

## COURSES OF CHANGE - Vol. 4, Issue 1, April, 2008

- Our newsletter is available on the web at [www.srcc-maine.org](http://www.srcc-maine.org). If you would like to receive this publication electronically, please send us your e-mail address.
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### Vegetative Buffers

Maine lakes, rivers and streams are among our state's greatest natural resource. We often take for granted the clean waters used for fishing, swimming and outdoor water activities. More and more people are choosing to live on or near our waterways.

What impact does this increased population have on our rivers, lakes and streams? As the land becomes developed, trees and shrubs are removed to make room for our homes, businesses and roads. With the removal of these trees and plants, there is greater amount of storm water runoff. The runoff of sediment and debris, called nonpoint

source pollution, is carried into our waterways. This runoff can have serious impact on our rivers, lakes and streams, such as increased weed growth along the shorelines, reduced water clarity, algal blooms, sediment deltas and altered wildlife habitats.

We can take some simple steps



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to keep this from happening. We can leave vegetative buffers and replant buffers that have been removed. These buffers help the water by trapping sediments and other pollutants, prevent erosion and help stabilize shorelines.

Your efforts are an investment in Maine's future.



### Water Conservation

By Doug Hawkins

We need a water conservancy to advance the accurate measurement of the amount of pure drinking water in our precious Maine aquifers.

Aquifers - like huge sponges - increase, hold steady, or decrease in water by rain or snow. These aquifers - unseen - lie under our earth and are the core source of our pure drinking water. Aquifers lie, for example, under the Ossipee River and under the towns of Parsonsfield and Porter, and under the Saco River in Fryeburg and Brownfield and their nearby lakes in Maine.

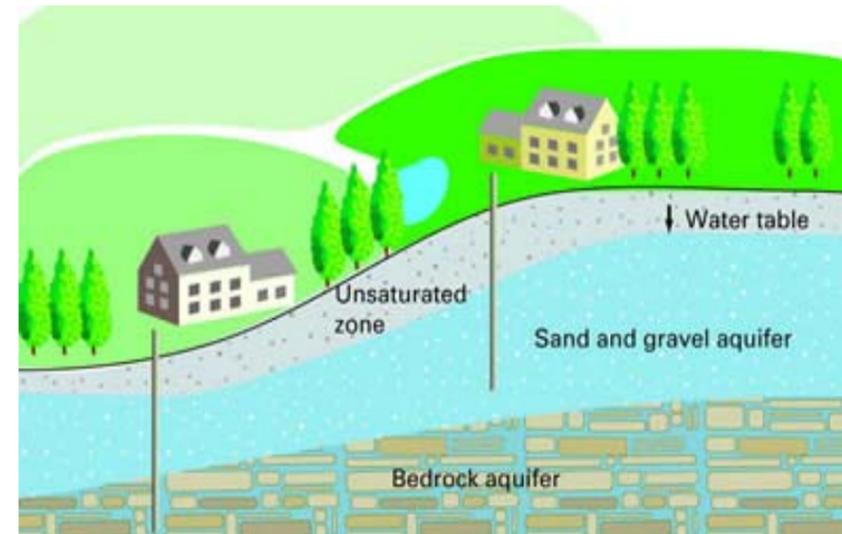
The aquifers are at the very heart of our existence. Should they become contaminated, our drinking water is gone. Should they be over pumped (called mining), our precious drinking water is gone. Current Maine law only provides recompense in dollars for that lost water. That makes no sense, for we cannot drink dollars.

The water conservancy is needed to continuously advance the art and science of locating aquifers and accurately measuring their change in water volume over the change in time - whether increasing, remaining constant, or decreasing in volume. Aquifer measurements must be credible for us all - those who pump the water as well as we who drink the water because that water belongs to us all in the same way as do the lakes of Maine. Current technologies such as seismic sounding and isotope hydrology are of great value, as are systems to accurately measure amounts pumped. But geologists, conservationists and hydrologists would be the first among us to state their need for ever better measurement and increased certainty.

