



## MAKING CONSERVATION A PRIORITY

### Do Something Different

by Dennis Godar TSPN President Elect

Everyone should get out of their comfort zone once in a while.

It's good for the mind, body and soul, relieves boredom, broadens your horizons and helps put life into perspective and could even possibly result in the betterment of society, or at least your neighborhood.

This "going over the fence" so to speak does not have to be bull riding or jumping out of airplanes or taking up an expensive hobby. It could be something easy like planting a cover crop, or grid soil sampling and ordering fertilizer applied with Variable Rate Technology (VRT).

My out of comfort zone experience this year is to be a content provider for a new course to be offered at our local junior college, seems mundane and boring on the surface, but it has been a challenge and a learning experience for me, who works with the said content every day. The course is entitled "AWM

103-Agricultural Nutrient Use Efficiencies" which is part of a new curriculum entitled Agricultural Watershed Management and is being developed by Lincoln Land Community College and funded by a US Labor Department TAACCCT grant, "Build Illinois' Bio Economy. I thought this should be easy to do, since I am a CPag and a TSP that specializes in nutrient Management, perhaps that's why I allowed myself to be shanghaied into this assignment.

Anyway the experience has been rewarding, I learned things that will help me be a better consultant for my clients and also made me realize how many talented and dedicated individuals we have in the educational profession, that do this kind of thing every day.

- 8 Units, 16 Lessons, 8 Labs, my task: to research content that is freely available on-line from reputable sources, the course content is selected very carefully to achieve the learning objectives.
- It's a very systematic approach, it took me several weeks to develop the outline and course description.

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# Technical Service Provider Network (TSPN)



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- Next task was to put the meat on the framework for the 16 lessons and 8 labs:
  1. preparation assignments, (reading and study materials)
  2. practice assignments, (projects, discussion boards, activities)
  3. and performance assignments, (quizzes, worksheets, and lab projects)
  4. And last but not least, write the questions for quizzes, labs, exams and the final exam.

About halfway through this contract, I began to feel sorry for the students, but sorrier for the teacher who ends up with this class in their schedule next semester. It's turning out to be a very intense class and all joking aside, I believe useful to graduates of the program that will play a role in Agricultural-Watershed Management.



Anyway with the new year approaching, I challenge all of us to Do Something Different next year.

I'm not much on New Year's resolutions, but this would be one Resolution that anyone could seriously do. You don't even have to name it, until you have successfully done it!

## New CNMP Policy

by Eric Hurley, Nutrient Management Specialist, Iowa NRCS

The Comprehensive Nutrient Management Plan has been redesigned. At its core technically, I think you will find the new plan does not vary from the old format. However, it is organized more simply, it is smaller, and several sections have been removed. For full details on the new CNMP policy. See the new General Manual policy at: <http://directives.sc.egov.usda.gov>. Go to <General Manual><Title 190...><Part 405...>

To see what is expected in a plan written by a TSP, see the current Conservation Activity Plan (CAP) 102 CNMP criteria available at: [www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/eqip/?cid=stelpdb1262227](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/eqip/?cid=stelpdb1262227).

The new CNMP plan design is organized into three primary parts:

1. There is the conservation plan for the Animal Feeding Operation/Farmstead – previously called the “production area” – which is essentially the same as the old Manure and Wastewater Handling and Storage section of the CNMP.
2. The next section will be the conservation plan for the land, typically cropland, where the manure will be applied. This will include the soil and water quality risk assessments (e.g. RUSLE2 and Iowa P-Index), identification of and setbacks from water quality sensitive areas, as well as any existing and planned conservation practices needed (formerly “Land Treatment”). For both the farmstead and cropland the National Air Quality Site Assessment Tool (NAQSAT, <http://naqsat.tamu.edu/>) will be used to evaluate potential air quality resource concerns.
3. Finally, there is a section for the nutrient management plan for the land receiving manure. There will also be a signature page.

