“Rod I am having trouble with all this heavy snow, can you see?” I was driving - sliding might be the better description - and VRWA Director Rod Lamotte was riding shotgun. It was 11 pm on Tuesday and we were near Gettysburg, PA headed north. Stuffed in the back seat of the small SUV were other VRWA directors; Ed Savage, Richard Desautels, and Harry Hinrichsen. Early that afternoon we had wrapped up our annual Rural Water Rally congressional visits. During rally, all the state rural water associations visit their Congressional representatives in DC to discuss the accomplishments, productivity, and simply stated, the return on investment for rural water programs. Every year we need to advocate for continued funding of rural water services as part of the nation’s budget. We were in the process of completing our visits to Congressional offices to deliver our yearly accomplishments information.

Normally the rally trip involves airline flights to and from DC, but the northern edge of the second blizzard of the century had grounded all outbound flights from noon Tuesday on. With the information available midday, we wouldn’t get out of the city until Friday at the earliest. This wasn’t a workable situation as the directors were volunteering time to

If you are faced with a dwindling source of water, a 40 year old wastewater plant that can no longer properly treat sewage, a water distribution system in which leaks are as common as fried dough at the county fair or any other symptom of an aged public water or wastewater infrastructure, then fear not, because I propose a cure to these ailments: reinvestment.

Let us digress for a moment to think of your infrastructure as a car. When you drove it off the lot it purred like a kitten, it smelled of that sensory pleasing odor associated with freshly manufactured, off-gassing vinyl and its buffed, waxy paint glistened in the midday sun. Now, 10 years and 150,000 miles later, the poor thing sounds like one of those antique “one lung” engines, the interior smells like a cross between old, moldy McDonalds french fries and soil, the original paint is barely visible among the rust spots and pop-riveted sheet metal on the body and your mechanic drools uncontrollably as you bring the thing in for an annual inspection. It might be time to trade that clunker in. After all it has served you well during and beyond its expected lifespan.

Now that you have recognized the need to reinvest in a new “car”, you begin to explore ways of funding that new vehicle. Much like the options and availability of funding sources for a new vehicle, those for funding water and wastewater infrastructure upgrades are numerous and obtainable (ok, from now on I will spare you the silly car metaphors and get back to the point of this article). The three most popular entities that specialize in providing funding for water and wastewater projects are:

- United States Department of Agriculture – Rural Development Loan/Grant Program
- The Drinking and Clean Water State Revolving Funds administered by the Vermont Department of Environmental Conservation
- The Vermont Municipal Bond Bank

The USDA-RD Loan/Grant program has a group of dedicated professionals committed to providing funding for rural utilities, and due to the recent “Stimulus Act”, the program has a surplus of funds set aside to meet the needs of eligible applicants. Eligible applicants include all not-for-profit public utilities that serve a population of less than 10,000. This is an excellent funding option, especially for projects that are in “poor” communities (those with a median household income below the state average of $40,856) because for these areas, the possibility of obtaining grant funds exists. Please note that before any final determination of grant eligibility can be made,
Letters

Guard & Yard, Inc.
P. O. Box 246
South Londonderry, Vermont 05155
January 20, 2010

Mr. Shaun Fielder
Vermont Rural Water Association
20 Susie Wilson Road
Suite B
Essex Junction, Vt. 05452

RE: Mountainside Condos.

Dear Mr. Fielder:

I am writing you this letter to show my appreciation to the workers at your office with all of the help they have given to me over the years on the preparation of our Source Protection Plan and also the help that we are now receiving on doing a new O & M Manual for our association.

I would have been at a loss in the beginning when having to prepare the SPP and now with having to do a new O & M, your office has been a great help.

Thank you for all of the help I have received from Eric Hanson and Ms. Jackson on all of our projects.

Sincerely,

Emily Underwood

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Annual Conference
On May 5 & 6, VRWA hosted our Annual Conference at the Lake Morey Resort in Fairlee. Nearly 200 individuals attended for another spectacular event.

