

What's Inside: 

Hows and Whys of No-Till Farming
Page 6



Conservation Spotlight:
Insulating Underground Pipes
Page 7

Fun Facts: interesting facts on natural resource issues.
Page 2

Making Conservation Work for You for Over 60 Years.

Penobscot County Soil & Water Conservation District

District News

2010 Conservation Highlights

Annual Report Edition—Spring 2011

Chris Brewer

Urban Conservation:

- The District is a partner with the Bangor Area Storm Water Group (BASWG). BASWG is comprised of the Cities of Bangor, Brewer, and Old Town, and the Towns Hampden, Milford, Orono and Veazie as well as the following nested entities; Bangor International Airport, Dorothea Dix Psychiatric Center, Eastern Maine Community College, Maine Air National Guard, the University of Maine, and University College of Bangor. BASWG is a collaborative effort by these entities to comply with stormwater regulations from the EPA. The District has partnered with them to assist with education and outreach projects.

Lakes Projects

The following projects are funded by grants from the Maine Department of Environmental Protection through funds from Section 319 of the Federal Clean Water Act. Grants are awarded to these lakes on a competitive basis.

- We have partnered with the City of Old Town to upgrade and improve 1 mile of Woodland Avenue on Pushaw Lake. The purpose of this project is to reduce



Stenciled storm drains in the Bangor area remind residents that water flows untreated into streams.

the erosion of from the camp road that is depositing an estimated 2,106 tons/year of sediment into Pushaw Lake. The challenge the city has had over the years is how to drain the 163 acre watershed which is densely developed. The District engineer has designed a

(Continued on page 2)

A Look Back at 2010

This past year the District worked hard to address a wide variety of conservation issues throughout Penobscot County. This included erosion control work on Wassoakeag Lake and Pushaw Lake, conducting a watershed survey around Cold Stream Pond, coordinating storm drain stenciling projects and lawn care education for the Bangor Area Storm Water Group, providing technical assistance to individuals and municipalities and hosting numerous workshops.

As you read through our list of District Highlights for 2010, we encourage you to contact us with any questions you might have or your ideas for future workshops or programs.

We look forward to continuing to serve you in 2011!

Fun Facts— Maine's Moose

We all love those images of moose rising out of a lake or pond with water cascading down from their antlers, but do you know why they take the plunge in the first place? Moose eat tree shoots, leaves and twigs as their main diet, but like humans, moose need salt in their diets. Trees and shrubs don't contain enough for their nutritional needs (and Maine has very few natural salt licks) so moose eat aquatic plants which have higher amounts of salt. In northern Maine, where moose are most common, moose actually keep aquatic plants like pondweed and water lily in control.

Did you know that a cow (female moose) will have zero, one or two calves depending on a number of factors. Cows younger than two and very old cows in their teens will probably not have any calves. Disease will also stop a moose from having any calves for a season. Cows in their prime will have twins if there is enough food available. A mother whose single calf is still nursing must eat 66 lbs of food every day.



More 2010 Conservation Highlights

new storm water management system. Over the next few years the stormwater system will be changed from the existing ditch system to a subterranean system designed to force stormwater to infiltrate through filter fabric and crushed stone before entering a perforated pipe system with additional filtration practices throughout the design. When all is said and done, the City plans to spend roughly \$1,000,000 over the next ten years to upgrade this road, with design assistance from the District.

- The Bear/Elk Lane Road Association on Wassookeag Lake in Dexter received assistance from the district to upgrade their roads. Over three years the association completely rebuilt Bear Lane. Because of the size of the project,



Upgraded drainage system on Woodland Ave in Old Town.

Bear Lane has received significant community interest. Thus, the work done on the entrance to the road and the hill has become a much discussed and often visited attraction. And, as our grant administrator said, "the project is a text book example of what a perfect camp road should be." Every camp owner who visits the property will be able to learn how to better maintain their own camp roads.

- The District has received funding to compile a Watershed Survey for Cold Stream Pond. The survey was a collaborative effort with the Cold Stream Campowners Association, and Towns of Enfield, Lowell, Lee and Lincoln. The information gathered from



Envirothon is a hands on experience that is also fun.

this survey will be used to request a 319 grant from MDEP to help the community address polluted runoff issues that were identified around the lake.