The emergency response plan, catastrophic mortality, biosecurity, and chemical handling items have been removed. They are no longer required for the CNMP. Keep in mind that practices such as the Feed Management (592) standard and soon the Emergency Animal Mortality Management (318) standard, so these can be planned for the farming operation.

I encourage you to switch to the new format as soon as possible. Watch for updates to Purdue Manure Management Planner software implementing the new format.

## CAP 102 Certified TSPs:

The NRCS will be presenting a webinar on CNMPs and the planning process on January 26th at 2pm. (If you cannot listen to the live broadcast you can listen to the replay. It will be posted on the NRCS Webinar Library a week or so after the live broadcast date. That link is: [www.conservationwebinars.net](http://www.conservationwebinars.net)

Goal of the webinar: to give participants an understanding of the elements included in a Comprehensive Nutrient Management Plan (CNMP) (will reflect recent policy changes) and the process to follow when developing a CNMP as outlined in the USDA NRCS National Planning Procedures Handbook (NHHP).

1/26/2016 Comprehensive Nutrient Management Plans and the Planning Process

The link to the webinar is: [www.conservationwebinars.net/webinars/comprehensive-nutrient-management-plans-and-the-planning-process](http://www.conservationwebinars.net/webinars/comprehensive-nutrient-management-plans-and-the-planning-process)



## TSPN Board moves to establish Executive Director Position

by Dallas Heikens

During the September 2015 Annual Meeting, a discussion was held concerning the possibility of establishing an Executive Director position as part of the TSPN Administrative Team. The idea first began with the award of a McKnight Grant to TSPN and Iowa State University.

The purpose of the grant was to determine “barriers” to Ag Retailers offering conservation management services to farmers. During the implementation of the grant, it became important to have a direct contact person in charge of daily administration of the grant. Future grants would need the same communication stream.

The board decided during the November board meeting to review job descriptions of ED positions with non-profit organizations, and selected an appropriate job description to use, including the note that this position would continue to be a non-paid position. All board members and Executive Director positions have and will continue to be, volunteer (non-paid) roles for TSPN.

As we continue to build our organization into a viable stakeholder in the world of conservation, education and training, we expect good communication with our members to be key to progress.

### TSPN BOARD CONTACT LIST

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## TSPN and CDI Joint Annual Meeting

by Joe Lally

Technical Service Providers network was held on September 2nd, 2015. Our annual meeting was held jointly with the Conservation Districts of Iowa Annual Meeting in Des Moines. This event was designed to showcase both the priorities of CDI’s efforts in conservation, as well as to introduce CDI to the mission of TSPN. The single most important feature of this joint meeting was the networking gained by putting faces and programs with people charged with executing our common interest.

The joint meeting began with Dallas Heikens, president of the TSPN board, outlining the mission and work of TSPN to the soil and water commissioners of CDI. Approximately 200 commissioners from all around the State of Iowa were in attendance for this session.

TSPN held their annual meeting in the afternoon session, attended by about 20 TSPN members from 5 midwestern states. Also attending were state NRCS and CDI officers and staff. The comments following the meeting were positive and encouraging to the TSPN board as a successful “first” attempt at getting the word out on our new network, with future stakeholder collaborations possible.

Link to annual meeting:

<http://tsp-network.org/twp/wp-content/uploads/2015/08/2015-TSPN-CDIWQ-Annual-Meeting-Meeting-72715.pdf>





## Website Updates



Both the national TSP initiative and Iowa NRCS are attempting to correct errors and improve our websites.

If you note errors such as outdated documents or broken links or have some ideas to improve the usability of these websites, please send your thoughts to Megan Hosford at: [Megan.Hosford@ia.nacdnet.net](mailto:Megan.Hosford@ia.nacdnet.net)

For those in other states, your local TSP coordinator would probably appreciate a heads-up on website problems.

