Clean Water Fundamentals

Clean and plentiful water is the cornerstone of a sustainable and prosperous community. In the 21st century, the efforts to protect and manage this natural resource are becoming increasingly critical. There are many natural systems that help to contribute to the goal of a clean and sustainable water supply, but few compare in their value and effectiveness as much as a natural or constructed wetland. In this Conservation Crier issue we are focusing on the benefits a wetland offers as well as how and why they are worth protecting.

Long regarded as wastelands to be dredged and drained so they could be “productive”; wetlands are now recognized as important features in the landscape that provide valuable functions that benefit the environment and all who live downstream.

A wetland is a transitional environment between permanently aquatic and terrestrial environments that share characteristics of both environments. It is recognizable where water covers the soil or is near the surface for substantial parts of the year. A wetland is found on every continent except Antarctica and from the tundra to the tropics covering between 4-6% of the world’s land mass. In 1990, the EPA identified 0.004% or 2,772 acres of our county’s land area as wetlands.

Wetlands provide innumerable economic, ecological, cultural, recreational, and aesthetic values. They are often identified by the habitats they create which include areas such as swamps, marshes and bogs and are usually found alongside waterways and in flood plains.

The characteristics of a wetland vary widely because of differences in soils, topography, climate, hydrology, water chemistry, vegetation, and other factors. Each serves a unique purpose or functions which can be classified broadly as habitat, hydrologic, or water quality.

The important functions of a wetland are as diverse as their classifications and dependent on which process or series of processes take place in it. It has been understood for years that the habitat and rich biodiversity of wetlands perform like a “biological supermarket” and “nursery of life” underscoring the value it plays in supporting fishing, hunting and recreation (Barbier et al. 1997). Now we know the critical chemical and hydrological functions wetlands also act like “the kidneys of the landscape” (Mitsch and Gosselink 1993). The hydrologic and water cleaning role wetlands play by slowing down stormwater flow to downstream waters helps to improve local water quality by trapping and moderating floodwaters which helps to recharge groundwater supplies, remove pollution by settling out sediments, and allows the wetland plants to utilize soluble nutrients.

If something has “value,” then it is worthwhile or beneficial and worth protecting. Federal and state

Regulatory Concerns in Wet Areas and Wetlands for Agricultural Land

State regulations pertaining to manure application on operations with low animal density and agricultural erosion do not specifically identify setback requirements from wetlands; however, modification of a wetland must comply with the Food Securities Act, PA Clean Streams Law, and Section 404 of the Clean Water Act (see related articles in this edition). In addition to these regulations, if a farmer manages more than 2000 lbs. of livestock per acre of cropland and pasture, he or she is regulated by the Act 38 Nutrient Management Law. Act 38 specifically prohibits winter manure application within 100 ft. of a wetland identified on National Wetland Inventory Maps that are also within the 100 year floodplain of an Exceptional Value stream segment if surface flow is toward the wetland.

Once it has been determined that a wet area or wetland can be planted or pastured while complying with the Food Securities Act, the PA Clean Streams Law, and Section 404 of the Clean Water Act, it is still important to recognize the sensitivity of the area. If an area remains wet, expected yields will be reduced, and the overall nutrients required to meet expected yields will also reduce. To assure over-application of nutrients does not occur, it is important to be realistic about expected yield and plan nutrient application accordingly. Also, compaction can occur easily when equipment and animal traffic are permitted when conditions are wet. Compaction can cause stunted growth and reduced yield. Ideally, equipment and animal traffic should be avoided until conditions are suitable.

For further information about managing wet areas in agricultural land, please contact the Lancaster County Conservation District at 717-299-5361 x.5.

–Kate Bresaw, Ag Conservation Technician

Photo by NRCS
Exelon Funding for Habitat Improvement

Many farmers are aware of the ongoing efforts to clean up the Chesapeake Bay through Best Management Practices (BMPs), which aim at reducing nitrogen, phosphorous, and sediment levels in local streams that flow to the Bay. However, they may not have the financial resources to make necessary changes on their own farms. The Lancaster County Conservation District is able to offer assistance for Habitat Improvement Projects through private funding from Exelon.

Habitat Improvement Projects that qualify for Exelon funding include:

- Forested stream buffers
- Wetlands creation
- Barnyard BMPs
- Pasture BMPs
- Field BMPs
- Stream restoration and maintenance
- Riparian buffer maintenance
- In-stream habitat improvement and maintenance.

All farms and non-farm properties are eligible for Exelon funding; priority will be given to projects with a direct connection to a stream, and those that include wetlands creation or forested stream buffers at least 50’ in width.