On Wednesday afternoon the annual golf tournament kicked off and the weather and course conditions were excellent. Thursday was jam packed with top notch training sessions and very busy vendor exhibit area. DEC Commissioner Justin Johnson was the keynote speaker at the business luncheon and commented on a number of current issues faced by the water and wastewater industry. In addition, VRWA renewed its training alliance with VOSHA to continue safety training efforts. The awards presented included one to our own circuit rider Brent Desranleau who received his 10 year service pin. Ray Counter was this year’s Tony Torchia Award winner. Ray was honored for his efforts to insure the protection of his community’s drinking water source and dedication to the profession.

VRWA also honored a total of 52 member systems who celebrated various membership anniversaries including their 25, 20, 15, 10 and 5 year levels. Special recognition goes to our 25 year members: Bert’s Mobile Home Park, Readsboro Water/Wastewater Facility, and Town of Bethel. We wrapped up the luncheon with our annual membership meeting and Paul Carroccio (Piper Ridge Homeowners Association) was announced as the winner the director election he will serve a three year term as director.

Thanks to Ferguson Waterworks for their gold sponsorship of the event and to Ti-Sales, Stantec, and Atlantic States Pipe for their silver sponsorships. The following companies donated raffle prizes and thanks to all of them:

- Lenny’s Shoe and Apparel
- ECHO Lake Aquarium
- Everett J. Prescott
- Lake Morey Resort
- TPW Management
- Iver Bjerke

Please mark your calendars for the 2011 Annual Conference and Trade Show it has been set at the Lake Morey Resort for May 4 and 5.

DC Rally
VRWA’s annual rally visit to Capitol Hill for meetings with Vermont’s congressional delegation was successful. While weather conditions created some significant travel problems for many affiliates (see Keeping the Goal in Mind) VRWA was able to meet with various office officials in Congressman Welch’s and Senator Sanders office and met personally with Senator Leahy. All three have signed onto national rural water dear colleague letters to support continued funding of rural water programs. If you have an opportunity, please consider sending a thank you to our representatives for their support of rural water.

Contact info for our representatives can be found at the following link: http://vtruralwater.org/legislation/officials.php

VRWA directors at the capital, February 9, 2010 (not pictured: Paul Carroccio)
What is E-coli?
By Paula Jackson, Water Systems Specialist

Every month, water plant operators around the country collect bacteriological samples according to their bacteriological sampling plan and send them to a certified laboratory where they are analyzed for total coliform bacteria. If a sample tests positive for total coliform, the lab automatically tests for e-coli bacteria. The water system collects repeat samples, based on the population of the system, and sends them in to be analyzed to make sure there is contamination in the system.

What does it mean if you have a positive total coliform sample? It means that a pathway for contamination was opened up in your water system. Maybe you had a new hot water heater put in, or maybe you have a broken distribution pipe in your system that you don’t know about. Maybe there was a big rain event and water was able to get into your well, there are many possible ways for contamination to enter your water system.

If you have e-coli in your water system, what does this mean to your consumers? What are e-coli? E-coli are a type of fecal coliform bacteria commonly found in the intestinal track of animals and humans. The presence of e-coli in your bacteriological samples is an indicator that sewage or animal wastes have found a way into your drinking water system.

Hundres of strains of bacterium e-coli live in the intestines of healthy humans and animals, and are harmless. E-coli O157-H7 is a strain of e-coli that is not so harmless. When someone ingests this strain of e-coli, the organism travels through the stomach and small intestines and attaches itself to the surface of the large intestine and starts to cause inflammation on the intestinal wall. This inflammatory reaction is caused by toxins secreted by the bacteria and believed to be the cause of Hemorrhagic colitis. Hemorrhagic colitis is the first symptom that presents with the ingestion of e-coli bacteria and consists of severe, sudden abdominal pain and cramps followed by diarrhea within 24 hours. The diarrhea may become bloody and the victim will sometimes vomit, but rarely does a fever set in. The incubation period for e-coli, from ingestion to symptoms, is typically 3-9 days.