The water conservancy is needed to focus purely upon the science of water, just as the nature conservancy focuses

upon the land. It takes great wisdom and cool unified action by we Mainers to ease the ever increasing global pressure on the decreasing supply of drinking water as the population to drink that water continues to increase. We, the people of Maine, have dominion over our earth and water. Wise, measurable management of our water resources rests with us, and a water conservancy lies at the very heart of that dominion.

*"Let us have a splendid legacy for our children . . . let us turn to them and say 'this you inherit and guard it well, for it is far more precious than money . . . and once it is destroyed, a river's beauty cannot be repurchased at any price.'" - with respect to Ansel Adams*



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Courses of Change is a quarterly publication of the Saco River Corridor Commission. We encourage our readers to submit ideas for publication in future issues. The deadline for submission in our Vol. 4, Issue 2, edition is June 15, 2008.

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**Mission Statement**

The Saco River Corridor Commission is committed to protect public health, safety, and the quality of life for the State of Maine through the regulation of land and water uses, protection and conservation of the region's unique and exceptional natural resources, and through the prevention of impacts caused by incompatible development.



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## Executive Director's Column...

Global warming! What a ridiculous concept. Anybody that believes in such nonsense has spent little time in Maine this winter. How could anybody believe that the earth is getting warmer when all one has to do is look outside on this March day. Actually, I must admit in spite of this past winter, I am a believer. The issue of global warming is not voodoo or magic, but rather, based on science and the rise in temperature is fairly easy to substantiate. Scientists around the world have collected temperature data, and after several decades have concluded that the earth is about 1.3 degrees warmer than it was in the 1970's. Glaciers recede, icecaps melt, sea level rises in small increments – and we wait and watch. Not unlike watching paint dry for some, because the climactic changes are not swift. But wait. Here it comes, the all important question. Who is to blame for this warming trend? Here the debate is usually quite heated, but I am not one to point fingers. After all, during the Paleozoic period, the Jurassic and Cenozoic, the earth was warmer. Areas in North America that are temperate today were once quite a bit warmer – tropical in fact. And let's not forget the ice age. Who today doesn't believe that this age occurred? Rather than get mired in why it's happening let's think about the consequences.

What exactly does a warmer earth mean?

A warmer earth means that we are in for some climate change. Precipitation amounts may change. Storms may be larger or smaller in intensity or frequency and wind patterns may be altered. These changes may not be noticeable right away. The changes are likely to occur over decades or perhaps, even generations. It is likely that in some areas of the world's oceans, salinity levels will change due to increases in precipitation. Speaking of the oceans, let's not forget about sea level rise. Could a New Orleans type event happen in other parts of the world? As temperatures climb, the evaporation of water from the earth's surface increases leading to more precipitation. There is no easy way to predict what will happen. Most conclusions are based on computer modeling or conjecture. We do know however, that as our climate changes, imperceptibly, or with a speed that only Mother Nature can impose, we may expect changes in our water budget. As a region, we need to watch our water inputs and outputs more carefully, so that we know what is happening and when. And, we need to have a fuller understanding of the importance of our water. This applies to our ground water as well as our surface water.

All of us, the residents of the Saco Valley, are the true stewards of our lands. Let's take this responsibility seriously.



Copyright University of Calgary

## The Big Water Picture (con't)

dance of bogs, ponds, vernal pools and lakes. But it would be a mistake to take these for granted. Without our attention and active protection, we could lose these water features, and with them, the way of life so many of us appreciate.

The latest scientific understanding of how things work favors the concept of interconnection. We now realize that we do not have individual systems operating in isolation, one from the others, but that each exists in relationship to the others. Each influences the others. Many of our laws however, have yet to catch up with systems knowledge of interconnections. If our water is to be adequately protected from pollution, from mining and from general misuse, we need to think about it differently than we have in the past.

