

LANDMARKS

Editor: Greg Phillips Assisted by: Jill Bat

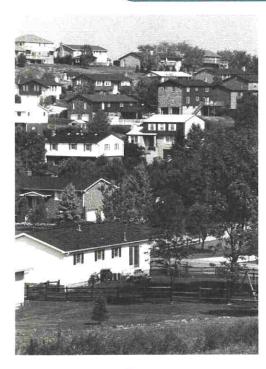
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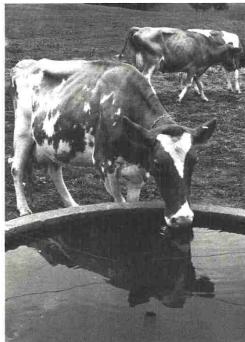
SPECIAL EDITION

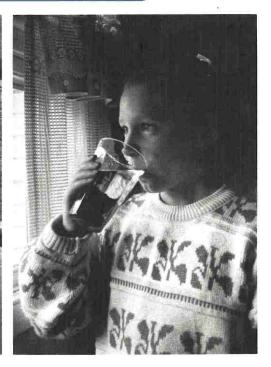
Fall, 1991

Learn About Our Water Quality

AND WHAT YOU CAN DO TO PROTECT IT







Lawns Complement Urban Development

by Kelly Sofaly

esearchers have become interested in the effects of development on urban watersheds. Land that was once able to absorb the precipitation which eventually would recharge the groundwater is covered with impervious material such as roads and parking lots. Lawns are the only urban features that permit precipitation to recharge groundwater. Another concern is the increased use of chemicals that provide lush, green lawns. These chemicals may be channeled into the groundwater.

The Westmoreland Conservation District contributed to a Penn State University research project on lawn and turf infiltration rates. The District's project was funded by State Conservation Commission through the Conservation District Fund Allocation Project as a Special Project. During the summer of 1988, Kelly Sofaly, then a student intern with the District, performed infiltration tests on newer lawns in Westmoreland County. Student Intern Tom Ford assumed the field work in 1989.

The infiltration tests were performed using dual-ring infiltrometers. As the name implies,

a dual-ring infiltrometer consists of a set of two (2) four-inch high metal rings. One ring is eighteen inches in diameter, the other is eight inches in diameter. The two rings are driven into the ground to a two-inch depth, with the smaller ring positioned inside the larger ring. Water is poured into the center ring, and is allowed to soak into the ground. When the area inside has drained, the soil inside the ring has a saturated condition. The ring is filled with water again, and measurements of the water level are taken in increments to measure the rate of infiltration. Soil and turf samples collected from each site were analyzed for soil moisture content and thatch thickness. Field data was sent to Penn State to be analyzed. The final report is almost complete.

Preliminary results show that infiltration rates vary within each lawn in Westmoreland County, and that lawn characteristics such as lawn quality and thatch do not strongly affect infiltration rates. Sodded lawns infiltrate faster than seeded lawns for the first fifteen minutes, but after the first fifteen

minutes, the rates for both types of lawns are similar. Curiously, sod did not have a higher infiltration rate than seeded areas on the same lawn. One of our field observations was that construction processes affect infiltration rates. According to George Hamilton of Penn State Landscape Management Research Center, "Typical lawn construction practices should be reevaluated in order to optimize infiltration rates on lawns."

In conclusion, all areas in relation to the pervious sections of urban landscape need to be further studied in the water related research area. Also, studies in soil disturbance and profiles in urban soils would be very helpful. All of this would benefit better understanding of the effects of urban development on our water resources.

Note: Information for this article was obtained from a Master of Science Thesis entitled, 'Infiltration Rates on Experimental and Residential Lawns', by George Hamilton, Jr., Supervisor for the Landscape Management Research Center at Penn State.

Forests - Guardians Of Clean Water Resources

by Tony Quadro

owdermill Run and sections of Mill Creek, Baldwin Run, and Loyalhanna Creek are all exceptional value streams in Westmoreland County. These clear, productive streams are all located in the forested mountainous regions in the eastern part of the county. Undisturbed forested watersheds usually produce excellent quality streams which are valuable as fisheries, public water supplies, recreation sites, and buffers to lower quality downstream waters.