Anyone applying for funding will work with the District to develop a project design to include in their application. If approved, projects may be funded up to $75,000 per project.

Please contact your Conservation District Ag Conservation Technician to explore your opportunity for Exelon funding. The 2015 deadline for applications is December 11.

–Julie Kratz, Ag Conservation Technician

Clean Water Fundamentals continued from page 1

laws have been established to protect watersheds. Multiple articles in this issue explain in detail some of the regulations designed to protect our local wetlands. As with most things, the value of a wetland lies in the benefits that it provides. In this case, that benefit impacts the environment directly or the people downstream, yet is something that is not equally appreciated. For example, the value of a wetland as duck habitat may be important to the hunter or birdwatcher but not as much to the farmer who owns the land. To help establish an equal value for all, the Conservation District administers several programs identified in the following articles that compensate landowners who protect or repurpose low quality agricultural lands that meet hydrological criteria.

After reading this issue, it’s our hope, you will have a greater appreciation for the important role a wetland plays in helping us manage and maintain a clean environment.

–Christopher Thompson, Administrator
A Walk Through Wetlands

Wetland Functions and Values

Many of us don’t give much thought to wetlands, other than the nuisance they can create in agricultural fields and backyards. However, unbeknownst to many, our nation’s economic prosperity and environmental health relies heavily on the numerous resources that wetlands provide. Wetlands offer a vast quantity of ecosystem services that we would struggle to create and maintain by our own devices.

Wetlands support several commercial industries. Fish, shellfish, cranberries, and wild rice are produced from wetlands. Timber and some wetland plant species used by the medicine industry are also harvested from wetlands. Hunting, fishing, and bird watching within wetlands sustain a billion dollar tourist and recreational industry.

Wetlands are integral to flood control; acting as sponges in the landscape to absorb and hold water. Beyond a wetland’s capacity to retain water, the wetland plant communities and their underlying soils made of minerals and microbes can filter out the contaminants in runoff from agricultural fields, parking lots, roofs, and roads.

Wetlands also serve as invaluable habitat to animals and plants. About half of the bird species in North America feed or nest in wetlands. Only 5% of the land surface of the continental United States is wetlands, but those wetlands are home to 31% of the nation’s plant species. Here in Lancaster, our wetlands are home to the federally endangered Muhlenberg Bog Turtle that was discovered in 1801.

Statistics

It is estimated that at the time of our ancestor’s arrival to the United States, 220 million acres of wetlands existed. Over half of those wetlands have now been drained and destroyed. Pennsylvania currently has 404,000 acres of wetlands, which comprises only 1.4% of PA’s total land cover. Only recently have we realized the value of wetlands and have begun to protect them.

Protection of Wetlands

The United States began federally protecting wetlands in 1972 with the Clean Water Act, later amended in 1977. The Clean Water Act established requirements for dredging or filling within “waters of the United States” which included wetlands. The responsibility for administering these regulations is shared jointly by the Army Corp of Engineers (USACE) and the Environmental Protection Agency (EPA). The Food Security Act passed in 1985, protected wetlands at risk of being destroyed for agricultural purposes. The Farm Bill, within the Food Security Act, established that any individual responsible for impacting or destroying a wetland after 1985 would not be eligible for federal agricultural funding or subsidies.

Wetland Identification and Delineation

In 1987, the USACE developed a manual to aid in the identification and delineation of wetlands. This manual is still the primary tool for identifying and subsequently protecting wetlands today. The manual identifies 3 factors when determining the existence of a wetland, which include: hydric soils, hydric vegetation, and hydrology. To be considered a wetland, sufficient evidence must be found that all three factors exist on site. The 3 factors are derived from the USACE definition of wetlands defined as “areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs and similar areas.”

National Wetland Inventory (NWI) maps, developed by the US Department of the Interior, can be used when performing offsite wetland determinations. These maps provide a basic starting point to determine if wetlands exist on a property. The maps were prepared using stereoscopic analysis of high altitude aerial photographs.

Wetlands within the NWI maps are classified by a system created by the US Fish and Wildlife Service. The classification system uses a series of letters and numbers to describe the wetland habitat. Examples of habitat include water, soil, plant and animal life. For example, a typical Lancaster County pasture wetland could be classified as Palustrine emergent (PEM). More information on the classification system can be found at: https://www.fws.gov/wetlands/Documents/Wetlands-and-Deepwater-Habitats-Mapping-Codes.pdf. The NWI maps should never be used as the only source for wetland determinations because of the margin of error associated with them. In addition, federal, state, and local regulatory agencies may define jurisdictional wetlands using methods that are different from those used to develop the NWI maps.