- The District asked the University of Maine Cooperative Extension to host a Watershed Stewards Program for Cold Stream Pond and Upper Cold Stream Pond. Through this program, 15 camp/homeowners on the two lakes received training in all things relating to lake water quality, from "Lakes 101", to "Rain Garden's and Simple Water Quality Practices for the Home."

Education and Outreach Projects

- The District visited the Glenburn School last year to present the Agriculture in the Classroom lesson called, "Till We or Won't We" for the 4-5 grades. The students learned about the different



Planting veggies at Thomas Farms in Corinth.



This rock ford provides protection for the woods road during peak flows.

methods farmers use to plant crops. Then they enjoyed a science experiment comparing the erosion that could occur based on non-contour, contour and no-till farming.

- Through our partnership with BASWG, the District and UMCE visited the 7th grade classes at Orono Middle School. The students learned about watersheds and Non-Point Pollution using the Enviroscapes watershed model. The students learned how to take simple steps in their homes to reduce their family's impact on the watersheds from cleaning up pet waste to rain gardens.
- The District once again provided LakeSmart evaluations to lake front owners in Dexter. LakeSmart is a program that offers opportunities for homeowners to learn how to manage their home and yard to protect the water quality of their lake. The goal is to change the common suburban landscaping practices around lakes to more natural, lake-friendly environments. The program will continue in 2011.

Agricultural Conservation

The District through our partnership with the USDA – Natural Resources Conservation Service provides conservation cost-share programs for agricultural operations in Penobscot County.

- Through the Environmental Quality Incentives Program we have provided assistance to agricultural operations in Bradford, Charleston, Corinna, Corinth, Dexter, Dixmont, Exeter, Garland, Hampden, Hermon, Kenduskeag, Lee, Levant, Milford Newburgh, and Newport. This year to date we have provided cost-share payments totaling just over \$3,000,000 for the installation of conservation practices on agricultural land.
- In 2010 NRCS started a new outreach program to forest land owners. The goal of this effort is to promote exemplary stewardship among private landowners by assisting them to improve forest health and productivity, wildlife habitat and water quality. Eligible forest landowners may qualify for conservation planning, management assistance and forest management plans. Interested land owners should contact NRCS for more information as this program will continue for 2011.



Heidi Bunn and Dennis Murphy, Sr. supervising construction on a manure storage facility.



Maine Agriculture Commissioner Named

The Maine Legislature has approved Governor Paul LePage's nomination of Walter Whitcomb as the Commissioner of Agriculture.

Whitcomb is owner and operator of Springdale Jerseys Inc. in Waldo County. A dairy farmer of 32 years, he also served six term in the Maine House of Representative from 1984 to 1996. In addition, Whitcomb has served on several teams for political appointments regarding the Small Business Administration and the U.S. Department of Agriculture. He has also served on the Waldo Board of Selectmen and the Waldo County Soil and Water Conservation District Board.

"Walt has been a leader in agriculture policy, working with the Maine Dairy Industry Association," said LePage. "He has represented Maine's farming interests in Washington and has worked closely with our congressional delegation. When it comes to Maine's natural-resource based industries, we are looking for stewardship and leadership—we are going to leave the industries stronger and better positioned to compete and create jobs in the future."

Women in the Workforce at NRCS and the Districts

Heidi Bunn

Women have held a critical role in the success of the USDA since being founded in 1862 by President Lincoln. The first female employees held clerical/secretarial positions. By the 1920's, the USDA became the largest employer of female scientists. This opened the door for future professional women who would eventually go to work for the Soil Conservation Service (SCS). When Hugh Hammond Bennett became director of the SCS in 1933, he hired Lillian Wieland as his secretary; she is believed to have been the first female employee of the agency. By the 1940's, labor shortages resulting from WWII allowed women to transition from secretarial roles to positions which were typically reserved for men. In 1946, the SCS hired Mary Baltz (see Figure 1) as its first female soil scientist.