There are several reasons why forests produce such high quality streams. Trees intercept rainfall which prevents impact with the soil below, thus reducing soil erosion. Fallen leaves protect the soil surface from erosion, and also produce organic material which feeds stream life. Tree roots hold soil in place and deter streambank erosion and mass soil movements on steeper slopes.

Streams are generally cooler under the forest canopy. The solubility of oxygen is higher in cooler water providing better fish habitat and giving properties of self-purification.

Stream quality can degrade due to abuse of land after forest cover is removed. Although tree cutting itself does not contribute to stream pollution, practices such as haphazard road construction, poor agricultural practices, overgrazing, and earthmoving without proper erosion controls can lead to increased sediment, thermal, and organic matter pollution.

Because these forested watersheds are so important, special care should be taken when disturbing any forested area. Forest roads should be planned to run along slopes at minimum grades. Erosion



controls such as waterbars, cross drain culverts, broad base dips, and stabilized cut and fill banks should be used. Crossings should be at right angles to the stream, using culverts with clean rock fill or bridges, and be properly sized.

When forests are cleared for agriculture, a conservation plan should be followed. Buffer strips should be left along streams, and conservation practices such as contour strip crops, grassed waterways, and diversions should be installed. Grazing animals should be kept out of buffer strips and streams by fencing off pastureland.

Any earthmoving, whether for a home site, housing plan, or commercial building should have

a plan which minimizes disturbed area and erosion, and also considers leaving forested areas along stream channels and upper reaches. Mining activities which disturb large forested areas should be closely monitored, and restored to forestland upon completion.

In short, where water quality is concerned, our forested watersheds are precious. Any activity which disturbs these watersheds must be carefully planned and carried out. Contact your Conservation District for advice on any of the above practices.

Water Quality Studies Begin On County Cropland

by Wes Gordon

ccording to the information about agricultural non-point source pollution received in the Soil Conservation Service office, it seemed to us that researchers assumed that farming has created a water quality problem. While there was no doubt that potential for pollution existed, we were not convinced that a problem had developed throughout Westmoreland County.

The condition of the water is a major concern to all segments of society today. The agricultural community is no less concerned. Past history of use and misuse of chemicals has focused attention on farming as as potential pollution source.

Several nationwide studies have been conducted to assess the condition of groundwater as it relates to agriculture. Within the last year, the EPA published the National Pesticide Survey. The Monsanto Agricultural Company also conducted a nationwide study, called "An Appraisal of Ground-Water Vulnerability to Pesticide Applications." Westmoreland County was a site for some limited sampling and testing in this study. The PA DER published a 1990 Water Quality Assessment, which reported on the condition of the state's Surface and Groundwater Programs currently underway to correct pollution problems.

On the whole, not much actual water quality data exists specific to agriculture in south-western Penn-

sylvania. We believe that our soils, geology, and farming enterprises are often quite different from the central and eastern sections of Pennsylvania.

Three sources of funding were obtained to implement the water quality program. The District obtained monies through both a General Education Program Grant and a Special Project Grant of Section 319, through the Bureau of Soil and Water Conservation. The Penn's Corner RC&D Area also provided funds for pesticide testing through a cost-share arrangement with the Conservation District. Through this, the District was able to hire Kelly Sofaly in a part-time capacity, and she assumed the overall coordination of the water quality program.

Gary Sheppard, Extension Service; Greg Phillips, Conservation District; and Wes Gordon, SCS felt it was important for farmers in Westmoreland County to be informed about the potential for non-point source pollution from agricultural activities. However, we did not want to infer that these farmers had created a problem. This led to the idea of combining a program of water sampling and testing, together with information and education about water quality.

Together, with help from Tom Betts, Regional Water Quality Specialist with Cooperative Extension Service, we decided on pursuing three different sampling and testing programs.