Wetland Regulations

Both the US Army Corps of Engineers (USACE) and PA Department of Environmental Protection (DEP) regulate waterway and wetland permitting in Pennsylvania. The USACE regulate wetlands and navigable waterways under Section 404 the Clean Water Act and Section 10 of the Rivers and Harbors Act. The PA DEP regulates “water obstructions and encroachments located in, along, across, or projecting into a watercourse, floodway, or body of water, whether temporary or permanent” under the PA Code Title 25, Chapter 105: Waterway Engineering and Wetland Management.

Within the Chapter 105 regulations, there are several types of General Permits that the public can utilize for activities involving water obstructions and encroachments, so long as the activity meets the conditions of the permit. If the activity does not meet the conditions of the General Permits, the applicant must apply continued on next page
A Walk Through Wetlands continued from page 3

for a Joint Permit, which is reviewed by DEP and USACE. For activities that do meet the conditions of the General Permits, the applicant can apply directly to the Lancaster County Conservation District, which is delegated by PA DEP to issue General Permits #1 through #9.

A General Permit #7, for example, can be used for the construction of a minor road crossing. Any “activities” that involve the construction, operation and maintenance of a minor road crossing across wetlands that disturbs less than 0.1 acre of wetlands or the construction, operation, maintenance or removal of a minor road crossing across a stream where the drainage area is 1.0 square miles or less could utilize this General Permit. The General Permit #7 Authorization Packet includes both a General Permit Registration Form and a PASPGP-4 (PA State Programmatic General Permit – 4) Project Screening Form that requires the applicant to identify any potential impacts to both wetlands and water. The PASPGP-4 Project Screening Form is an agreement between DEP and USACE of federal authorization for the activity. If impacts to wetlands exist, the applicant must provide a wetland delineation report. Additionally, if the minor road crossing is proposed in an area identified to have hydric soils, the applicant must have a wetland delineation performed to determine whether or not the presence of wetlands exists.

In the past 50 years, wetlands have become much more closely regulated. Through various laws and permits, the federal, state and local governments work in unison to protect remaining wetlands. Wetlands are incredibly valuable resources—for the goods they produce and services they provide. If you would like to complete work in an area you believe could be a wetland or suspect harmful activity has occurred in a wetland, please contact your local conservation district.

For more information regarding wetlands or the General Permits issued through the Lancaster County Conservation District, please refer to the Conservation District Website: http://lancasterconservation.org.

—Nevin Greiner, Jenna Mitchell, and Samantha Gordon, Erosion and Sedimentation Department

USDA Wetland Conservation Provisions (Swampbuster)

As productive available farm land in Lancaster County gets harder to come by, farmers may start looking at the woodlands and wet areas of the farm and say, “if I clear that area and install some drain tile I would be able to crop that area”. My advice on that thought is to proceed with caution. Before you start the process of clearing land or installing drainage, it’s highly recommended that you contact your local U.S. Department of Agriculture’s (USDA) Natural Resources Conservation Service (NRCS) office for assistance. Once you remove stumps or install tile drainage then you have altered that wetland. Not all wetlands are saturated or inundated on the surface all year round. A phone call could help prevent you from becoming ineligible for USDA farm programs and possibly having to reestablish a wetland that’s been altered.

The Highly Erodible Land Conservation and Wetland Conservation Compliance provisions (Swampbuster) were introduced in the 1985 Farm Bill, with amendments in 1990, 1996 and 2002. The purpose of the provisions is to remove certain incentives to produce agricultural commodities on converted wetlands or highly erodible land, unless the highly erodible land is protected from excessive soil erosion. Persons who plant an agricultural commodity on wetlands that were converted between December 23, 1985 and November 28, 1990 will be ineligible for program benefits in any year an agricultural commodity is planted unless an exemption applies. Persons who convert a wetland making production of an agricultural commodity possible after November 28, 1990, will be ineligible for program benefits until the functions of the wetland that was converted is restored, unless an exemption applies.

To maintain eligibility, participants must certify that they have not produced crops on converted wetlands after December 23, 1985, and did not convert a wetland to make agricultural production possible after November 28, 1990. This certification takes place when you fill out the Certification of Conservation Compliance form AD-1026 with the USDA Farm Service Agency (FSA) on any new land being brought into production. This form has questions that ask if you have recently cleared land, dredging, land leveling or filling, tile drained new areas or repaired existing tile system.

In order to determine compliance with the swampbuster provisions, the USDA-NRCS will determine if a producer’s land has wetlands that are subject to the provisions. The agency maintains a list of the plants and combinations of soils and plants found in wetlands and uses these technical tools, along with the hydrology of the area, to conduct determinations. These determinations stay in effect as long as the land is used for agricultural purposes or until the producer requests a review. This determination is only for eligibility with USDA programs and not for compliance with Clean Water Act. Permits may need to be obtained through the United States Army Corp of Engineers.

