**How Things Change Over Time**

Shaun Fielder, Executive Director

It amazes me how ten years passes by so fast and how much can change in that time period. Just like all of you, I remember exactly what I was doing that tragic late summer day in 2001. I was assisting with a water system capacity training as conducted by our association, then Northeast Rural Water Association, at the Waterbury state office complex. The focus was to insure systems have the basics down on technical, managerial, and financial matters. These core areas serve as the foundation to insure long term sustainability for not only water and wastewater systems but any business including our association. The business environment is not static; regulations change, operations change, personnel change. To put a play on the words, change is a constant.

Since 2001, our association has experienced a complete restructure from a three state entity to one that operates in Vermont only. We have seen national & state contracts come and go, as well as team members come and go. Throughout, we have adapted to these changes, put our best foot forward, and continued to meet our mission.

*(Continued on page 7)*

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**Recovery from Tropical Storm Irene**

Just as VRWA sends this issue to press, we all are dealing with the impacts of Tropical Storm Irene. We appreciate all the efforts of water and wastewater personnel to reestablish and keep water and wastewater service functioning in your given communities. Vermont DEC was also impacted directly due to flooding of their offices in Waterbury and they are working diligently to get back to full operations. VRWA sends our condolences to the Garofano Family of Rutland. Mike Sr. and Mike Jr. were swept away in flood waters while inspecting the city’s public water supply intake infrastructure and lost their lives. We will have more information on the recovery phase of Irene in our next issue. Please visit our website for regular updates related to the recovery following Irene.

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**Wooden Water Line**

Aaron Perez, Water System Specialist

A construction crew from Markowski Excavating digging a trench for a new pipeline along Grove Street (Route 7 north) in Brandon found some interesting pieces of history. Several sections of wooden water line were uncovered just north of Brandon Auto Sales. The wooden pipe referred to as “pump logs” in Fire District records are believed to be over 150 years old. The logs approximately six inches in diameter have a 1½ hole bored along its entire length. One section uncovered was in very good condition.

Hollowed-out wood log pipes were first used for water conveyance in the late 1700s - early 1800s and soon after it became apparent that they could be used as a source of water to fight fires. When a fire occurred, the firefighters (volunteers) dug down, found the log pipe, and either augered or used a pick axe to make a hole through it. Water would fill the firemen's excavation, forming a “wet well” to either get buckets of water from, or serving as a reservoir for pumps to pull water from.

When the fire was out, the hole in the pipe would be sealed by driving a wood (oftentimes redwood) plug into it. The plug's location was often noted and marked before the pipe was covered over, so the plug could possibly be used as a source the next time -- instead of creating a new hole in the wood pipe. This procedure is the basis of the term “fire plug,” a name which is often still applied to modern day fire hydrants.

The Fire District hopes to work with the Historical Society to try and pinpoint the origin of the pipe and plans to put pieces of it on display after an appropriate method of cleaning and preserving it are found.
“I wanted to let you know that I have taken a lot of courses over the years and yours is one of the best to date. I like your style and knowledge and the fact that you are “one” of us. It is obvious that you have been down in the trenches and have the experience to back up what you are teaching, thank you!” - John LaZelle, Wilmington

“I am writing to express the great job Paula Jackson did at the on-site training for us at Williston Fire District #1. She really covers the issues that make a difference for our system and is always interesting and concerned. I look forward to the next time we have a challenge or need more training. Please express to her how valuable she is and accept my donation.” - Tim Austin, Williston

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VRWA Begins Fee For Selected Field Services
The upcoming end of the rural water EPA training and technical assistance program on September 30th has led us to implement a fee for selected field services effective October 1st. This specifically applies to many of the “privately held” public water systems that Paula Jackson provides various technical assistance to. More specifically, this will be applicable for any systems not eligible for rural development funding. If your system is a so called municipal, fire district, or water co-op, technical assistance at no direct cost is still available and will be provided by other VRWA team members.

