Reducing Inflow and Infiltration

by Wayne Graham, VRWA

Roof and perimeter drains are common ways to deal with unwanted rain or surface water. Unfortunately, sometimes these drains are connected to sewer lines that deliver the unwanted water to wastewater facilities. These direct connections result in extra influent flow that the collection system has to handle and the wastewater facility has to treat. This treatment of unwanted ground/surface water wastes valuable facility capacity and restricts the amount of future hookups and growth of a community. Wastewater facility upgrades due to lack of capacity that has been taken up by inflow and infiltration sources are a huge waste of money and resources. Drainage water can also cause wastewater treatment facilities to use extra electricity and chemicals, and can affect the efficiency of the treatment process.

A one-inch rainstorm can result in a 100 foot by 100 foot flat roof delivering over 6,000 gallons of water into the building’s drain system. It does not take very many similar roof drains to have a large impact on your wastewater facility.

There are several ways to ensure that roof and perimeter drains are not tied into sewer collection systems:

**Education:** Many home owners and businesses do not realize the problems they are causing by allowing these drains to discharge into their sewer.

INFLOW:
The water discharged into a sewer system and service connections from sources such as roof drains, sump pumps, foundation drains, cooling water discharges, manhole covers, combined sewer systems, catch basins, and storm water and surface runoff.

INFILTRATION:
The water entering sewer pipes and service connections from the ground. Defective pipes, joints, connections and manhole walls are all common locations of infiltration.
Who We Are

Since 1982, Vermont Rural Water Association has supported water and wastewater systems across the state. We provide many services, including training, source water protection planning, and onsite assistance.

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Dear Director, VRWA staff have done so much to save us money over the years, especially in 2007 and the start of 2008. Wayne Graham has worked on our sludge certification plan, power failure plan and spill containment plan. I supplied the information, and he sorted and organized it all into state accepted folders. We are talking saving us thousands of dollars. We have a small budget, and with costs spiraling, I don’t know what we would have done to remain in compliance. Wayne has been like an extra employee as well as becoming a very good friend, and from what I hear from other operators, he is a good friend to all he works with.

I also have to mention Brent Desranleau who has been there for us for many years. He introduced us to VRWA and it’s been a partnership from day one. Brent has found water leaks for us, traced lines, and is ready to back us up with any water problems that arise. Again, Brent is also a very good friend. He stops to see how I’m doing, and also saved us thousands of dollars over the years.

I also have to mention Paula Jackson who has been there to help us in different areas of water problem solving. She has a great personality and knowledge of municipal water systems.

VRWA training is just about the best I know. Shaun Fielder instructed a class in preparation for Class 2 Water Exam, and it was detailed, yet simplified. I passed my exam, answering questions I knew little about because of certain details he discussed and explained better than anyone I’d heard before.

VRWA is the spokes that keeps the wheels of small municipalities turning. Thank you for being there for us.

Sincerely,

Marcel Mayhew
Chief Utility Operator, North Troy
New VRWA Director Appointed

Our vacant Director position was filled by the board in June. Harry Hinrichsen (Town of Barre) has been appointed to serve until May of 2009. He brings many years of supervisory experience to the table. Harry serves as the town engineer and is involved with the operation of the towns' water supply, distribution, and wastewater collection system. Congratulations Harry, we look forward to your involvement with our association.

Paula Jackson Nominated for Training Specialist of The Year

Our own VT Training Specialist, Paula Jackson was nominated for the NRWA Training Specialist of The Year Award. Paula was elected by her peers at the June NRWA in-service training event. Just like all our staff, Paula takes great pride in her work. She enjoys incorporating her practical experience into given training presentations. Paula is competing against a number of other training specialists from around the country and the award will be announced and presented at NRWA’s Fall Conference taking place this October in Reno, Nevada. Good luck Paula!

Gun Raffle Winners

A big thank you to all who participated in VRWA’s gun raffle this year. Winners were randomly drawn at our annual conference in Fairlee, Vermont. All proceeds benefit VRWA’s Equipment Fund.

Mark Burnham of Milton was the winner of the Mossberg 12 gauge model 835 shotgun.

Chad Eugaire of Proctor was the winner of the Mossberg .308 All-Terrain Rifle.

VRWA to Study Well Interference in Vermont

by Eric Hanson, VRWA

VRWA was recently awarded a contract with the Water Supply Division (WSD) of the Vermont Department of Environmental Conservation to complete a study to assess groundwater interference from the pumping of public community water system (PCWS) wells in Vermont. This study will involve the review of historical pumping test data for PCWS sources at the WSD to determine areas of groundwater interference throughout the state. Groundwater interference in public and private water supply sources caused by the pumping of PCWS wells can affect the capability of these affected sources to serve their intended uses.

Using existing pumping test data for hundreds of PCWS wells, VRWA will identify the degree and extent of groundwater interference caused by the pumping of these wells. The end result will be a better understanding of interference between wells in Vermont and will identify areas where groundwater interference may be problematic. The groundwater quantity information to be provided by this project will benefit Vermont legislators, regulatory personnel, and interested citizens as Vermont moves forward with a more thorough understanding of groundwater issues in the state.

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VRWA to Study Well Interference in Vermont
A BIG Thank You!
by Phil Acebo, VRWA

I've been the Training Coordinator for VRWA for almost two years, and I know at this juncture it will be responsible for me to thank all those who give of themselves so that those in the water industry can be better informed and prepared. This job you do is critical to the safety of visitors and to residents of our state, and vital to our economic wellbeing.

If and when you attend one of VRWA's training sessions you may be greeted by one of our own: be it Paula Jackson, Wayne Graham, Shaun Fielder, or myself. But it may also be an individual connected with the industry in a direct or indirect way. Nevertheless, they bring to a training an expertise, a knowledge, and an understanding of the nuances of this business called water.