Over a period of 200 years, the lower 48 states had lost an estimated 53 percent of their original wetlands. An estimated 87 percent of the wetland losses from the mid-1950’s to the mid-1970’s were due to agricultural conversion. The wetland conservation provisions have sharply reduced wetland conversions for agricultural uses, from 235,000 acres per year before 1985 to 27,000 acres per year from 1992 through 1997. Swampbuster helps preserve the environmental functions of wetlands, such as flood control, sediment control, groundwater recharge, water quality, wildlife habitat, recreation, and esthetics.

For more information on technical assistance and planning, visit the NRCS Lancaster Field Office in Room 200 of the Lancaster Farm & Home Center or call at (717) 299-5361 x. 3.

—Rob Weaver, NRCS Soil Conservationist
Highly Pathogenic Avian Influenza Precautions in Backyard and Commercial Flocks

Egg prices have risen in the past 6 months. You heard the news reports about Avian Flu “out west somewhere”. You may not realize the threat to Pennsylvania’s, specifically Lancaster County’s; poultry population is real; very real, and it is more than just a farmer issue.

Highly Pathogenic Avian Influenza (HPAI) is a virus that affects poultry, not humans. Avian influenza viruses occur naturally in birds. Wild bird species (such as ducks, swans and geese) can carry the viruses but usually do not get sick from them. HPAI in birds is very contagious and can make domesticated birds (chickens, ducks, quail, pheasants, guinea fowl and turkeys) very sick or die.

HPAI devastated the poultry industry in many states in western and mid-western United States in spring 2015. The virus tends to die out in summer months. However, many experts expect that migratory birds from multiple continents are currently mixing in Canada, sharing the virus. As the weather cools again and migratory birds fly south for the winter, it is expected they will spread that virus among backyard, commercial pastured, and other commercial poultry flocks. It is believed that HPAI spreads partly by

- migratory birds
- local birds and rodents
- air borne dust for up to 1 mile
- vehicles or people using poor biosecurity methods
- farmers sharing equipment and egg crates.

The Pennsylvania Department of Agriculture (PDA), USDA Animal Plant Health Inspection Service (APHIS) Veterinary Services, PA Emergency Management Agency (PEMA), Penn State Extension, poultry industry representatives, local emergency management agencies and many other entities are actively preparing for response and recovery if HPAI enters Pennsylvania. It is expected that PDA and APHIS will enforce restricted zones around each affected farm limiting access to the farm and surrounding farms. The best way to prevent the spread of the disease is to immediately depopulate flocks that have it and flocks that are in an identified “risk zone”.

The best way to prevent the spread of the disease is to be hyper-vigilant about following bio-security practices. According to the USDA APHIS HPAI Biosecurity Checklist, “…all segments of the industry will need to follow comprehensive and stringent biosecurity practices on an on-going basis.” Comprehensive details are found at http://www.aphis.usda.gov/animal_health/downloads/animal_diseases/ai/HPAIchecklist.pdf.

There is currently an active Clean and Disinfect Quarantine Order issued by the PA Department of Agriculture covering in-state and out-of-state vehicles that are used in any part of the poultry industry. More thorough details can be found at the PA Bulletin, August 22, 2015, http://www.pabulletin.com/secure/data/vol45/45-34/1544.html.

A site-specific “Flock Plan” needs to be developed for every flock, no matter how small. A flock plan created ahead of time will help a farmer decide how to minimize business/service interruption, limit the spread of the virus, address depopulation, disposal, cleaning and disinfection of the premises. A generic flock plan template is available from PDA, or can be found at http://www.agriculture.pa.gov/Protect/AHDServices/avian_influenza/Documents/HPAIGenericFlockPlanverC5-1-15.pdf.

Being prepared for how to handle the disposal of backyard or commercial flocks who have been depopulated is CRITICAL. Do not wait for the disease to arrive. Make arrangements for materials and equipment NOW. A farmer will also need a written Erosion & Sedimentation (E&S) plan when burial is planned. An E&S Plan template is available on the Lancaster Conservation District website at http://lancasterconservation.org/wp-content/uploads/Poultry_Burial_ES_Plan.pdf.

If you suspect a backyard flock or commercial flock is infected, immediately contact the State Veterinarian at 717-772-2852. Detailed steps of who to call and how to handle flocks for necessary testing can be found at http://extension.psu.edu/animals/poultry/small-poultry-flocks/getting-help.