In most healthy adults, symptoms will last about a week and resolve without any further complications. Antibiotics do not improve the illness and may actually increase the risk of complications. Therefore, apart from good supportive care with hydration and nutrition therapy, there is no specific cure. HUS, Hemolytic Uremic Syndrome is a life threatening complication caused by e-coli. 5-10% of children infected by e-coli get HUS. HUS is responsible for over 90% of kidney failure in children in America. Children who get HUS have permanent kidney damage for the rest of their lives.

It is important as a water system operator to ensure your water system is protected from contamination. If you are disinfecting, is important that there is no interruption in the disinfection process so as to ensure safe drinking water for everyone.
During the last several years, a number of towns across Vermont have completed studies to gain a better understanding of groundwater resources within their communities. The impetus for this work varies among towns, from a desire to identify potentially valuable aquifers for future water supply sources, to providing information to help determine possible groundwater resource impacts from proposed land use activities. Some towns just want to gain a better sense and understanding of this important, and often misunderstood, resource. If done thoroughly and accurately, large-scale groundwater mapping can provide invaluable information for public education and town planning purposes.

No matter how you look at it, groundwater mapping in Vermont is complex and anything but a straightforward exercise. Thanks to our geography consisting largely of steep mountains and narrow valleys (save for the Champlain Valley) and our complex geology of folded and fractured bedrock of a variety of types, and a wide variety of glacial deposits ranging from almost impermeable clay to loose gravel and boulders, groundwater and aquifer mapping can indeed be a difficult endeavor. However, with the assistance of the Vermont Geological Survey and, in some cases, private environmental consulting firms, groundwater and aquifer mapping has been completed in a number of Vermont communities representing a wide range of geologic conditions.

Unlike groundwater and aquifer mapping in areas of simpler “layer cake” geology, where large aquifers can be present over vast areas (for example, the Ogallala or High Plains aquifer covers a continuous area extending from South Dakota to Texas), a variety of site-specific methods are used to map groundwater in Vermont. For instance, as many homeowners and public water system operators out there know, the vast majority of wells in Vermont are drilled into bedrock where they, hopefully, intersect water-filled fractures in the bedrock that supply groundwater to the wells. While the precise characteristics of a fractured bedrock aquifer are almost impossible to define unless extensive (and potentially expensive) investigations are completed, a common groundwater mapping technique in Vermont is to carefully map and characterize the soils and glacial deposits overlying the bedrock, and then rank these deposits on their potential to allow recharge to the underlying fractured bedrock aquifer. A portion of such a map completed for the Town of Rutland is shown in Figure 1.

(continued on reverse)
Of course, there are many other techniques used to map groundwater in Vermont, including the identification of potentially significant aquifers (both fractured bedrock and gravel aquifers), detailed mapping of the overburden (i.e., the glacial till, clay, sand, and gravel materials than can overlay the bedrock), groundwater table contour mapping, mapping the thicknesses of overburden and potential sand and gravel aquifers, and detailed bedrock mapping with information about thrusts, faults, and fractures. Examples of groundwater and aquifer maps can be explored on-line at the Vermont Geological Survey website at http://www.anr.state.vt.us/DEC/GEO/grndwaterinx.htm.