It really didn't take me long to figure out that my knowledge base was limited and having others fill the gaps was essential. The first class I "instructed" was the Advanced Certification for Class 3 and 4 operators. There's a lot of stuff to know and I didn't know it nor could I teach it effectively. Sure I took some chemistry, appreciated the subject, (Okay, that's a lie. I really couldn't get into the pluses, minuses, electrons, compounds, and shells.) However, I was introduced to Ray Solomon who's sort of a Water Supply Division guy, yet isn't. Ray came in, did his thing, and then I found out that if you have a problem in your system and are baffled; Ray is the go-to-guy.

I've called on many to help with class instruction and never had anyone say they were sorry, "but I just don't have the time".

So here is my partial thank you list (not in any particular order), with more to follow in this winter’s News Leaks:

Dave Harris of Ti-Sales instructed classes on Metering and Chemical Feed Pumps and had presented for our organization many times. Dave was also instrumental in arranging for Wayne Bennett and Dan Smith of Northeast Pump & Instruments' hands-on course in Chemical Feed Pump Repair we ran this past spring.

Personnel from the Champlain Water District, Jay Nadeau and Paul Tice have worked on the Advanced Course and Distribution Certification. In fact, it was Paul who suggested we move the distribution portion to a separate course away from the Advanced Course and he helped prepare the syllabus for that seven week class. Tony Higgins also of CWD participated in our course on Fluoride in Drinking Water and added his expertise to the subject from an operator's perspective.

I asked Tom Allen (LCS Controls) if he could do a presentation about SCADA systems. Not only can he build you a SCADA system he can probably build you a nuclear power plant. He brought in some circuitry for a system and participants put the various components together to create a mock facility. Lots of time and effort on his part went into this presentation.

If you haven't met Mike Harrington of USA Blue Book you should. Personable, witty, and he knows the industry. Mike isn't just water; he knows his wastewater too. In the past he has instructed: Alternative Disinfection, Verifying Water and Wastewater Treatment, and UV for the 21st Century. He has over
The results of this study will also provide the foundation for the continued assessment of groundwater interference by the WSD as new PCWS sources are developed and permitted.

In order to provide for proper management of the large database that will be developed during this project, and to provide for clear presentation of this information in geographical information system (GIS) format, VRWA is working with Stone Environmental, Inc. of Montpelier, Vermont. This association of hydrogeological expertise at VRWA and the GIS and database expertise at Stone will ensure that scientifically sound and professionally presented reports will be completed for this project.

VRWA and Stone are looking forward to working with the Water Supply Division on the successful completion of this project, as this will be a significant milestone for increased knowledge of groundwater interference issues across Vermont.

For additional information, please contact VRWA hydrogeologist Eric Hanson at 802-660-4988 ext. 327.

VRWA Hydrologist Eric Hanson checks the water level at a public well in Norwich.
lines. Educational mailings, billing inserts, door hangers, newspaper notices and town report messages are all ways of communicating to homeowners about improper connections. Most people that realize they pay for these wasteful flows in sewer rates and taxes will voluntarily fix the problem.

**Ordinances:** Most communities have sewer ordinances that regulate illegal connections such as roof drains and perimeter drains. Enforcing the sewer ordinance is sometimes necessary.

**Plumbers:** A visit to your local plumbers to remind them about proper drainage connections may also help.

Getting the word out in your community about drainage connections and doing periodic smoke testing may yield surprising results for your wastewater collection system and treatment plant.

“A one-inch rainstorm can result in a 100 foot by 1000 foot flat roof delivering over 6,000 gallons of water into the building’s drain system.”

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due to the WSD in early April, the list is finalized in May, a public hearing is held in June and the money becomes available in early October.

Does everyone who applies for the Priority List get money?

No, there are typically more projects than money available. The projects with the most need, or points, are funded first. This does not mean there isn’t a chance for projects originally in the non-fundable range to be funded later in the fiscal year; as projects are completed or bypassed because they are not ready; the next project on the list is funded.

Wow this seems like a long timeline - can I do anything to move the process along?

Absolutely! If you are a municipality or private nonprofit community system serving less than 10,000 people you can apply for a planning loan. Planning loan money is available to hire an engineer to assist you with project feasibility and design.

I have my plan done - now what?

If you are not initially in the fundable range of the Priority List, here are some options:

- Pay for the project from cash reserves (sometimes you can get paid from the DWSRF retroactively but this is not the preferred method).
- Look for other funding sources (USDA, other grants, private loans).

- Wait until you are in the fundable range if not reacting to a compliance deadline - this could happen this year or you may have to wait for another year. You NEED to apply each year for the new list.

You are in the fundable range of the Priority List! It is now time to enter the Construction Loan Phase of your project.

Look for a more comprehensive article with step-by-step instructions on our website. The WSD website and the good folks listed below can also help you through the process.

Additional Resources

Ian Schrauf, Onsite DWSRF assistance 802-660-4988 x321

Eric Law, VT Water Supply Division, DWSRF Project Development Specialist eric.law@state.vt.us or 1-802-241-4656

Bryan Redmond, VT Water Supply Division, DWSRF Program Specialist bryan.redmond@state.vt.us 1-802-241-3408

Ashley Lucht, VT Water Supply Division, Capacity Development Specialist ashley.lucht@state.vt.us 1-802-241-3424

Water Supply Division DWSRF Website: http://www.vermontdrinkingwater.org/capacity.htm

Vermont Rural Water Association Website: http://www.vtruralwater.org

For onsite DWSRF assistance, please contact VRWA Water Systems Specialist, Ian Schrauf at 802-660-4988 x321, ischrauf@vtruralwater.org
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