The International Conference on Water and the Environment: Development Issues for the 21st Century held in Dublin, Ireland in 1992 adopted a statement on water referred to as The Dublin Principles.

This statement provides an overview of water management and is, in brief, as follows:

**\*Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.**

**\*The participatory approach involves raising awareness of the importance of water among policy makers and the general public.** It means decisions are taken to the lowest appropriate level, with full public consultation and involvement of users in the planning and implementation of water projects.

**\*Women play a central part in the provision, management and safeguarding of water.** This pivotal role of women as providers and guardians of the living environment has seldom been reflected in institutional arrangements for the development and management of water resources. Acceptance and implementation of this principle requires positive policies to address

women's specific needs and to equip and empower women to participate at all levels in water resources programs, including decision-making and implementation, in ways defined by them.

**\*Water has an economic value in all its competing uses and should be recognized as an economic good.** Within this principle, it is vital to recognize first the basic right of all human beings to have access to clean water and sanitation at an affordable price . . .

Of these four points, the second seems particularly germane locally. If ecological water needs are also properly considered and respected, it offers a possibility of far reaching implications of fairness for all users.

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Information for the above was collected from publications from the DEP, EPA, Worldwatch Institute and The International Forum on Globalization.

Did you know . . . ?

- A shower can use 25 to 50 gallons (5 gallons per minute).
- Just washing your hands can use up to 3 gallons of water (with tap running at 3 gallons per minute).
- Leaving the water running while you brush your teeth can waste 3 gallons of water.
- Outdoor spigots can pump 5 to 10 gallons per minute.
- Ten gallons of water are needed to refine one gallon of gasoline.
- The average bath takes about 36 gallons of water.
- The average individual uses about 125 gallons of water per day.



## The Big Water Picture

By Pat Foley

Because we live in a world in which both our natural and our human based systems are interdependent, it is helpful to know what the global aspects of any given system are. It helps us make better decisions on a local level when we understand that bigger picture. For example, in Maine, we presently have few serious water scarcity issues. Yet in a world context, the picture is very different.

It is commonly assumed that the world's water supply is huge and infinite. This assumption is incorrect. Available fresh water is less than 1/2 of 1 percent of the world's total stock. The supply is finite.

The only renewable source of fresh water is continental rainfall or snowfall. This generates a more or less constant global supply each year. Meanwhile the world population, each member of which needs water to live, is increasing by roughly 85 million people a year, thus the global amount of fresh water available to each of us individually is decreasing rapidly.

At the same time, we are diverting, polluting and depleting our finite supply at a remarkable rate. Worldwide consumption of water is doubling every 20 years, a rate more than twice the rate of increase in human population

Over-pumping of groundwater for irrigation is now a widespread problem. Tube wells supply underground water for irrigation in China, India, Pakistan, Mexico and many other countries with water needs not met sufficiently by rainfall. Because of overuse, groundwater levels are dropping. In large areas of

China and India levels are estimated to be falling between 40 and 120 inches each year. As the water tables drop, in many cases, salt water intrudes into the effected aquifers.

Global warming will present its own challenges as weather patterns shift and rainfall changes. Segments of the world population that depend on seasonal melting of mountain top snows for their water will be at particular risk.

According to a United Nations report, 31 countries presently are facing water stress and scarcity and more than 1 billion people lack adequate access to clean drinking water. **By 2025, as much as 2/3s of the world's population, predicted to have expanded by an additional 2.6 billion people, will be living in conditions of serious water shortage and the remaining 1/3 will be living in conditions of absolute water scarcity.**



Copyright: The Washington Post

### CONDITIONS IN THE UNITED STATES

*If we consider the water used to produce the corn fed to the beef critter, it takes over 10,000 liters of water to make one hamburger.* Groundwater pumping and aquifer depletion are also serious problems in the United States. As much as 21 percent of our irrigation is achieved by pumping ground water at rates exceeding the water's ability to replenish itself. The High Plains Ogallala aquifer, which stretches from the Texas panhandle to South Dakota, is being drawn down eight times faster than nature is able to replenish it. The water table in places under the San Joaquin Valley has dropped nearly 40 feet in the last 50 years and continues to fall.