For additional information, please contact Shelly Dehoff at 717-880-0848 or shellydehoff@lancasterconservation.org.

Shelly Dehoff, Ag/Public Liaison

Low Volume Road Program: Traffic Counts

Pennsylvania’s Low Volume Road (LVR) Maintenance Program provides funding to eliminate stream pollution caused by runoff and sediment from the state’s comprehensive network of low volume public roads. The program was born out of the 2013 PA Transportation Bill, and is administered at the local level by the Conservation District. Low volume roads are defined as paved or sealed roads with 500 vehicles per day or less. Municipalities and state agencies can apply for funding on roads that meet this threshold. To ensure a road meets this volume requirement, a traffic count is required. The following methods should be followed to obtain a traffic count.

**OPTION A:** Validate with Existing Traffic Count Data, or Extrapolation from Existing Data

Existing traffic counts can be used to verify road eligibility for LVR funding. Existing Data must have been collected within the previous 5 years and conform to the Program’s Level 2 count protocol at a minimum. “Estimated” traffic counts that exist for many municipal roads cannot be used. It is permissible to use existing data for roads with 500 vehicles per day or less to logically extrapolate to subsidiary roads. For example, a spur road between two State Roads where both state roads have less than 500 vehicles per day must also have less than 500.
Low Volume Road Program continued from page 5

**OPTION B:** Level 1 Count

A level 1 count involves counting traffic for a two hour period, either by hand tally, video recording, or an automated traffic counter. The count for the time period will be adjusted to a 24 hour period by simply multiplying the 2 hour count volume by 12. The count must be conducted between March 1 and the week before Thanksgiving on a Tuesday, Wednesday, or Thursday. It cannot be conducted on a holiday, or the day before or after a holiday. It must be conducted for a minimum of two consecutive hours between 3:00 pm and 6:00 pm. Only the number of vehicle passes is counted, regardless of direction of travel or type of vehicle, however only licensed motor vehicles should be counted.

If a Level 1 Traffic Count produces a count of more than 500 vehicles per day, it does not disqualify the road, but necessitates a Level 2 Traffic Count because of its increased accuracy.

**OPTION C:** Level 2 Count

A level 2 count involves the placement of an automated traffic counter on the road for a minimum period of 24 hours. Level 2 counts supersede Level 1 counts if there is a discrepancy. A level 2 traffic count must meet the following criteria: It must be conducted between March 1 and the week before Thanksgiving, between 12am Tuesday and 12am Friday. It cannot be conducted on a holiday, or the day before or after a holiday, and for a minimum of 24 consecutive hours. Only the number of vehicle passes is counted, regardless of direction of travel or type of vehicle.

If these methods produce a count of 500 vehicles per day or less, the project on the road is considered eligible. If they produce a count of more than 500 vehicles per day, the project is not eligible for LVR funding. Additionally, to be eligible for funding, a member of the agency owning the road must have attended a two day environmentally sensitive road maintenance (ESM) training. The upcoming fall 2015 ESM training is scheduled for October 13 and 14 at Cabela’s in Hamburg, PA. Please visit [http://www.dirtandgravel.psu.edu/education-and-training/esm-course](http://www.dirtandgravel.psu.edu/education-and-training/esm-course) for more information and to register for the training. **Open application for the 2015 LVR funding is available from January 4, 2016 to February 12, 2016. Please visit [www.lancasterconservation.org/dirt-gravel-roads/](http://www.lancasterconservation.org/dirt-gravel-roads/) for more information.**

--Evan Martin, E&S Technician

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**EXTRAORDINARY GIVE: NOV. 20, 2015**

**Benefits Conservation School and County Envirothons**

November 20, please consider being a part of Lancaster County’s Largest Day of Online Giving. The EXTRAORDINARY GIVE, [extragive.org](http://extragive.org) offers a 24 hour giving marathon. Grow future generations of outdoor enthusiasts by clicking on the Conservation Foundation of Lancaster County to give to the Lancaster County Youth Conservation School and the Lancaster County Envirothons. The **Conservation Foundation of Lancaster County** is a not-for-profit 501(c)3 organization that supports and sustains the stewardship, education, and conservation practices undertaken by the Lancaster County Conservation District.

Every dollar you donate will be stretched by $250,000 from the Lancaster County Community Foundation and their presenting sponsors.

Your donation provides supplies, transportation, and programming for two extraordinary educational programs: the Lancaster County Youth Conservation School and the Lancaster County Envirothons. When you give, Extraordinary Things Happens! Mark your calendar, tell your friends, give Extraordinary.

--Sallie Gregory, Education Coordinator