Figure 1: Mary Baltz

Although the SCS continued to hire women in more technical roles, the clerks and secretaries of the SCS and the Soil and

Water Conservation District were making a name for themselves. One of these women was Ellen Cobb, a secretary for the SCS in South Carolina who held a critical role in the creation of the National Association of Soil Conservation Districts (NACD). She attended the first meeting in 1956 with E. C. McArthur, head of the SC state association, and describes it as such, "it was hot as Hades when those 17 men, plus McArthur, plus little me, sat around a table at the Morrison Hotel, and discussed the merits of a national organization..." Ellen Cobb left that meeting as the first Executive Secretary of the NACD where she ran the organization out of her home until 1948.

Legal changes in the 1960's and 70's opened up even more career opportunities for women. These changes included:

- Civil Rights Act of 1964: Title VII prohibits sexual discrimination in the federal government
- Equal Employment Act of 1972: Required Equal Employment Opportunity (EEO) plans to be written to establish training and/or education programs to allow all employees maximum opportunity to perform at their highest potential.
- Civil Service Reform Act of 1978: Man-

dated that the federal workforce reflect the nation's diversity.

The impact that those laws had on the placement of women in professional positions within the NRCS is reflected in the average General Schedule (GS) level. In 1975, the average GS level for permanent female employees was 5.24 with only 123 women in professional/student trainee positions; that same year, the SCS hired its first female District Conservationist, Roberta Stevenson in Arizona. By 2009, 60% of permanent female employees had an average GS level of 10.5 (source: NRCS MD 715 Data, 2009).

Did you know? As of October 1, 2009:

- 155.8 million women living in the US (151.8 million men)
- 55% of college students were women
- 29.4 million women ages 25+ with college degrees
- 1.7 million women veterans
- 197,900 women in military active duty
- 66% of women were eligible to vote (73% registered)

As women continue to take more technical and leadership roles within the NRCS and the Districts, the

value of the assistance that they can provide will only increase. Douglas Helms, author of Women in the Soil Conservation Service, said it the best. "The continuation and expansion of equal opportunities for women constitute not only the just and legal path to take, but also the one most beneficial to the agency. For a natural resources agency to continue with a well-trained, dedicated workforce, it will need to make even greater efforts to recruit the best of those available no whatever the gender, race or ethnic group."

Please see the following sites for more information:

- Maine Civil Rights Committee—<http://www.me.nrcs.usda.gov/CivilRights.html>
- Federal Women's Program—<http://www.nrcs.usda.gov/about/civilrights/FWPpage.html>
- Women in the Soil Conservation Service by Douglas Helms—<http://www.nrcs.usda.gov/about/history/articles/WomenInSCS.html>



Meet our Newest Staff Member

We have had some staff changes at the Bangor NRCS office. After nine years of service, Seth Jones has transferred to the Skowhegan NRCS office. And we now welcome Chuck Penney who has transferred from the Belfast NRCS office as our New Soil Conservationist.

Chuck has been with the agency for nine years and has worked in many counties throughout Maine. He graduated from Unity College in 1995 with a BS in Environmental Sciences. He lives in Unity with his wife Raena, daughter Lindsay and son Hunter. Chuck enjoys hunting, fishing, camping and raising and training bird dogs (English Pointers). Chuck is very excited to be here and is looking forward to working with producers and people of Penobscot County.

My Well Water Turned my Hair Green

Laura Wilson, University of Maine Cooperative Extension

Last week, I had a phone call from a Maine resident who has a private well. Her shower and sink were, in her words, "glowing blue" and her hair turning green – from her wellwater. Of course she was alarmed by this color (most likely from copper), and we chatted about having her wellwater tested so she knows how to proceed with treatment.

Most wellwater doesn't turn your hair green, or your shower blue – but that doesn't mean it's safe to drink. Bacteria, arsenic, radon, and nitrates won't change the color or taste of your wellwater, but can indeed cause some pretty serious health problems. And, as wellwater quality can change over time, a good well test result from several years ago doesn't mean that the water you're drinking TODAY is safe.

The Maine Center for Disease Control has guidelines for testing your well – nobody can force you to test it, and nobody will make you treat your wellwater with a water treatment system if you find problems – these are health-based recommendations that we and they hope you will take seriously enough to follow. The full list is in a brochure that's available at wellwater.maine.gov, and includes:

- Test every year for bacteria (germs) and nitrogen (nitrate and nitrite forms) that can make you ill and cause problems for babies, and
- Test every three to five years for arsenic, radon, uranium, lead and fluoride (yes, in Maine, you can have too much fluoride in your wellwater!). Some of these (arsenic, radon) can cause cancer, others (lead) can lead to brain damage in children.