## New Iowa TSP Coordinator

We have a new TSP Coordinator in Iowa, Kevin Kuhn. You can reach Kevin at the following:

**Address:**

Iowa NRCS  
210 Walnut Street  
Room 693  
Des Moines, IA 50309

**Phone:** 515-284-4370

**Email:** [kevin.kuhn@ia.usda.gov](mailto:kevin.kuhn@ia.usda.gov)

## People Like Options

Reprinted with permission by Tom Buman, [tom@agreninc.com](mailto:tom@agreninc.com)

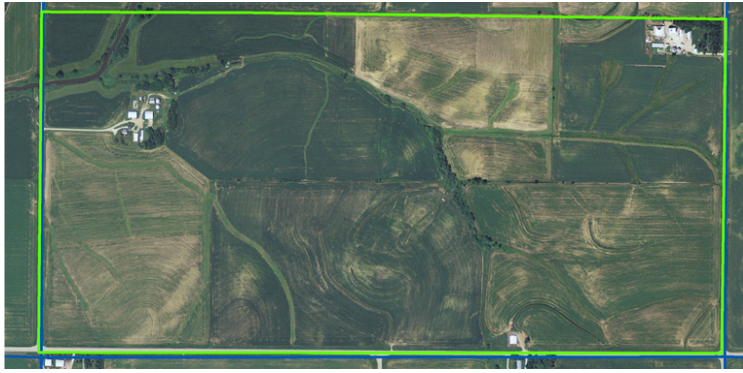
People like options. That is why auto companies successfully sell a variety of makes, in a range of colors. Even for those of us who will eventually choose a red Ford F150 pickup, we want to consider all of our options. The same thing is true about conservation. Farmers need options. They want to be able to choose the conservation practices that best meet their needs. Minnesota passed a law in 2015 requiring farmers to install filter strips to improve water quality; that is, reduce sediment, phosphorous and nitrogen delivery to water bodies. To minimize the impact of taking land out of production, farmers will be allowed to install variable width filters or a combination of conservation practices, as long as they meet the primary goal of improving water quality. According to a Minnesota Board of Water & Soil Resources (BWSR) online publication, instead of requiring a 50 foot wide filter strip, it states that “a combination of practices... may be used to sufficiently meet water quality goals – and when that happens, a filter may not be needed.”



## Implementing Minnesota's New Buffer Initiative

Traditionally, constant-width filter strips have been promoted by state and federal agencies. These filters are designed to handle water moving through the filter strip in a uniform flow. However, overland runoff is not uniformly distributed; it tends to concentrate within channels before reaching the stream. Therefore, a constant-width filter can become overwhelmed and would be only marginally effective. In fact, soil trapping efficiency is significantly reduced. Additionally, where low water flows exist, the standard 50 foot filter strip width may be overkill because there is very little water movement and sediment to trap.

*Continued on Pg. 5*



*Aerial image depicting a 315 acre farm with a stream and no filter strips. The stream flowing through this farm is 4,368 feet long. This example farm will be used throughout the post.*

By Minnesota law, this stream will require a 50-foot wide filter strip, or equivalent, on both sides. A total of 10 acres will need to be converted from cropland for the filter strip ( $4,368' \times 50'/\text{side} \times 2 \text{ sides} = 436,800 \text{ sq ft}/43,560 \text{ sq ft/acre} = 10 \text{ acres}$ ).



*Standard 50 ft filter (10 acres of filter)*

As I understand the MN law, BWSR is responsible for developing the rules to determine the combination of conservation practices farmers can use to meet water quality goals. The process used to determine alternative conservation practices will need to be transparent and science-based, as wildlife orgs. will likely fight efforts to reduce acres going into grassland habitat. Furthermore, other activists may want to use the law to enforce stricter soil erosion standards. It is critical to maintain the integrity of the primary goal of the law — to improve water quality.