For applicable fee services, systems will be billed from point to point with a travel fee added. The following rates will apply; $56 / hour for member systems and $70 / hour for non-members systems. Mileage will be billed at 55 ½ cents per mile. VRWA will only provide the technical assistance if the system agrees to this at the time of appointment scheduling. If you have other service needs please contact us so we can discuss the details.

VRWA Energy Efficiency Program Early End
VRWA’s subcontract with VEIC will end three and half months early. VEIC ended the subcontract based on comprehensive program adjustments in order to boost overall efficiency incentives. For the short term, Matthew Burgess (VRWA energy efficiency program manager) who started with us mid-summer, will be assigned to other association duties effective September 15. We are exploring all opportunities to keep Matthew on board for the future.

New Service Program Opportunity: Compliance Check
We are pleased to announce our new Compliance Check program which is available on a fee basis to member systems effective October 1, 2011. The primary objective is to keep your system on target with various regulatory deadlines. A missed deadline is the number one compliance issue faced by water and wastewater systems and can potentially lead to a financial penalty. See the insert in this issue of News Leaks for more details.

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Drinking Water Resources in Rural Kenya, East Africa
Liz Royer, Source Protection Specialist

While I work with public drinking water systems on a daily basis here in Vermont, I recently had the opportunity to compare our water resources with those on the other side of the globe. This past March, I spent 16 days in the country of Kenya, located in the area known as East Africa. This area of the world is recognized for its amazing scenery, diverse wildlife, coffee & tea production, AIDS epidemic and extreme poverty of many of the residents. I travelled to Kenya to take part in an international work camp organized through CIVS, a local partner of Volunteers for Peace (an organization based in Burlington, VT).

The first thing that struck me when I arrived in the workcamp was the dryness of the region. While the village I was staying in was only 10 kilometers from Lake Victoria, the second largest freshwater lake in the world, mid-March was the end of a long dry season that had seen drought conditions. As we all know, drinking water is the key to survival, but it is a resource we take for granted here in New England. My guidebook didn’t help my concerns, stating “Kenya’s once fairly safe tap water is increasingly unfit to drink and the supply can be particularly suspect during periods of drought or heavy flooding. Be very cautious of well water.”

At the workcamp site, our first priority was finding safe drinking water for the 20 volunteers. The small pump in the barnyard of the compound had run dry months before. The only other choice was a relatively expensive public water source located approximately two kilometers away. Fetching water became a social event for the volunteers – at first it was fun greeting our neighbors, chatting with kids on their way to school, and teasing each other about our ability to carry the 20 liter containers. For the families in the area, the multiple daily trips required to maintain enough water for household needs were more of a rudimentary chore.

The well itself was quite advanced for African standards, having been drilled in 2007 by USAID, the United States government’s international development agency. The bedrock geology of this part of Kenya consists of Archean granite/greenstone terrain. From approximately 200 meters in depth, the water was pumped up to a plastic storage tank on top of a cement-block structure. This structure had three water taps (with limited access through indoor controls) which delivered water at the price of 2 shillings (about 3 cents) per 20 liters. My guess is that the water quality was good coming out of the tap, but when we used visibly dirty containers (some of which had been used previously for gasoline and kerosene) to transport the water back to our camp, the quality certainly deteriorated.

After a few days of near continuous trips for water in the midday 90-degree heat and equatorial sun, the workcamp decided to have a discussion about water conservation, but it was difficult to come up with any ideas when our water use was so minimal. The water was used primarily for bucket “showers”, but also for cooking, washing dishes, and drinking. No water was needed for toilets since we were all using two outhouses with pit latrines. The drinking water was kept separate and was treated with a product called Aquaguard, commonly known as sodium hypochlorite (1.2%). The directions stated that 3.5 mL (one capful) should be added to 20 liters of well water and 7mL to river or pond water – with a total contact time of 30 minutes prior to use.

