Introduction

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6-1-07

As a farmer, you are already very much aware of your relationship with soil and water. To succeed as a farming steward of the land, you have to be. As an operation that involves tilling or "disturbing" the land and applying nutrients such as manure, you also need to be aware that, like other industries that disturb the soil and apply chemicals (nutrients, pesticides, etc.) in Pennsylvania you are subject to regulations that protect water quality. These regulations were created under the PA Clean Streams Law and include the Dept. of Environmental Protection (DEP) regulations Chapter 102 (1972), which deals with erosion and sediment (E&S) pollution control, and Chapter 91(1977), which deals with manure management. For copies of these regulations, see Attachments #1 and # 2.

All Pennsylvania Farms involved in tillage and/or manure use are subject to water quality regulations.

Additional requirements apply to farming operations (sometimes referred to as regulated farms) defined as Concentrated Animal Operations (CAOs) (Act 38 and Chapter 83) and Concentrated Animal Feeding Operations (CAFOs) (Chapter 92). But remember – ALL FARMS are subject to manure management and E&S regulations of the Commonwealth.

These regulations require farmers to have a plan for how they are protecting both surface waters and ground water quality. This packet was developed to help you organize and document just how you are protecting those water resources. Farmers, with a basic understanding of the requirements, can apply their practical experience, knowledge and good judgement, using the guidance provided in this packet, to achieve compliance. When the practices implemented on a farm are not sufficient to protect water quality, additional actions need to be taken to correct these problems. These can be in the form of Best Management Practices (BMPs.) County conservation districts, NRCS, Extension and others can provide assistance, including information about financial and technical support. A list of potential sources of assistance are included in this packet. (See Attachment #3.)

Application of the guidance in this packet may or may not assure agronomic efficiency or full compliance with water quality regulations and it does not address the requirements for CAOs or CAFOs. It will however demonstrate intent and efforts to accomplish compliance which are important considerations if violations do occur.

The intent of this packet is to assist farmers in meeting the baseline water quality requirements as noted above. Good nutrient and conservation planning is the ideal for the long term sustainability of any agricultural operation. By considering and answering the questions on your farming operations contained in this packet, and installing planned BMPs, you help assure not only the protection of water quality, but also attainment of compliance with the above regulations.

The BMPs included in the packet are broad and often meant to be applicable to as many operations as possible. Since this plan is meant for broad application, it includes generic recommendations such as buffer areas.

In many instances, a refinement of the BMPs recommended here can be made through site specific design and implementation. You may wish to ask for technical advice from an outside source to assure that the BMPs installed meet both the DEP regulations and the PA Technical Guidelines.

A Self Assessment of Your Farming Operation and Developing a Farm Plan

The information contained in this packet is provided to help you first conduct an assessment of your needs in addressing water quality related issues and then consider the BMPs that will help you address any areas of concern. Additional resources are contained in the packet to help you decide what is best for you and your operation.

DRAFT
6-1-07

To Complete Your Farm Plan Do the Following:

STEP 1. Look over the **self assessment** on pages A-2 through A-8.

If you till (including no till and pastures) fields on your farm, answer the questions in Section A.

If you store, handle, or land apply manure on your farm answer the questions in Section B.

List the areas of concern under each.

STEP 2. Determine the best solution and protection measures or BMPs that fit into your operation. The brief description at each question should help direct you to some of those BMPs. Additional information is enclosed in this packet. You may also want to talk to some of the people at the locations listed in the resources section.

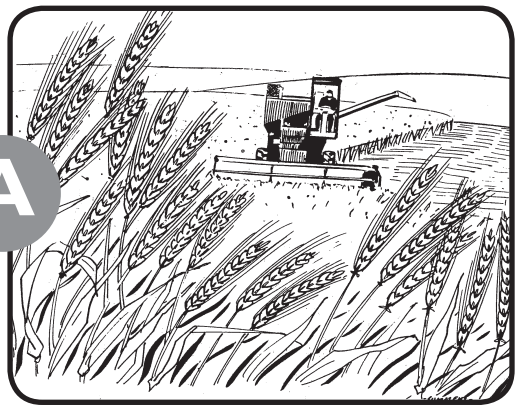
STEP 3. **Fill out the farm plan** on pages P-1 to P-10 by indicating what sections are applicable to your farming operation and what BMPs you are going to use. Be as specific as possible. Be sure to complete your farm map and attach it to the plan. Have all the BMPs indicated on your map that you list in the plan.