- Barn samples of drinking water on Dairy Herd Improvement Association (DHIA) herds.
- 2. Basic sample and testing for a commonly used corn herbicide, atrazine.
- Sampling and testing subsurface drain outlets for nitrates, following manure application and crop planting in the spring.

Betts and Sheppard collected barn samples, with Betts testing for pH, total dissolved solids, nitrates, sulfates, and iron. He also conducted these tests on samples from subsurface field drains.

Since atrazine is the most commonly used corn herbicide, subsurface line discharges were sampled for the presence / absence of the chemical. About 40 samples were collected, from three farms, by responsible 4-H members. Testing is being conducted at Penn State University.

While these few basic samples and tests are not research quality, and can never replace the need for a good research program, they may offer a preliminary window into the status and quality of our water as it relates to farming in Westmoreland County.

Westmoreland County Dairy Cows Drinking Good Water

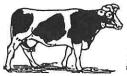
by Gary Sheppard and Tom Betts

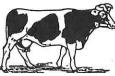
recently completed study of Westmoreland County dairy farm water quality has produced some interesting information. Eighty county farms or roughly 30% of the area's dairies had water samples checked for five contaminants common in western Pennsylvania drinking water. The overall findings looked surprisingly good.

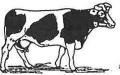
Dairy farms rely heavily on water with an average farm requiring as much as 1,100 gallons a day for cleaning equipment and watering livestock. The quality of that water can greatly affect the health and productivity of the animals as well as the performance of cleaning agents. The goal of the project was not only to get a sampling of our rural water supply but to help local dairies identify and correct any existing problems.

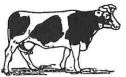
Starting in October of 1990, water samples were collected by the Westmoreland Dairy Herd Improvement Association and analyzed by Penn State University Cooperative Extension. In two short months, work was completed and results summarized. Though the analysis was not DER certified, the results of the testing are accurate and a valuable source of information.

The water supplies included 16 public sources as well as 44 wells, 16 springs and 4 ponds. The following table compares the county averages with recommended levels for both human and livestock consumption.









Westmoreland County Dairy Farm 1990 Water Quality Project

Element	EPA Maximum Level for Humans	Recommended Maximum Animals	Study Range	Study Average	% Exceeding Human Standard	% Exceeding Animal Standard
pН	6.5-8.5	5.5-8.5	5.28-9.24	7.47	20.00%	12.50%
TDS	500	3000	23-1680	213	1.25%	0.00%
Iron	0.3	0.3	0.00-12.75	0.40	16.25%	16.25%
Nitrates	45	100	0.0-57.2	6.1	2.50%	0.00%
Sulfates	250	2000	0-625	42	1.25%	0.00%

^{**}note: all values in milligrams per liter (mg/l) except for pH.

TDS = Total Dissolved Solids

Editor's Note: Gary Sheppard is the Extension Agent for the Penn State Cooperative Extension in Westmoreland County. Tom Betts is the Water Quality Agent for the Penn State Cooperative Extension in Armstrong County.

Drinking Water — A Vital Resource



by Tom Betts

robably no other natural resource is so vital to human life and to present day human activities as is water. Clean water in adequate amounts is essential for a variety of household, industrial, and agricultural processes. Unfortunately, the avenues for water contamination today are as many and varied as are water's uses, and in many situations water quality or quantity cannot meet a desirable or necessary level.

Of course water's greatest contribution is the role that it plays in the bodies of living things, where it is a critical part of virtually all the life functions. Water free of impurities is requisite for these bodily processes, and human health depends largely on the efficiency with which the body operates, a variable influenced partly by the amount of water consumed and its quality.

The one to two quarts that the human body requires daily may not seem like much, but the versatile resource has countless other uses in man's technological lifestyle. For cooking, cleaning, and a variety of other household uses, the average person requires 50-100 gallons of water daily. And when indirect uses from agriculture and industry are included (food production, electricity, manufacturing, etc.) the per person daily requirement jumps to 1800 gallons! There can be no disputing the resource's importance to living things, particularly to humans, and there is no time to question the need to preserve the Earth's water quality.