While installing constant-width filter strips can achieve some level of water quality improvement, the same improvement can be achieved by a number of other substitute mechanisms:

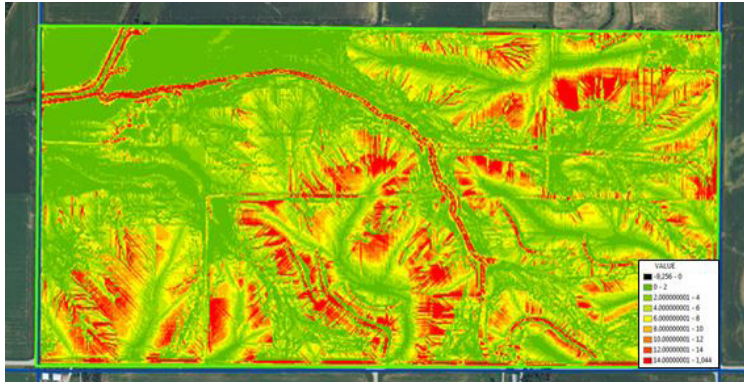
- **Create variable width filter strips:** vary the dimensions of the filter strip according to the amount of runoff and sediment delivery. The filter strip will be wider where runoff and sediment delivery is greater and narrower where runoff and sediment delivery is less. Using variable width filters, I estimate that farmers can achieve the same sediment load reduction, using 35-45% less grass (less land out of production).
- **Impoundment structures:** Build small impoundment structures (sediment basins) upstream in order to capture runoff and sediment before it reaches the stream. The impoundment will allow a narrower filter strip or even eliminate the need for a filter strip.
- **Reduce soil erosion:** Practices like no-till, contouring, terraces, and grassed waterways reduce sediment delivery to streams. These practices reduce in-field erosion and result in less sediment that needs to be filtered out.

The scientific methodology exists to effectively compare substitute practices against a standard, 50-foot wide filter. Models for that purpose have been developed and peer reviewed. In order to determine the effectiveness of a 50 foot constant-width filter strip, three independent models will be required.

1. **The first model:** will focus on sheet and rill erosion (erosion that occurs on the hillslopes of agricultural fields). This model will determine where erosion occurs and where eroded soil is deposited while also accounting for different rotations and tillage systems.
2. **The second model:** will focus on ephemeral erosion, or channel erosion, and channel deposition. Much of eroded soil is deposited before it ever enters a water body. This model would account for the size of the watershed and different practices like sediment basins, terraces, and ponds, while modeling the amount of sediment transported to the filter strip.
3. **A third model:** must focus on the effectiveness of a filter strip in two different ways. First, it must determine the effectiveness of a 50-foot wide filter strip, based on the farming operations specific to each field. Then it must allow a farmer to adjust conservation practices and determine a filter strip arrangement that will meet the effectiveness of the 50 foot wide filter strip.

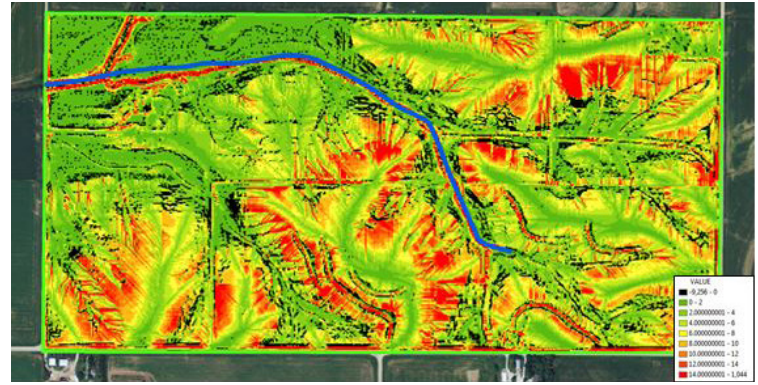
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Sheet & Rill Erosion  
1,417 tons/year-field total  
(or 4.5 tons/acre/year-average)

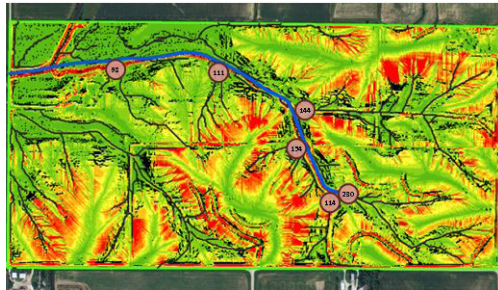
This soil erosion map, generated by Agren® SoilCalculator, shows the distribution and amount of sheet and rill erosion occurring in this field. Red indicates areas of high erosion and green indicates areas of low erosion.