Continued on next page...
Transportation of the water was another concern. While the Kenyan women were able to carry the 44-pound full containers on their heads with no problem, the volunteers had to carry the water by the slippery handles, with much water lost in transit. A rickety wheelbarrow was helpful for some, but again, much water was lost in transit unless you shoved enough sticks and leaves in the openings. A team of miniature donkeys was also used for a small price, but were unreliable on the timing of delivery. With none of these options ideal, water delivered through a distribution system and indoor plumbing would have been handy.

In rural areas of Kenya, less than 10% of the population has access to a piped water supply. While I had an amazing experience in Kenya, it certainly opened my eyes to the primitive conditions found in rural areas of developing countries. Now, more than ever, I realize the value of Vermont’s drinking water resources and will look at our source protection efforts, water treatment systems, and distribution infrastructure from a different perspective.

Common form of water transport in rural areas
If your water system continuously chlorinates, or has standby chlorination, read on for some important tips on ensuring you are achieving breakpoint chlorination in your disinfection process. The majority of water systems are disinfecting with chlorine to control pathogenic organisms in their drinking water, ensuring public health.

Chlorine, when added to water, goes through four phases of a chemical reaction before it produces free available chlorine residual. The hypochlorous ion and hypochlorite ion are produced when breakpoint chlorination is achieved. Contact time is needed to allow the chemical reaction to fully happen, as well as a strong enough dosage of chlorine to get to the fourth phase of the chemical reaction and produce the free chlorine residual which will ensure that your drinking water is free of pathogenic organisms.

In phase one of the chemical reaction, chlorine readily combines with constituents in the water such as microorganisms, iron, manganese, hardness compounds, and ammonia in some cases. In phase two of the chemical reaction, chloro-organic compounds are formed if ammonia is present, creating chloramines. In this phase, water has a strong chlorine odor and people notice it. In phase three of the chemical reaction, the destruction of these chloro-organic compounds occurs, if the dosage is sufficient. When phase four occurs, you have reached breakpoint chlorination and your free available chlorine residual is produced.

If you have ever received complaints of strong chlorine odor in the drinking water, this could be an indicator that you are not adding enough chlorine to reach phase four, and the chemical reaction is stuck in phase two, the chloro-organic compound forming phase.

A good way to check this is to check both your free and total chlorine residuals. If your free chlorine residual is .2 mg/L and your total is 1.3 mg/L, you have not reached breakpoint chlorination. If your free residual is .2 mg/L and your total is .3 mg/L, you have reached breakpoint chlorination.

If you have not reached breakpoint chlorination, turn up your chlorinator, or adjust the dosage in small increments, testing the free and total chlorine residual until they are within .1 mg/L to .2 mg/L of each other.
So it will be as we enter another phase of change in which we recently were notified of an early end of our energy efficiency subcontract with VEIC/Efficiency VT (see News On Tap). In addition, the national rural water EPA programs will end on September 30. VRWA will need your continued support as FY 2012 budgets are developed. We are hopeful funding will be maintained for existing programs and the rural water EPA program reinstated. Keep your letters of support coming back to me and additionally, consider contacting Vermont’s elected officials at the national and state level directly so they get the message from you about how valuable our services are to your system.

We have another opportunity for you to support VRWA, and for VRWA to provide continued support to you. We are initiating a new program called Compliance Check. It will be available for member systems only, effective October 1, 2011. VRWA will offer this service to interested members on a written agreement basis. We will provide selected administrative support and reminder services to insure you don’t miss a deadline on a given regulatory item. Why would this be valuable to you? Because missed deadlines are the number one regulatory issue and in some cases can lead to a financial penalty. With the increasing task load, and having to do more with less, Compliance Check has been established to keep you ahead of the curve. See Compliance Check insert in this issue for more details and for pricing information.