In many respects, water quality has improved greatly in the past several decades. Lakes and rivers previously without aquatic life are now thriving fisheries. And many ground and surface supplies tainted with the by-products of a booming industrial age have been restored to levels acceptable for

The one to two quarts that the human body requires daily may not seem like much, but the versatile resource has countless other uses in man's technological lifestyle.

human consumption. But the conservation of Earth's water resources is an on-going effort, for virtually all of man's daily activities have the potential to impact local and regional water quality.

Agricultural activities, for example, can result in a variety of water contaminants. Pesticides and other

agricultural chemicals can find their way into ground and surface water if not applied properly. Nitrate contamination may occur from fertilization, and bacteria contamination from animal wastes.



Where erosion control is not practiced, sedimentation may impact aquatic systems.

Natural resource extration including coal mining and gas and oil drilling can disturb subsurface geology and affect both water quality and quantity. Some groundwater supplies have been reduced to a trickle from such activities, and more often the quality of the supply is degraded to a point where it can no longer be used. Iron and manganese, acidity, sulfates, barium, sodium, and chlorides all have contributed to a reduction in water quality from these land uses.

And often overlooked are activities in and around the home. Poorly-maintained septic systems result in inadequate treatment of wastewater and can lead (continued on page 4) Drinking Water (continued from page 3)

to bacterial contamination of the water supply. Lawn care chemicals and a variety of plant and animal pesticides can make their way into ground or surface water supplies. And the infamous unmanaged, illegal backyard dump may leach a witch's brew of toxic contaminants into local streams or groundwater.

All of these possibilities emphasize the importance of regular water testing to those on private water supplies. There really is no other way to determine exactly what is or is not in a sample of water. Penn State University recommends that private water supplies be analyzed for coliform bacteria and for nitrates at least once each year, and that testing for pH, sulfates, and total dissolved solids be performed every three years. In addition, if land use changes from mining, drilling, etc., are anticipated, other analyses should be completed before the activities are initiated, if possible. It is important to utilize laboratories certified by the Pennsylvania Department of Environmental Resources.



Penn State Cooperative Extension maintains a list of such laboratories as well as broad files of information on water quality and water quantity. During February of 1991, a number of Safe Drinking Water Clinics were sponsored, including two in Westmoreland County. Water specialists from Penn State University presented information on the importance of water testing, proper wellhead protection, effective water treatment, and current research on "hot" issues such as lead and radon. Certified laboratories were present to offer reducedrate water analyses, and treatment equipment vendors had a variety of systems on display. It is anticipated, based on the positive public response, that such meetings will be offered each year.

The quality of Pennsylvania groundwater and surface water supplies is an issue deserving of attention as the twentieth century draws to a close. Continued population growth in many locations leads to greater stress on land and water resources that in some areas have already been exhausted or severely impacted. It is critical that water supplies with sufficient quantity and adequate quality be preserved, and that those which are deficient be replenished if possible.

Tom Betts is the Water Quality Agent for the Penn State Cooperative Extension in Armstrong County.

Don't Dump That!

by Jill Bates

o you pour that hazardous material down the drain or storm drain. No one sees you and you think . . . "This isn't going to hurt anyone -- what they don't see won't hurt them."

Everything that goes down your drain, from paint thinner to insecticides, ends up in wastewater treatment plants. These plants are not designed to handle certain types of hazardous waste.

Landfills are not effective either. If not specially designed, the hazardous waste disposed there can pollute groundwater and surface water.

So if I'm not allowed to dispose of them, what can I do?

First -- Reduce

- · Before you buy, make sure the product will do what you want it to.
- Don't buy more than you need.
- Read and follow the directions on how to use and dispose.
- · Use non-chemical substitutes (HINT: Landmarks, Winter 1991)

Second -- Take Care of Your Waste

- · Recycle when you can.
 - · NEVER burn wastes in your fireplace or wood-burning stove.
 - Please don't pour it on the ground. It will get into the water table and groundwater. That's where we get our drinking water.