Not all eroded soil is transported to a water body. Black rasters indicate in-field deposition occurring before soil reaches a water body.

This soil erosion and deposition map is generated by Agren's SoilCalculator. It is important to realize that some of the soil that has been eroded is re-deposited within the same field, as indicated by the black rasters. It is common for eroded soil to move downhill and be deposited in flatter areas of the field. Therefore, when designing filter strips, it is important to understand the difference between soil erosion and soil transportation.

Those areas that have high erosion (red areas) and are directly adjacent to the stream, have the most likelihood of delivering sediment to the stream.



*The calculated sediment amounts delivered at the areas of concentrated flow are shown (see circles) as 114, 230, 154, 111, and 98 tons/acre/year.*

The "tons of soil transported to the stream" is calculated using a combination of Agren's SoilCalculator and EphemeralGullyCalculator. Currently, these two models work independently, but over the next couple of months, Agren will integrate them into a seamless operation. The integration of these models provides the only known method whereby a non-technical person can calculate sediment delivery to a water body. Other methods are available, but they require extensive time and an expert modeler.

The erosion depicted in this image is based on a corn-soybean rotation; the corn is no-tilled in soybean residue and corn stalks are fall chiseled followed by spring field cultivation before planting soybeans. This example serves as a baseline for the next three options.

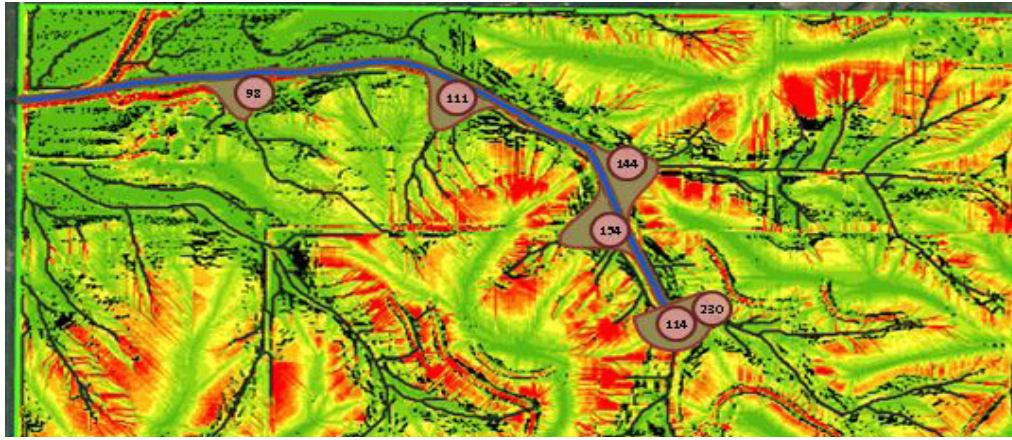
## Option #1: Create variable width filter strips

Variable width filters are designed to be wider in areas where water and sediment are running into the stream in a concentrated flow or channel. The filter width is increased in these areas, while at the same time reduced in areas of non-concentrated flow. This reallocation of grass results in less total acres of filter strips required; as much as 3.5 to 4 acres in this example:



*Continued on Pg. 7*





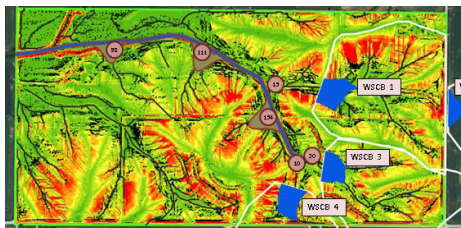
*Variable width filter could save the farmer between 3.5 to 4 acres of cropland in this example.*

The variable width filters redistribute the grass in order to provide extra filtering capacity in areas of concentrated flow. The filter strip is widest where concentrated flow is delivering sediment to the stream, but only 16.5 feet wide in areas of non-concentrated flows.