None of these will make your water turn blue, green, red or any other color that indicates a problem. Again, the only way to be certain is to have your water tested. There are laboratories throughout the state that are certified to test drinking water. A list of labs is available at <http://www.informe.org/het/>.

You'll need to ask for specific tests (like the ones recommended above), or if you choose to use the State of Maine



Health Lab in Augusta, ask for the "Healthy Homes" test, which covers these contaminants and a few other common ones (including copper) and radon in air and water. The Healthy Homes test costs \$120 – which is less than \$30/year, if you have this test every five years. This is the test I recommended to the caller with the blue fixtures and green hair, as she had not had her well tested at all for many years.

And if you find a contaminant in your water? Or don't understand the wellwater test results? There are resources available at <http://wellwater.maine.gov> to help you, and you can always call your University of Maine Cooperative Extension county office (in Penobscot County call 942-7396)!

The District has well water testing kits from Clear Water Laboratory in Newport available in our office call or stop by and pick one up.



Supervisors & Staff

District Supervisors

- Ryan Crane
- Bob Fogler, Chair
- Dan Kusnierz, Treasurer
- John Simon
- Mary Wilson, Vice Chair

Associate Supervisors

- Joseph Chernosky
- Neil Crane
- John Fogler
- Larry Smith

District Staff

- Chris Brewer: District Manager

NRCS Staff

- Heidi Bunn: Agricultural Engineer
- Eric Giberson: Soil Conservationist
- Chuck Penney: Soil Conservationist
- Dan Schmidt: District Conservationist



Cover crops and rotations are important...

especially where crops are grown that do not provide a lot of surface residue. Cover crops serve several important functions:

- Hold nitrates over winter, may provide additional nutrients
- May have allelopathic action for weed control
- Add organic matter and plant diversity for improved soil biology and plant health and vigor
- Radishes and other tap-rooted cover crops can be used to provide deep soil penetration and aeration.

For the complete fact sheet visit us at www.penobsoctswcd.org

The Hows and Whys of No-Till Farming

Alice Begin

Hard times seem to stimulate people to change what they do or how they do it. With fuel prices and the economy being what they are, some agricultural producers are contemplating no-till options on their farms. For many years, NRCS has promoted no-till planting as a solution to erosion. But reduced soil loss is just one of many potential benefits of a no-till system. Erosion may just be a late symptom of soil biology and function disruption. In parts of the Midwest where no-till has become the new conventional way to farm, it is not erosion control but soil quality that is the goal, and reduced erosion is a fringe benefit. A huge benefit to seeking soil quality through reduced tillage is fewer passes over the fields, resulting in reduced fuel and labor costs, and less rock picking.

So why are there only a handful of Mainers doing no-till? The conventional wisdom was (is) that no-till doesn't work in cold regions because the soil doesn't warm up enough for corn to germinate, and that weeds are a problem when fields aren't tilled. So how is it working in the upper Midwest and Canada? Wonderfully, they will tell you. Technology has changed. New herbicides and improved planters, among other things, are making a difference.

Many newer planters are easily converted. No-till planters utilize row cleaners to remove residue from the planting row, allowing better seed /soil contact, and allowing the sun to warm those areas faster. Machines that Zone till (~ 4 inches depth) and Strip till (~ 8 inches depth) are also available for those who feel they need some kind of till action. These create rows that are about 8 inches wide, leaving the rest of the field undisturbed.

Undisturbed soil means that organic matter can accumulate and soil organisms can take up residence, and that is a good thing for them and for crops. Soil bacteria, fungi, and invertebrates cycle nutrients and improve drainage, aeration, structure, and moisture retention. In short, the soil becomes more resilient to outside factors, such as drought and wetness. Over time it may need fewer inputs in the form of fertilizers and pesticides.

Adopting a no-till system doesn't just mean changing your planter, or changing some parts on one that you have. Adopting reduced tillage means adopting a new system of growing crops, and that means planning ahead. For sure there is a transition time to overcome, as well as a learning curve for the operator. It may take several years or longer

to transition the biological activity of the soil and develop a healthy, productive system. However, most people who change over to no-till and give it a chance don't go back to inverting the soil. Dollar and time savings and improved farmlands are too attractive.

