allow for meter isolation and removal. A data recorder will be attached to the ¾-inch Neptune T-10 water meter to record flows during the Night Flow Leakage Testing. The meter make, model, and size will be forwarded to DES prior to purchase/installation for review and approval.

Unless otherwise specified by formal documentation from the manufacturer, the meter will be tested/calibrated based on the following rate schedule:

Meter Size (inches)	Testing Rate (year)
Less than 1"	10
1" - 2"	4
3"	2
More than 3"	1

The testing rate may be adjusted based on results of prior tests, but DES must approve less frequent testing.

The distribution meter 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).

- **Determining Baseline Flow**

A nighttime flow analysis will be conducted as described, below. The baseline flow will be the lowest flow recorded. If flows do not drop to 0 gpm during the analysis, leak detection and repair will begin. Once the system is known to be tight, night flow analysis will again be conducted and the lowest flow will be the baseline.

### **Night Flow Methodology**

- Night flow analysis will be conducted twice a year 6 months apart (no less than 173 or more than 187 days apart).
- Water usage will be recorded every minute for one hour between 1 am and 3 am (unless another time of day when there is little water use is established) using the distribution meter. Users of the system will be requested prior to the night flow analysis to refrain from using water between 1 am and 3 am.
- If flows are above the baseline, then flows will continue to be recorded for an additional hour. If low flows are equal to or more than 8 gpm above the baseline, an emergency leak will be suspected and valve isolation will begin as stated below.
- If flows are above baseline but less than 8 gpm, all residents will be asked to check their homes for leaks including running toilets. The previous steps will then be repeated again in 3 days. If again flows are above the threshold, a leak on the service side of the system will be assumed and Steps f.-i. will be taken. If flows continue to be above baseline then valve isolation will begin.
- If a leak is suspected, valves will be closed to isolate select portions of the system and to evaluate the change in flow as measured by the distribution meter to isolate the leak. 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.
- No later than two weeks from isolating the leak to a certain branch of a system, a sub-contractor skilled in acoustic leak detection will be retained and assist with pinpointing the leak.

- Leak detection will be conducted in accordance with “Manual of Water Supply Practices M36, Water Audits and Loss Control Programs” (American Water Works Association, 2009).
- Leaks will be repaired within 60 days of discovery unless a waiver is obtained in accordance with Env-Wq 2101.09.

A leak detection survey has not been completed since the startup of the Westgate Estates CWS in 2004. No leaks have been noted or repaired. There is approximately 2,995 feet of 6-inch and 4-inch C900 PVC and 684 feet of 2-inch PVC water main installed. Water services to the units are 1-inch CTS, 200 psi polyethylene tubing. Location wire was installed over the piping to allow for easy location of the piping. Isolation gate valves are located at each intersection and flushing points are installed at the end of the water main runs. The location of the water main in the subdivision is known.

### **Pressure Management:**

The water system will be designed consistent with water system industry standards and regulation and consistent with other public health and safety considerations in regards to minimum and maximum operating pressures as required by (EnvWq 2101.04 (n)). The pump station provides a constant 70-psi pressure to the water system. Pressures within the system range from 50 to 80 psi.

### **Intentional Water Loss:**

The water system will not intentionally allow for water loss using bleeders or the intentional overflow of atmospheric storage tanks.

### **Water Use Restrictions:**

The proposed community water system was designed to provide domestic water and fire protection only. The Westgate Estates Homeowners Association presently allows lawn and garden irrigation during the summer months.

### **Educational and Outreach Initiative:**

The water system owner (Westgate Estate of Raymond HOA or Hampstead Area Water Company) will conduct public notification and outreach activities as required by EnvWq 2101.11. The water system owner will be distributing water conservation educational literature twice a year to its customers in Westgate Estates. Educational materials will be included with the Consumer Confidence Reports in the Spring. The educational materials will be distributed again in the Fall. Water Conservation Information will be obtained from EPA WaterSense ([www.epa.gov/watersense](http://www.epa.gov/watersense)) or the DES Water Efficiency Fact sheets (Go to [www.dcs.nh.gov](http://www.dcs.nh.gov) and scroll down “A-Z” list to “Water Conservation then to Publications”).

**Reporting and Implementation:**

The Owner of Westgate Estates shall keep the following records:

- The date of discovery and repair of all leaks, as well as the closest address, type of leak (ex. main, service, valve, hydrant), and estimated size of leak (gpm).
- The date and title water efficiency materials were distributed.
- Meter testing, calibration, and replacement log.
- If choosing to do night flow analysis, the date of analysis, flows recorded, and actions taken in response to analysis if any.

The owner of Westgate Estates shall report monthly production volumes on a quarterly basis to the DES Water Use and Registration Program upon receiving a WU ID number.

The Owner of the Westgate Estates water system will submit a report form supplied by the NHDES once every 3 (three) years documenting how compliance with the requirements of EnvWq 2101 is being achieved.

All activities outlined in this water conservation plan for Westgate Estates will be completed under the supervision of its certified water system operator.

**Public Notification:**

Within seven days of submitting this water conservation plan; the applicant will provide a copy of the application and report via certified mail with return receipt requested to the Town of Raymond and the Rockingham Planning Commission located in Exeter. The information provided to the Town will include a summary of the requirements of Env-Wq 2101 and will request that the Town of Raymond amend local site planning requirements to reflect the requirements of Env-Wq 2101 or to promote water efficiency. Signed copies of the Certified Mail Return Receipts (the green card) will be forwarded to NHDES.

**Water Conservation Plan Certification:**

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): Robert Marguis / Rockwood Construction LLC

Owner Signature: Robert Marguis Date: 3/11/14