(Check out the Household Hazardous Waste Chart below. It will tell you what to do with the material.)

HOUSEHOLD HAZARDOUS WASTE CHART

The following chart prepared by the Water Pollution Control Federation will help you to establish the most effective means of disposing of typical hazardous wastes used around your home or garden.

Circles (0) indicate products which can be poured down the drain with plenty of water. Use caution with a septic tank. Some materials can't go in one.

Stars (*) indicate materials which cannot be poured down the drain; but can be safely disposed of in a sanitary landfill. Be certain the material is contained properly.

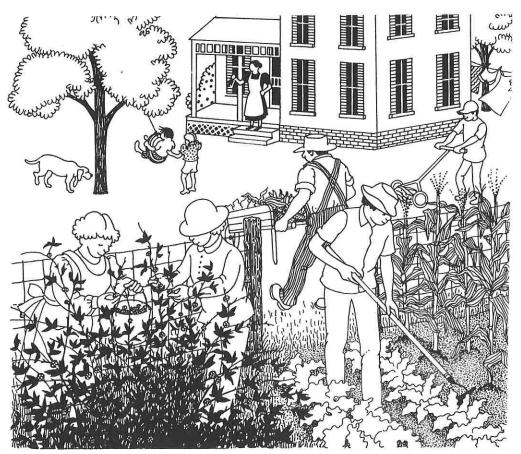
The plus sign (+) indicates hazardous wastes which should be saved for a community wide collection day or given to a licensed hazardous wastes contractor. (Even the empty containers should be taken to a licensed contractor if one is available.)

A cross sign (X) in the fourth column indicates recyclable material.

Area Type of Waste	0	*	+	X
Kitchen				
Aerosol cans (empty)	Bal	*		100
Bug sprays			+	1
Drain cleaners	0			
Floor care products			+	
Furniture Polish		126	+	
Window cleaner	0	3.5		
Oven cleaner (lye base)	10	*		9
Bathroom	10.75		THE S	
Alcohol based lotions	0			
(aftershaves, perfumes, etc.)				114
Bathroom cleaners	0			Ť.
Disinfectants	0			No.
Medicine (expired)	0	1921	2.00	M.
Nail polish (solidified)		*	1,000	
Toilet bowl cleaner	0		1150	
Tub and tile cleaners	0			
Garden				
Fertilizer		*		
Fungicide			+	
Herbicide			+	
Insecticide			+	
Weed killer			+	
Miscellaneous			10.75	
Lighter fluid			+	
Mercury batteries		(ME)	+	
Moth balls			+	
Shoe polish	184	*		

Area Type of Waste	0	*	+	X
Workshop Paint brush cleaner with solvent			+	X
Paint brush cleaner with TSP	0			
Glue (water based)	0		II UH TE	ě.
Paint - latex		*		NI.
Paint - oil based			+	
Paint thinner			+	X
Paint stripper			+	Ġ
Paint stripper (lye base)	0			Hg.
Primer			+	
Turpentine			+	X
Varnish			+	
Garage Antifreeze	0			8
Automatic transmission fluid			+	X
Battery acid (or battery)			+	X
Brake fluid			+	lie
Car wax with solvent			+	
Diesel fuel			+	X
Fuel oil			+	X
Gasoline			+	X
Kerosene		FIRE	+	X
Motor oil	- 15		+	X
Other oils		1	+	
Windshield washer solution	0			

Source: Pamphlet from the Water Pollution Control Federation



Maintain a Healthy Garden, Naturally

by Betty Reefer

well maintained garden, combined with the use of natural insect control, results in a healthier you and a better environment. Natural pest control requires more time in your garden, but the many benefits you will reap make it worthwhile.

Good plant care is important to control insects and disease. An unhealthy plant is more susceptible to problems. Proper watering, weed maintenance, using mulches and organic matter results in more nutrients for your plants as well as improving the soil. Weed your garden often, before it becomes overwhelming. Insects are easier to control during the egg stage. Removing the eggs from the leaves will prevent another generation of pests. Many insects produce multiple egg masses during the course of a season, so keep checking throughout the summer.