The continental US has lost more than half of its wetlands. Nearly 40 percent of our rivers are too contaminated for safe fishing, swimming or drinking. Once a world epicenter of freshwater biodiversity, 37 percent of our freshwater fish are currently at risk of extinction.

### THE LOCAL SITUATION

Within Maine we have water and most groundwater is potable, but all groundwater in unforested areas of Maine is threatened with some sort of pollution. It is reasonable to assume that, because our population and water use is increasing, we need a cohesive plan to protect the integrity of our water.

So far we in the Saco River Corridor are fortunate. Most of us have relatively clean water. In addition to the river, our general area has an abun-

## Water Quality Update

By Ben Tripp

The Saco River begins as a small stream high in the White Mountains of New Hampshire and flows approximately 135 Miles to the Atlantic Ocean in Saco, Maine. Our river flows through farmland and forests in Maine and New Hampshire. The Saco River watershed actually covers an area of approximately 1,700 square miles in central New Hampshire and southwestern Maine. We are fortunate that the Saco River is one of the cleanest major rivers in Maine and New England, due in part to the lack of any substantial industrial development along its shoreline.

We began water quality monitoring in 2001 in order to gain a better understanding of the water quality and to develop a baseline for trends. Until now, there was little actual data on the quality of the water in the Saco, Ossipee and Little Ossipee Rivers. Regular, but infrequent testing by the State of Maine indicated that water quality has improved, allowing the river to attain Class A & AA. The Maine Department of Environmental Protection (DEP) tests the water in the Saco River at six separate locations, once every five years. Their testing regime is physical, unlike the Saco River Corridor Commission testing which is chemical in nature. The Maine DEP looks for the presence of aquatic insects which can be used as "indicator species" for water quality. Other isolated and periodic testing of discrete areas along the rivers over the years was carried out, primarily by school groups without a commitment to long term data collection. Because long term background information is not

available, it is difficult to determine if current land use trends in management strategies and regulations remain effective. The hopes of the SRCC for this program are to collect and store data for use by towns in the corridor, for use by the State of Maine and to help us refine and/or reform our regulations to meet the current needs of the rivers and the citizens in the corridor. Having the data allows us to create a picture of the river systems. Over time, this picture will emerge showing us and other users of the data, the trends in water quality. Identification of problem areas along the river and a more informed decision making process will be the direct outcome of this program.

Our volunteers have tested annually (April through October) since 2001 for the following eight parameters: pH, Dissolved Oxygen, Turbidity, Temperature, Total Kjeldahl Nitrogen, Escherichia Coli, Alkalinity, Total Phosphorus, and Orthophosphate. The first four parameters are monitored using equipment produced by and purchased from HACH Company out of Loveland, Colorado. The next three parameters are monitored by



transporting water samples daily to Katahdin Analytical Services, an accredited full service environmental testing laboratory (located on Enterprise Drive in Scarborough, Maine). The last two parameters are frozen and transported to the University of New Hampshire approximately once every other month. Our 2001 results were on a few limited sites as we learned how to use the equipment and began to recruit volunteers. Since 2002 when we had 27 testing locations to our present 31+ sites (we do some testing on a contract basis for special interest groups, Lake Associations, etc.), we feel that we now have enough data to develop a more comprehensive picture of the Saco River water quality and trends.

*We are currently seeking volunteers for the 2008 Water Quality Monitoring season. Anyone interested in participating in the program should call the Commission office at (207) 625-*



## SRCC Tutorial

By Dennis Finn

### What is a Hardship Variance

Several times a year, the Saco River Corridor Commission (SRCC) reviews development projects that are seeking a hardship variance. Often, people believe that simply telling them that they can not build 30 feet from the edge of a water body is a hardship. While it may seem so to those folks, a hardship has been defined by the Maine Supreme Court – at least for the purposes of land use law.