Following up on the program losses noted above, the key question from many systems is, “how will these changes impact the service VRWA can offer to me?” On the training side of things, no short term negative impact since we have negotiated an extension and expansion of our Vermont Training Coordination Contract with the VT Department of Environmental Conservation, Water Supply Division. Thanks to all at DEC for your support on this issue. Given our team member Paula Jackson is directly impacted by the end of the rural water EPA program, this extension allows us to keep her on board full-time and, just as important, keep those trainings she has been offering over the years coming to you. She will continue this work half time alongside Phil Acebo who continues his full-time role on water system training coordination. For the other 50% of Paula’s time, she will be the lead on selected fee for service work we will implement beginning October 1, 2011 (see details following). For those of you on the wastewater side of things, Wayne Graham continues his work both for training and in the field for given technical assistance.

In regards to all other team members including Brent Desranleau, Aaron Perez, and Liz Royer, their work continues in the field since there are not funding disruptions for their given programs. Do recognize the end of the rural water EPA program does mean the loss of a fulltime source protection specialist for our association and this will create some situations where source protection planning services will be fee-based.

Please note Liz Royer continues her work in this area but can’t take on all the requests for this type of assistance. Given the energy efficiency program end, Matthew Burgess is taking on other VRWA duties and we are exploring all opportunities to keep him on board for the future.

The loss of the rural water EPA program presents another dilemma for our association. We lose the capability to provide free assistance to public water systems that are not eligible for rural development funding (these are the systems Paula Jackson has worked with over the years via the rural water EPA program). Any water system that is not a municipality, fire district, or water co-op are examples. In most cases, mobile home parks, homeowners associations and other privately operated public water systems will have to pay an hourly fee and travel costs for field assistance as led by Paula. This fee-based service will take effect October 1, 2011.

Quite an extensive list of changes described above. As we make business adjustments, our goal is to keep to our mission and we are doing our best to keep support coming to your water and wastewater system.

As we mark the 10th anniversary of September 11th we all need to recognize the changes of the past ten years have been incredible. The lesson all of us should take away is you need to roll with punches and look at those changes and any resulting challenges as opportunities for the future.
Maintaining regulatory compliance has never been more difficult. Given an ever-increasing task load, even the best run water and wastewater utilities can miss a compliance deadline. With our new Compliance Check program, Vermont Rural Water Association will be able to offer members an extra level of assistance in dealing with these regulatory compliance burdens.

The following is provided with the Compliance Check service:

1) Initial consultation onsite to review the following;
   - Sanitary survey
   - Discharge permit
   - Permit(s) to operate
   - Other pertinent water / wastewater items as issued by State or Federal entities
   - Monitoring schedule (water and / or wastewater)
   - Operator certifications

2) Following the consultation VRWA will provide your system a reminder service for the following;
   - Given water and / or wastewater testing required
   - Permit renewal
   - Renewal of operator certification(s)
   - Other pertinent renewals relating to permitted operations and as agreed to by the system and VRWA during the initial consultation

This service is available for VRWA members only. The fee is in addition to your current membership rate, as described on the following table:

<table>
<thead>
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<th>Public Water Systems:</th>
<th>Compliance Check fee</th>
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<tr>
<td>population ≤ 500 (includes Transient systems)</td>
<td>$150</td>
</tr>
<tr>
<td>population &gt; 500 but ≤ 3,300</td>
<td>$150</td>
</tr>
<tr>
<td>population &gt; 3,300 but ≤ 10,000</td>
<td>$350</td>
</tr>
<tr>
<td>population &gt; 10,000</td>
<td>$550</td>
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</tbody>
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Combined Water & Wastewater System  Will receive 30% discount off full cost pricing

Wastewater Systems
- population served ≤ 3,300  $150
- population served > 3,300  $350

To take advantage of this program, please call VRWA at 802-660-4988 or email us at compliance@vtruralwater.org

You can also visit vtruralwater.org to request more information or to become a VRWA member.