Some Tips on Transitioning:

- Plan ahead. Find someone who is using no-till who can answer your questions. Start small with limited acreage. Use land that is productive, not your worst and not your best.
- South-facing slopes are most likely to warm early. Soil temperature should be at least 50 degrees Fahrenheit at a depth of 2 inches below the soil surface for corn.
- For best results when starting out, plant corn into fall-killed hay fields, or plant winter grains after silage corn or spring small grains. Burn-down herbicides or a roller-crimper will be needed to kill pre-existing live sod or cover crops.
- Insecticides will be needed to control grubs, webworms, or wireworms after sod. Greatest insect pest problems are expected after sod or green cover crops. Scout for corn rootworm, slugs, and cutworm. Utilize other Integrated Pest Management (IPM) practices that can prevent or alleviate problems.
- Where large amounts of residue are present and will interfere with crop establishment, such as small grain straw and high-yielding corn, harvest some of the straw or stalks, leaving tall stubble. A good alternative is the use of Zone or Strip-Tillage to allow the sun to warm the areas where seed is placed.
- Look for cold-tolerant seed varieties with early vigor and resistance to diseases common to the area.



Based on "Steps Toward a Successful Transition to No-Till", by Sjoerd W. Duiker and Joel C. Myer: <http://pubs.cas.psu.edu/FreePubs/pdfs/uc192.pdf>

For more information, also see Penn State's Conservation Tillage Series at: <http://cropsoil.psu.edu/extension/ct/ct.cfm>



Backyard Conservation Spotlight

Insulating Underground Pipes—Part 1

John Simon

Let us start this discussion of insulating underground pipes by clarifying what we mean by "pipes" by referring to their usage.

The first usage is for underground pipes that are carrying fluids in a CLOSED PIPE system. Examples of closed systems include drinking water, waste water, or process liquids of many types.

The second usage is for culverts under roads, and for stormwater outlet pipes and their associated catchbasins in OPEN PIPE systems.

The subject of using solid insulation boards needs clarification, the crushing strength of these boards varies. The crushing strength can range from 10 [psi] 1,440 [psf] up to 40 psi [5,760 psf] or more. The common type of solid insulation for in ground use is EXTRUDED Polystyrene conforming to specification ASTM C578. EXTRUDED polystyrene is dense and does not absorb much moisture. The grading printed on the material should give the pressure rating of the material.

EXPANDED Polystyrene is less dense and is not recommended for in ground use where water is available because it absorbs moisture and loses some of its R value over time.

To estimate the support capabilities of the insulating board and using a very conservative value for the weight of soil overburden as 150 pounds per cubic foot [pcf], we arrive at the following values. Using this value one can see that the 10 psi board could support 9.6 feet of fill, and a 25 psi board could support 24 feet if fill.

The board should be covered with at least one foot of earth fill [for puncture protection]. It is safer to use at least a 20 psi + board under driveways and around homes and farms.

One major factor influencing the depth of frost penetration is the annual number of freezing degree days FDD for the area in question. A freezing degree day is calculated by the equation: $FDD = 32 -$ the average daily

temperature. Assuming of freezing degree days is referred to as a freezing index.

The engineering literature uses the following terms that one should be aware of: The DESIGN FREEZING INDEX [DFI] is the average of the total winters accumulation of FDDs for the 3 coldest years of record. For the central Penobscot County area a good value would be about 2000. The AIR FREEZING INDEX [AFI] is the maximum amount of FDDs for the coldest winter or record. For the central Penobscot County area a good value would be about 2250.

A commonly used equation to approximate how thick the solid insulation board should be is based on FI values as follows:

$$\text{Thickness of solid insulation in [inches]} = t = 0.5 [FI/500] + 0.5$$

The thickness of board using the DFI of 2000 gives a thickness of 2.5 inches, The Thickness of board using the AFI of 2250 gives a thickness of 2.75 inches. If you are the conservative type then a 3 inch layer is appropriate.

Now for the practical design information that can be made use of around your farm or home. Refer to the attached Figure 1 for "Closed Pipe Systems" when solving the following equations.