Towns wishing to explore the opportunity of completing groundwater mapping in their communities can derive their interest from involved citizens, a town committee such as a conservation commission or planning commission, or local natural resource groups. It is up to the towns to determine how to best fund groundwater and aquifer mapping projects. One option for partial funding of such projects is from the U.S. Geological Survey’s National Cooperative Geologic Mapping Program STATEMAP program. STATEMAP funds from the federal level are matched by state funds to help pay for the geologic mapping that is used, along with water well data, as a basis to define recharge areas and potential high and low yield areas in a town. Typically, interested towns are also expected to provide some funding towards the completion of the groundwater resource maps. Funding levels can vary among towns. In Vermont, the STATEMAP program is administered by the Vermont State Geologist Laurence Becker. Due to limited funding, only a handful of projects are accepted for completion each year. Communities wishing to learn more about this potential funding source can contact Mr. Becker at the Vermont Geological Survey (ph: 802-241-3496, email: laurence.becker@state.vt.us). Additionally, you can contact me at the Vermont Rural Water Association (ph: 802-660-4988 ext. 327, email: chanson@vtruralwater.org) to learn more on how to proceed with groundwater mapping projects and town planning considerations.

Groundwater and aquifer mapping for Vermont towns can provide valuable information that can help with community planning and resource protection for those communities wishing to work towards protection of this invaluable resource into the future. We at the Vermont Rural Water Association look forward to working with communities with such an interest.
Reducing the Cost of Quality Pumping
By Amy Rubin, Communications Project Manager, Efficiency Vermont

Plant operators in Vermont are finding significant savings by assessing and improving the efficiency of pumping systems. By becoming familiar with current energy use, tracking pump performance, and making appropriate equipment adjustments or upgrades, operators are able to reduce overhead by thousands to tens of thousands of dollars, depending on plant size.

“It’s easy to assume that high electricity costs are a fixed part of operational overhead,” says George Lawrence of Efficiency Vermont. “But the truth is that these costs often can be controlled and, in the process, pump performance can be improved.”

According to Lawrence, pumping is one of the processes offering the greatest energy-saving opportunities. Typical energy-saving approaches include:

- **Track Electricity Use** – Become familiar with your plant’s electricity use. If utility bills aren’t mailed to you, they may be with your town clerk. By tracking use over a series of months, you can see if energy use is highly variable, relatively constant, or increasing. If electricity usage is increasing while system flows are normal or low, it can be a sign that pumping equipment performance is declining.

- **Do Annual Testing** – Test pumps annually to determine flow rate and how much electricity is being drawn. If you don’t have testing capability, ask your service contractor if testing can be a part of your service contract. By comparing yearly results, you can identify changes that indicate declining equipment performance as compared to manufacturer’s specifications. An equipment supplier can help interpret your findings to determine if systems are running well or if it may be time to rebuild or replace equipment.

- **Check Control Valves** – If valves are being throttled to reduce flow, energy is being wasted to operate oversized pumps. Even though flow rates are lower when valves are throttled, the pump is operating at a higher than necessary pressure and therefore using more power than necessary. A variable-frequency drive allows you to control flow more efficiently.

- **Optimize Pump Speed** – Instead of operating a pump at a constant rate, install a variable-frequency drive to adjust flow rates in response to actual needs. This can reduce energy use of positive-displacement pumps and can result in even greater reductions with centrifugal pumps.

- **Appropriately Size Your Pumps** – Significant savings can be found by appropriately sizing pumps to a plant’s particular needs. The bigger the pump, the more it costs to keep it powered. While, typically, the most cost-effective time to replace equipment is at the time of failure, it makes sense to speak with your pump supplier or a design engineer to compare the cost of replacement to the cost of continuing to pay for the energy needed to run an oversized pump.

- **Upgrade Failed Pumps** – Replace failed pumps with models that have premium efficiency motors. This investment will result in a high rate of return from the ongoing savings on energy bills. Efficient motors use less energy to do the same work as inefficient motors and, because they run cooler, they’re more reliable and long-lasting.

- **Get a Full System Evaluation** – A consulting or design engineer can assess pumping operations and make recommendations about cost-effective equipment upgrades and/or process changes. Awareness of equipment condition can help you anticipate needed repairs and/or replacement, which enables you to estimate and plan for future expenses.

For more information about reducing energy costs throughout the plant, including approaches to pumping, lighting, leak detection, aeration, motors, solids dewatering, and more, go to the Business “Saving Energy” section of www.efficiencyvermont.com, and click on “Wastewater Treatment”. You’ll also find information to help you understand and potentially reduce a plant’s electric bills.