STEP 4. Attach all your record sheets and nutrient balance sheets to your plan if you are utilizing manure or have livestock operations.

STEP 5. Keep your plan and records in an easily accessible location so that you can consult them. Keep them up to date and verify their existence and implementation should you need to.

STEP 6. When considering minimum requirements under regulations, consult Attachments #1 & #2.

Remember, good advice is usually only a phone call away.
See the reference section of this packet.



A

DRAFT 6-1-07

Assessing Erosion and Sediment Control (Chapter 102)

Do you have a current conservation plan?

❒ **Yes** ***(if yes and it is implemented and consistent with Chapter 102 (see Attachment #1), you have met your regulatory requirements. Go to Section B, page A-5)***

❒ **No** ***(continue your self assessment)***

1. Crop Field Soil Erosion and Sediment Control § 102.4(a)

Soil erosion and sediment can be controlled by altering the amount, concentration and velocity of storm water and by altering soil conditions such as residue or crop cover. A variety of BMPs can be considered to slow runoff or stabilize the soil such as: diversions, contour farming, waterways, reduced tillage, no-till, cover crops, residue management, crop rotations, field border filter strips, grazing systems, and grass land farming to name a few. Erosion directly above any road ditch, diversion, waterway, or any other channel poses a high risk to deliver sediment to surface water. A minimum of 35 feet of a vegetated filter strip is essential for water quality protection in the absence of site specific, professionally designed BMPs on all tilled fields adjacent to a stream or a channel that outlets into a stream.

Are any fields tilled within 35 feet of a stream, waterway or ditch that empties into a stream, lake or pond?

❒ Yes *(Address in plan. See page P-3.)*

❒ No

Can sediment be observed leaving crop fields and entering a stream, waterway or ditch that enters into a stream, lake or pond?

❒ Yes *(Address in plan. See page P-3.)*

❒ No

Are there any areas above channels on the farm or farmstead where erosion is happening and sediment is observed entering the channel which subsequently enters into a stream?

❒ Yes *(Address in plan. See page P-3.)*

❒ No

2. Streamside Pasture Management § 102.4(b)

Risk of sediments entering surface water is high especially if animals concentrate near the stream. Fence placed a significant distance from the top of bank will allow vegetation to be established and maintained which will help stabilize the banks from erosion. Stabilized stream crossings can be incorporated. A new drinking water system may be needed for cattle if they previously used the stream. These buffers can greatly increase water quality and stream bank stability. Plantings can be done to help stabilize the banks. Rotational paddocks help to prevent overgrazing.

Do animal concentration areas near streams, waterways, lakes, ponds or ditches result in the elimination of vegetation or streambank damage that causes accelerated erosion?

❒ Yes (*Address in plan. See page P-4.)*

❒ No

3. Farmstead Soil Erosion and Sediment Control § 102.4(b)

Soil erosion from the farmstead can be a significant source of sediment to our water. Pay particular attention to driveways, roof water, ditches and pipe outlets. Minimize water concentration on roads and in ditches. Spread concentrated water out in a vegetated area wherever possible to allow filtering of sediment.

Are there any bare ground areas around the farmstead where sediment is observed being washed into a stream, waterway, lake, pond or ditch that enters into a stream?

❒ Yes *(Address in plan. See page P-4.)*

❒ No

Does rainwater and other clean storm water flow uncontrolled through the barnyard, farmstead, animal concentration areas, etc. and wash sediment into a stream, waterway, lake, pond or ditch that enters into a stream?