For the SRCC, a hardship variance can only be issued when a project meets a four part test rigorously constructed by the courts. This four part test is explained as:

1. The hardship must be based on a true constraint of the land;
2. The applicant must show that they will not get a reasonable (not maximum) return on their investment;
3. The hardship must not be self created; and

4. If granted, the variance must not subvert the intent and purpose of the law.

Let's look at these four parts briefly to see if we can provide an example of each.

One example of a land constraint is, if a lot was subdivided before the law came into effect and the lot is too small by today's standards. This would be considered a constraint of the land if a setback could not be met because the lot is not large or deep enough - but was sized appropriately when first divided.

It is not unusual to have an applicant submit an application saying that they need to exceed the dimensional requirements on their house imposed by the law because if they do not, they will not get a very good return on their money when they sell the house at some future date. While understandable, this does not meet the intent of the law. On the

other hand, if a person cannot literally continue to live in a house because of the house's size, especially due to injury, disease or other issue, then the argument could be made they are not getting a reasonable return on their investment.

Self creation of a hardship is usually fairly obvious. If an individual buys a lot in the Corridor and decides to demolish a house that already exists on the property, there is risk involved. They need a permit to reconstruct. If a person simply wants to be closer to the water because the original house was close, this may not be allowed. The person can not claim that they have a hardship and need to live by the water simply because there was once a house in that location. This individual has created his or her hardship by removing the old structure first without understanding the implications of their actions.

Finally, and quite obvious, the Commission cannot give a project a hardship variance if in this hardship other parts of the law are in conflict. Giving a variance to a development that ultimately ends up polluting water quality, or causing erosion or other issues is simply not acceptable.

The Hardship Variance is designed to accommodate the special case, the true hardship – it is designed for these exceptions and can not be taken or granted lightly.



PHOTO: STEPHEN M. DICKSON, MAINE GEOLOGICAL SURVEY

## Owls All Around

By Dennis Finn

Has anybody else noticed an abundance of owls lately? Yes, I am aware that this is not really a water quality question. But living in this area one begins to see all of the interconnections between water quality and the other ecological features that make this such a great place to live.

Owls are certainly native to Maine and seeing one is not unusual. However, in my trips around the Corridor I have noticed more and more of them. This is especially true of the owl known as the Barred Owl. A more formal, but rarely heard name for this owl is *Strix varia*, the genus and species assigned to this large bird of prey. Although it is an owl of the deep forest, they often frequent woods near cleared areas when on the hunt. They have perfect camouflage in many settings and are often difficult to spot. After many visits from two different Barred Owls in my yard and seeing at least four more in the Corridor all during the day, I consulted a number of internet sites in an effort to determine if this was a little out of the ordinary.



Credit: Lou Gaeta

As it turns out, a collapse of the Red Vole population in Southern Quebec has prompted a variety of predators that normally hunt them to move south in search of food. This collapse and the consequent relocation of Avian predators is known as an irruption. An irruption is an irregular migration, and is sometimes spectacular in proportions.

This has been a tough winter for everyone - homo sapiens and other species as well. The accompanying photo shows one of the Barred Owls that frequents the bird feeders in my apple trees. He, or she, appears to be waiting for a mouse, but no such luck with the snow cover this year.

Smaller birds visit the feeder uninterrupted. They, and the Owl, know that these little birds are too quick to be caught. Although I have observed a number of close calls for one of the many, red squirrels that try to sneak seeds. These squirrels must surely be living in my house, so while I have no mean spirited feelings toward them, I admit my allegiance is with the Owl.

In theory the winter will soon wind down, and although the view out of my window does not support this theory, spring will arrive. With the spring comes the normal migration of birds and the other species of Owls that migrate to the area. Until then, if you see Owls, particularly during the day, know that this is a bit unusual and there is a reason. If you haven't seen any Owls, pay just a bit more attention when out and about. It is truly a treat to see such large and majestic birds of prey.