Repel Those Insects Safely

Crop rotation helps prevent the return of insects and diseases that may have remained in the soil from the previous year. Companion planting with flowers and herbs will help repel insects. Marigolds dispel root feeding nematodes in the soil that can attack your plants. Peppermint will ward off harmful insects from members of the cabbage family.

Prevent **cutworm damage** to tomatoes, cucumbers, and broccoli, by making a cardboard collar to fit around the stem of the plant. Extend the collar several inches below the surface of the soil. Sticky traps work well to stop many insects without the use of chemicals. The insect becomes trapped in the substance and dies.

Slugs have a special liking for stale beer. Place a shallow dish of it between the garden rows where

slugs have been a problem. The slugs will crawl into the dish and drown. Japanese beetles can be controlled with the use of sex hormone traps and floral lures.

Beneficial insects can be purchased from nursery centers and mail order garden suppliers. Insects such as praying mantis are predators of many types of caterpillars, including gypsy moth caterpillars. Ladybugs will feast on aphids. One ladybug can consume 40-50 aphids in one day.

Encourage beneficial predators to your garden by growing flowers and plants rich in pollen. Goldenrod is said to attract as many as 75 species of good bugs. Herbs such as caraway, dill, and fennel are also good attractants.

Kitchen Remedies

Homemade remedies from the kitchen can also control insects. Soapy water sprays can be effective on aphids and spider mites. Be sure to spray both sides of the leaves, and spray again after rain. Brew a tea of onions, garlic, chives, hot peppers, and herbs to make an effective insect spray. Experiment with herbs such as basil, coriander, and wormwood. Plants can be dusted with flour to suffocate caterpillars. Wood ashes sprinkled around the base of plants discourage cutworms.

Diatomaceous earth, available at garden centers, is made from cracked one-celled plants called diatoms. The razor sharp particles puncture and kill insects such as slugs, beetles, aphids, spider mites, cabbage loopers, and hornworms. Trace minerals in diatomaceous earth are also beneficial to soil, but use sparingly, as it can also harm beneficial insects.

Insecticidal soaps contain potassium salts of fatty acids which penetrate soft-bodied insects and kill by dehydration. Botanical insecticides are plant-derived material, toxic to many pests. They include rotenone, ryania, nicotine, and pyrethrum. These do not leave residue on crops, and are less likely to contaminate the soil or ground water. Take care when using these, and avoid their use near waterways, following directions carefully, as their misuse may be harmful.

Natural gardening can be very rewarding and beneficial to your plants. To learn more about identifying insects so that you can treat the problem with the right solution, contact Penn State Cooperative Extension of Westmoreland County, located on Old Salem Road, Greensburg.

District Purchases Water Quality Test Kit



by Kelly Sofaly

he District has acquired a HACH colorimeter which will be useful in performing water quality testing. Funding for this equipment came from the state's 319 funding of the District's water quality project.

A colorimeter measures the wavelength of light that passes through a substance (such as water). A specimen of the water to be tested is measured for the amount of light that can pass through it. This specimen is called the **standard**. Tests on a source of water are measured against its standard. **Reagents**, known chemicals which are used to disclose the absence / presence of other chemicals, are mixed with samples. If the substance for which the sample is being tested is present, a chemical reaction will occur. This reaction will affect how much light will normally pass through the source. The light measurement is converted to a unit measurement such as grams per milliliter (g/ml).

In conjunction with the District's water quality project, reagents have been purchased which will enable staff to test water for nutrients such as nitrates and phosphates. We plan to purchase additional reagents so that we can test water for minerals commonly associated with acid mine drainage.

The colorimeter is primarily useful for testing water for the presence of minerals. Although we cannot exclusively test private water supplies. the kit will be a valuable tool for water quality research by the District Staff.



Drinking Water Labs

The District has completed a list of PA DER approved drinking water laboratories which are located in Westmoreland, Somerset, and Allegheny counties. Pick up a free copy at the District office or call for information.