If you need help determining the efficiency of your equipment or if you’re ready to purchase new equipment, contact Efficiency Vermont toll-free at 888-921-5990. Also, ask about financial incentives that may be available for specified energy-saving equipment purchases.
This column details unique solutions to difficult problems that operators come up with every day. Below are several cases of operators solving large problems, saving money and making life at their second homes (treatment plants) a little easier.

- Many treatment facilities (I have seen this in Hardwick, Barton and Orleans, but am sure that others have thought of it as well) have solved chemical odors in chemical rooms by venting their chemical storage tanks into existing ventilation ductwork originally designed for gas chlorine. These existing ventilation systems usually have a blower that comes on when room lighting is turned on. A good work practice would be to turn on the light/blower a few minutes prior to entering the room. This idea is especially useful when dealing with sodium bisulfite.

- Do not run your like pieces of equipment, especially duplex units, to have equal total hours of run time. This is an idea that I stole from West Lebanon operators at my first wastewater job and have used for the last 24 years. Contrary to what most equipment suppliers will tell you, alternating equipment with the goal of maintaining equal run hours, is in my opinion not a good idea. The simple reason for this is that if you have 2 units of the same blower, pump, motor etc. and you run them equal hours, when one of them wears out chances are that the second unit is also worn out. This leaves you with the dilemma of having one unit broken or under repair and your back up unit in similar poor shape.

- Randy Devine of the Fairfax WWTF, has made some changes to his lagoon aeration system that makes his life a lot easier and his process top notch. He installed HDPE aeration headers above grade which allows him access to the individual air lines. He can clean, purge water from and change air lines without lowering his lagoons. He also rejuvenates his patterns by carefully applying compressed air to each end of the air lines which flexes the slits in the tubing. Randy’s improvements have let him get rid of the old and dangerous gas system previously used.

An example of how this can work is to run your lead unit six days a week and your backup unit one day per week. When the lead unit is ready for rebuild, your backup unit will be in very good shape. Granted, there will be exceptions to this such as warrantee issues, when you may want to max out equipment run time or equipment that needs to be exercised daily. A good practice that can be used facility wide is to exercise these backup units while exercising your generator. This will keep your electrical demand charges down.

If you have interesting ideas that you want to share, send them to me; we will include them in News Leaks in the future. I also encourage you to tour other facilities and share ideas; you will find that networking with other operators can be very beneficial. Several organizations can also help; VTWARN, GMWEA, VT Wastewater Management and of course, VRWA! 😊
rate loan, also known as principal forgiveness.

The Vermont Municipal Bond Bank is a quasi-state agency that provides municipalities with access to municipal bond proceeds in order for them to fund, among other things, water and wastewater upgrades. Because recent interest rates have been extremely low (around 2.9% on a 30 year note) now is an excellent time to fund your project through the VMBB.

A couple of significant points regarding VMBB financing are that the public entity must submit to a CPA audit of its financial statements, and because the financing is market based, there is no chance of qualifying for grant money or principal forgiveness.

If you have questions, comments, or want to obtain contact information for any or all of the above listed funding opportunities, don’t hesitate to contact either myself or any other member of the VRWA staff as we exist to serve you.

Now that you know where to seek funding, go ahead and buy that new car. After all you, and your community, deserve it!

Looking back I am pleased we made the decision to go forward with our DC visit. While the travel experience wasn’t the best, our efforts led to the significant goal of Senator Leahy, Senator Sanders and Congressman Welch signing onto the rural water dear colleague letters. Their continued support is appreciated. A special thank you to VRWA Directors, Ed Savage, Richard Desautels, Rod Lamothe and Harry Hinrichsen you were very understanding and flexible with the situation. You are great advocates for our association; all the systems in Vermont we serve should be very proud of your efforts.
CHANGE SERVICE REQUESTED