❒ Yes *(Address in plan. See page P-4.)*

❒ No

4. Farm Lanes/Walkways/Forest Lane Management § 102.4(b)

This requires managing the profile of the lane. Where possible the lane should crown and allow water to run off onto surrounding vegetated land and away from the lane. Water bars and broad based dips in the lane itself are used to divert water from the lane. Avoid ditches where they are not needed. Where ditches are necessary use cross pipes or cut-outs approximately every 150' (or closer together on steeper slopes) to spread water back out onto the landscape in a non-erosive fashion. Ditches required to carry water for long distances must be properly stabilized and sized to handle the flow. See the contacts (Attachment #___) for assistance with design of these ditches. Rock and/or geotextile may be used to reinforce the road base in wet areas with frequent traffic.

Are there any roads or animal pathways on the farm or farmstead where sediment is observed running off and entering a stream, waterway, lake, pond or ditch that enters into a stream?

❒ Yes *(Address in plan. See page P-4.)*

❒ No

5. Channel Outlet Management § 102.4(b)

Channel outlets are particularly vulnerable to erosion. These outlets often dump water onto steeper slopes where velocity increases and erosion begins. In some cases a waterway could be installed to carry water in a non-erosive fashion. If erosion can be noticed early, outlets can be properly stabilized. "Head cutting" occurs when erosion at a channel outlet begins to work its way upstream into the channel. This is prevented by repairing the erosion when it first begins. In extreme cases where channel outlets have eroded large gullys over a long period of time repairs are possible; however, they are often expensive and may require some engineering assistance. Any new channel should be designed with the proper outlet in mind.

Are there any channels on the farm or farmstead where outlets are eroding and sediment is observed entering a stream, waterway, lake, pond or ditch that enters into a stream?

❒ Yes *(Address in plan. See page P-5.)*

❒ No

6. Maintenance of Existing Erosion Control BMPs § 102.4(a) and (b)

If no operation and maintenance plan exists, create one. Maintain proper vegetation in channels. Maintain capacity of diversions and waterways by removing sediment periodically. Monitor channel outlets to stay ahead of any erosion. Regular maintenance goes a long way to protect your investment in productivity and the environment.

Are all conservation BMPs maintained according to a regular schedule, in accordance with a written operation and maintenance plan?

❒ Yes

❒ No *(Address in plan. See page P-5)*

B

Assessing Manure Management (Chapter 91)

Do you have a current Nutrient Management Plan approved by the County Conservation District which meets Act 38 or Act 6; or a plan that meets NRCS' 590 standard or a plan that has been developed under the guidelines in the DEP Manure Management Manual?

❒ **Yes** ***(if yes and it is implemented you have met your requirements under Chapter 91)***

❒ **No** ***(continue your self assessment)***

1. Manure Storage § 91.36 (a)

You may need to identify areas to store manure when field conditions do not allow access. This storage needs to be located where runoff from the stored manure can not enter surface or ground water. For stackable manure, you may find an appropriate area in a nearby field where no construction is necessary. Some improvement of this area with gravel or concrete may be needed or a storage can be constructed near the barn, treating runoff in a designated grass filter area. When spreading manure in the winter, the manure management plan will identify fields to receive manure in the winter. All liquid and semi-solid manure storage facilities built after 1-29-2000 are required to be certified by a Pennsylvania Professional Engineer as meeting PA Technical Guide Standards.

Do you utilize manure storage areas and does surface water run through these areas and enter any streams, waterways, lakes, ponds or ditches that enter a stream or groundwater inlets?

❒ Yes *(Address in plan. See page P-7.)*

❒ No

Do you need a manure storage area?

❒ Yes *(If yes, seek technical assistance.)*

❒ No

2. Heavy Use Area Protection Controls § 91.36 (c)

The barnyard and manure handling areas can be reinforced with gravel or concrete to provide a stable wearing surface and make manure collection easier and more efficient. Nutrient rich runoff from animal concentration areas is best treated on a grass filter area. Curbing around the perimeter of the heavy use area can help contain waste, direct runoff to a collection point, and eliminate surface water. Runoff can also be collected in a tank and pumped to a spreader for field application although tank size requirements can be quite large.