NOTE: The insulating of Open Pipe Systems such as culverts and drainage conduits will be covered in a later article. Keep this article for the values and tables, as they will be referred to in

future discussions.

The values shown on Figure 1 that are user inputs are: FD, D, PD, and t. The others two [S1 and W1] need to be calculated as follows. Keep all the units the same for all inputs . Either use feet or inches.

$$\text{Equation 1: } S1 = FD - D \text{ and}$$

$$\text{Equation 2: } W1 = 1 + 1 \times PD + 2 \times S1$$

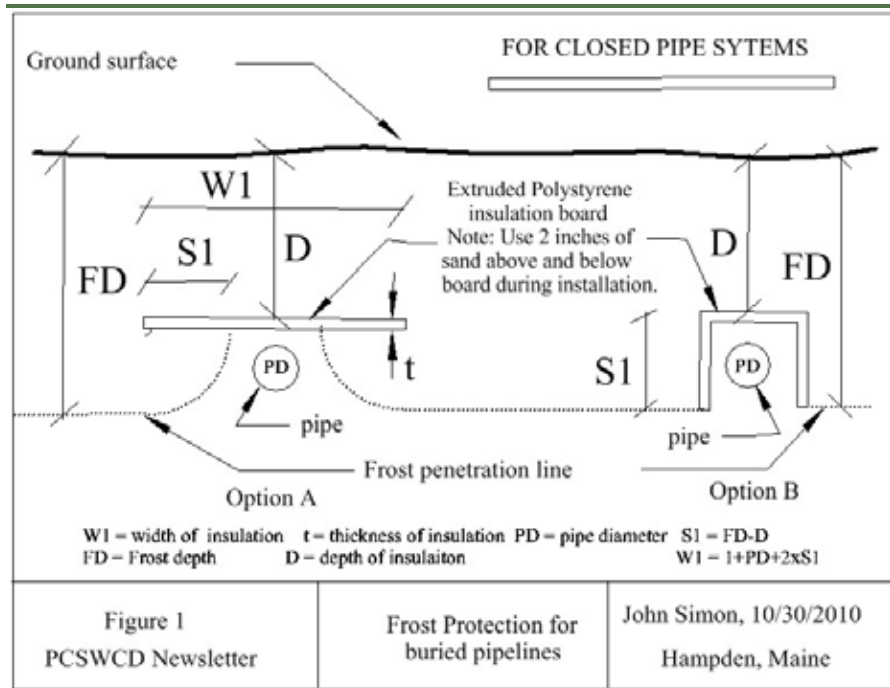
The decision of what option to use in installing underground board insulation, as shown on Figure 1, is up to the user.

Option A would generally require more excavation, but is a safer option for workers needing to be in the trench, and the insulation board will be easier to install. Reminder: A 2 inch layer of sand should be placed below and on top of all the board insulation during installation.

Option B may require less excavation depending on the pipe depth, the soil type, and OSHA rules for trench sloping, but the placement and proper backfilling may be more difficult to achieve. The insulating board amounts should be about the same although more cutting and fitting will be required.

The user needs to determine for themselves if professional assistance is needed for their project. The above discussion and recommendation do not insure success but are given as guidance and suggestions. The district and the author are not responsible for use of this material. The user accepts full responsibility for their own projects.

John Simon 10/30/2010





*Penobscot County Soil & Water
Conservation District*

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**2011 Tree & Shrub Sale & Spring Trout Sale
Enclosed**

You're Invited to our 2011 Annual Banquet



Thursday, April 14, 2011
5:00—9:00 pm

Penobscot County Conservation
Association Club House
570 N. Main Street
Brewer Maine

Buffet Dinner will be served.

Tickets are \$12 per person.

Please join us for this year's
events that include;

- Social Hour at 5:00 pm
- Award Presentations
- Conservation Highlights Slide Show and Door Prizes!
- Our guest speaker this year is John Banks, Director of the Penobscot Nation Department of Natural Resources. He will be giving an update on the Penobscot River Restoration Project.

RSVP by April 8, 2011
to Chris Brewer,
info@penobscotswcd.org
or 990-3676. You can
also register on line at
www.penobscotswcd.org