## Option #2: Impoundment structures



Impoundment structures include conservation practices such as a water and sediment control basin. A water and sediment control basin is a short earthen dam built across a drainage way. It traps water and sediment running off cropland, upslope from the structure, and reduces ephemeral gully erosion downslope by controlling flow within the drainage area. The basin releases water slowly, usually through infiltration or a pipe inlet and tile line. Basins are effective in reducing sediment in downstream waters.



*An impoundment structure reduces the amount of water and sediment that needs to be cleaned by a filter strip.*

Agren® BasinBuilder was used to plan the four basins (WSCBs) displayed. These basins will temporarily store the runoff so that sediment can settle out, in the sediment basins. Together, these four basins will cost approximately \$35,000 to install, but will save 4 to 5 acres of cropland that otherwise would need to be converted to filter strips. These basins are permanent structures and provide other tangible benefits, such as flood control and reduced need for grassed waterways. After a rainfall event, the water stored in the basin will drain (within 24 hours) into a surface intake and then through subsurface tile line, preventing crop damage. Sediment basins remove very little land from crop production.

In areas of concentrated flow where sediment basins are not installed, wider filters should be used to reduce sediment loads. The reduction in sediment delivery due to the installation of sediment basins and the resulting variable width filter is only estimated. Agren currently has not integrated a filter strip design tool into its software.

### Option #3: Reduce soil erosion

The third option for reducing the filter width is to reduce the amount of sediment delivered to the filter strip, thereby requiring a narrower filter strip to achieve the same water quality results. Reducing the amount of sediment delivered to a filter strip can be accomplished with a multitude of practices such as no-till, reduced tillage, contours, terraces, grassed waterways and cover crops.



*By keeping the upland soil in the upland, this example reduces total sediment delivery gained by no-till farming.*

On average, sediment delivery in Option 3 is reduced 9 times over the management system in Option 1. Instead of 851 tons being delivered, only 91 tons are delivered to the stream. To achieve the same water quality benefits, this option would allow for a narrower filter strip or possibly allow the farmer to eliminate the filter strip. At the same time, this system would do more for sediment erosion reduction and soil health. As states mandate water quality actions, it is critical farmers are allowed to select from a list of conservation practices, rather than mandating “cookie cutter conservation.” All farmers have different operations and different management skills. As long as farmers achieve water quality standards, the farmer is in the best position to select the practices that best fit their operation. This is what we all desire – options and choices.



#### References:

- The application of the Revised Universal Soil Loss Equation, Version 2, to evaluate the impacts of alternative climate change scenarios on runoff and sediment yield – (Peer Reviewed Journal)
- Dabney, S.M., Yoder, D.C., Vieira, D.A. 2012. The application of the Revised Universal Soil Loss Equation, Version 2, to evaluate the impacts of alternative climate change scenarios on runoff and sediment yield. *Journal of Soil and Water Conservation*. 67(5):343-353.
- Spatially distributed sheet, rill, and ephemeral gully erosion – (Peer Reviewed Journal)
- Dabney, S.M., Vieira, D.A., Yoder, D.C., Langendoen, E.J., Wells, R.R., Ursic, M.E. 2014. Spatially distributed sheet, rill, and ephemeral gully erosion. *Journal Hydrologic Engineering*. pp. C4014009-1-C4014009-12.
- Effects of topographic feedback on erosion and deposition prediction – (Peer Reviewed Journal)
- Dabney, S.M., Vieira, D.A., Yoder, D.C. 2013. Effects of topographic feedback on erosion and deposition prediction. *Transactions of the ASABE*. 56(2):727-736.

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