"Funding for this publication was provided by the U.S. Environmental Protection Agency through Section 319 of the Federal Clean Water Act."

Water Quality HOTLINES

Clean Water Hotline (PA Fish Commission): 1-800-854-7365

(24 hrs / day)

To report any source or indication of water pollution. Provide name of waterbody, county, date, and time observed, and whether or not dead fish were observed.

Safe Drinking Water Hotline (EPA affiliated): 1-800-426-4791

(8:30 - 4:30 EST)

Information on drinking water policy, regulations, and standards. Referrals on questions concerning drinking water quality, testing, and contaminants, including health advisories and health effects.

National Pesticide Telecommunications Network (NPTN):

1-800-858-7378

(24 hrs / day)

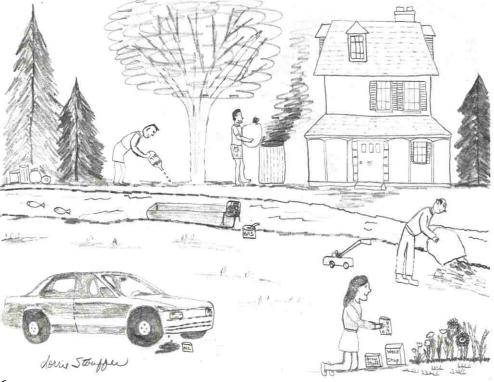
Information on pesticide chemistry, safety, health and environmental effects, clean-up, and disposal.



Kathy's Kids' Corner

by Kathy Frit

Circle the activities that may be harmful to the environment.



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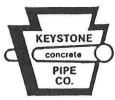
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PA CleanWays News

Although it may sound too early, it's time to start making plans for this season's county-wide Christmas Tree Recycling program. Last year PA CleanWays and the District coordinated the program and set up eight collection points in the county. This year, more is hoped to be added.

If you belong to a group or know of a group that would like to be involved in an environmental project such as this, please call PA CleanWays at 925-9653.

We must have information as soon as possible in order to distribute tags and posters. Both will have dates and times of recycling, and distributed to Christmas tree lots. So, if your group is interested in this effort, please call.



As part of their fundraiser, PA CleanWays is selling canvas tote bags. One side carries a conservation theme, the other side has an "I'm Working for Cleaner Ways" pledge. The bags measure 17 " x 19 " and would be great for those quick trips to the store or other necessities. Pick one up at the District, 932 St. Clair Way, Greensburg. The cost is \$5.95.



Fine Art For Sale!

Tom Benevento, local artist from Murrysville, has donated his talents and artwork to the District to be sold. The profits from the sale will benefit the District's Environmental Education Fund. The subjects of these particular works are of Wetland Wildlife threatened by extinction from wetland destruction. Prices are \$25. for print alone, or \$100 mounted and framed.

Titles include:

Eastern Massasauga — Endangered Henslow's Sparrow Nest - Threatened Bewick's Wren - Endangered Black Tern - Threatened Michigan Lily - Vulnerable Trillium Pitcher-Plant

Please stop by the District and invest in these beautiful works of art and in environmental education.



by Lorrie Stouffer

Chris' Spinach Quiche

9" Pie Crust 1/2 Stouffer's Spinach Souffle (can substitute broccoli) 1/3 cup minced onion 11/2 cups Cheddar Cheese (grated) 3 Eggs 1 can evaporated milk (13 oz.) 34 tsp. salt ¼ tsp. sugar

Sprinkle onion on bottom of pie crust. Spread spinach and cheese over onion. Beat eggs slightly and stir in remaining ingredients - pour into pan. Bake fifteen minutes at 425°. Reduce to 300° and bake for 30 minutes. Knife inserted 1" from edge should come out clean. You may substitute the following cheeses: longhorn, Monterey Jack, Swiss, Mozzarella.

1/8 tsp. cayenne



932 St. Clair Way, Rt. 30 East Greensburg, PA 15601

Address Correction Requested



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