Adequately sized vegetation areas can be used to filter nutrient and sediment laden water. Milk house waste and runoff from animal concentration areas are often treated by filtering through vegetation. A permanent grass area with a slight to moderate slope is established. The size is determined by the amount of material and its nutrient content. Contaminated water is distributed evenly across the top of the filter area by gravity or pump and then flows downslope through the vegetation. Nutrients are used by vegetation and solids are filtered. The filter would be harvested by grazing or mowing to remove nutrients in the vegetation. **Technical assistance is required to adequately design and size vegetative filter areas.**

Does surface water run through animal concentration areas, where manure has been deposited or accumulated, that drain into any streams, waterways, lakes, ponds or ditches that enter a stream or groundwater inlet?

❒ Yes *(Address in plan. See page P-7.)*

❒ No

3. Manure Application and Record Keeping § 91.36 (b)

Written records help you track implementation of your decisions. They help you pin point ways to improve efficiency including manure application, commercial fertilizer needs, crop yields, etc. A record keeping system should be simple, written or computerized, and compiled in one place. At a minimum, you should keep the last three years of records on site and available for inspection. Records should include: location, date and rate of all nutrient applications (manure and others), crop yields and exported and imported manure. You should also consider including: soil samples updated every three years and manure analysis.

When the farm operator does not have enough land to utilize the manure produced, additional acres must be found to receive the manure. These will be documented in the manure management plan.

If utilizing manure from a CAO or CAFO, then Pennsylvania's Chapter 91 regulations specify minimum setbacks from surface water for manure application. If a vegetated buffer exists, manure can be applied within 35 feet of surface water. If no buffer exists, manure can not be mechanically applied within 100 feet of surface water. (While not required of all farms, this practice helps protect water quality.) If a nutrient management plan is developed using the Phosphorus Index, then manure can be applied closer to surface water according to the plan. Contact the Conservation District or a certified nutrient management planner with questions about the Phosphorus Index or for help developing this plan.

Do you apply manure to any fields that may have an impact on surface or ground water (wells, sink holes, etc.) or are observed leaving the farm and entering a stream, waterway, lake, pond or ditch that enters into a stream?

❒ Yes *(Address in plan. See page P-8.)*

❒ No

4. Surface and Roof Water Control § 91.36 (c)

Wet conditions in an animal concentration area are often compounded by surface and roof runoff. Any runoff should be diverted around the barnyard. Roof water should be collected with gutters or drip trenches and directed to a clean, stable outlet. When possible, it is best to keep the barnyard drier and to keep clean stormwater from being contaminated.

Do you have areas that contribute to the surface water running through barnyards and other animal concentration areas that may wash manure, milk house waste, silage discharge or other nutrients to surface or groundwater?

❒ Yes *(Address in plan. See page P-9.)*

❒ No

5. Well Head and Groundwater Protection § 91.36 (c)

Surface and ground water around a well, sinkhole or other subsurface inlets can potentially pollute the aquifer. Surface water should be diverted from well head and these other locations. Manure should be far removed from well locations. Any animal concentration area or field application should remain at least 100 feet back from any well and farther away if upslope of a well on steeper slopes. Well heads can be capped around the casing with concrete and bentonite to prevent surface water from following the casing. New wells should be installed with bentonite grout sealing between the soil and casing to prevent all water flow along the casing. Pollution entering the aquifer at one well can pollute other neighboring wells.

Are you applying manure to your crop fields or have animal concentration areas within 100 feet of a well, sinkhole or other potential source of groundwater connection?

❒ Yes *(Address in plan. See page P-9.)*

❒ No

6. Maintenance of Existing Manure Management BMPs § 91.36 (a)(b)(c)

Proper maintenance of existing manure management BMPs is critical. Review the operation and maintenance plan for any conservation BMPs currently installed. If no operation and maintenance plan exists, create one. Regular maintenance goes a long way to protect your investment in productivity and the environment. Each BMP should have a specific maintenance need and should be incorporated as part of the maintennce plan.

Are all nutrient management BMPs maintained according to a regular schedule, in accordance with a written operation and maintenance plan?

❒ Yes

❒ No *(Address in plan. See page P-10.)*

Important

Other common water quality farm related issues may include:

- **Milk house wastes**
- **Silage leachate**
- **Streams and wetlands**

Contact your regional DEP or County Conservation District Office for water quality protection compliance information.