

## Ten Things You may not Know about Drainage

The following article appeared in the November, 2013 issue of "Drainage Contractor." It is reprinted with permission. To see more articles of interest, visit [www.drainagecontractor.com](http://www.drainagecontractor.com).

Attendees of the 2013 LICO and DSAO Drainage Convention, which took place in January in London, Ontario saw several speakers and presentations offering tricks of the trade. One such presentation that caught the eye of Drainage Contractor magazine was by Sid Vander Veen, drainage coordinator with the Ontario (Canada) Ministry of Agriculture and Food. It was entitled 10 things you did not know about drainage.

In a room full of industry professionals, Vander Veen's presentation was bravely named but he explained that the presentation was originally intended for a different audience. The talk was originally given to a crowd involved in conservation and resource management. Here is a recap of the ten points.

**10) Subsurface drainage functions comparably to the holes in the bottom of a flowerpot.** It drains the water out of the top layer of the soil, leaving the soil moist, but not saturated and drowning crop roots. "Many in the resource management crowd view tile drainage as a bad practice," Vander Veen explained. "I want to show that tile drainage functions no different than the holes in the bottom of a flower pot – it is a fundamental means of providing the proper growing conditions for crops."

**9) Subsurface drainage dates back as early as the second century B.C.** As Vander Veen explained, there has been a long-recognized need for subsurface drainage, and a huge increase in drainage in the late 1960s and early '70s. But rolling the clock back even further, to the late 1800's and early 1900's, clay tile was installed with a wheel machine – a very labor intensive process. "Each clay tile was individually put into a chute and laid at the bottom of a

trench. The trench would then have to be backfilled. The practice of drainage was slower back then," Vander Veen said.

In the early to mid-1800's, anything that could form a conduit where water could flow through, including rocks, chunks of wood or clay tile, was used for drainage. Tile drainage in North America was largely attributed to John Johnston, a Scottish immigrant to New York State who embraced drainage in 1835. Prior to Johnson, there were sporadic references to tile drainage in France in the 1600's and in Scotland in the 1400's. Palladius, a Roman agriculture writer in the third or fourth century, wrote on agricultural drainage in the time of Christ. And the very earliest reference to drainage was Marcus Procius Cato, 239-149 BC, who wrote that if the land is wet, it should be drained with trough shaped ditches. "It's important to realize that subsurface drainage has been recognized as a necessary component of agriculture for a very long time," Vander Veen said.

**8) Subsurface drainage reduces the overland flow and the movement of sediment and . . . 7) Subsurface drainage only flows when the water table rises to the bottom of the pipe.** These two points are directly related. When it rains, tile drainage increases the capacity of the soil to absorb water, which allows the soil to function almost like an urban storm water management pond. As Vander Veen noted, many people know that storm water management ponds are installed to slow down water runoff. "Tile drainage does the exact same thing, using the agricultural soil surface as the storage area," he noted. "The fact that tile drainage encourages more water to go down is good. When it stops raining, tile are still flowing, and the tile are now doing their job of getting that root zone of the crops in a good condition so that it doesn't drown the crops."

**6) Subsurface drainage acts a conduit for water – it**



Waterways is a quarterly publication of the Iowa Drainage District Association. Comments can be directed to the association at:

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# Farm groups launch new Water Quality Alliance

Iowa Farm groups have announced the launch of a new water quality alliance to accelerate the pace and scale of “quantifiable water quality improvements.” The Iowa Corn Growers, Iowa Soybean and Iowa Pork Producers associations are each providing \$200,000 annually to support the Iowa Agricultural Water Alliance said Kirk Leeds, CEO of the Iowa Soybean Association.

The farm groups tapped Sean McMachon as the alliance’s executive director. He previously was the director of the Nature Conservancy’s North American agricultural program and has led national land stewardship campaigns at the National Wildlife Federation.

The alliance is expected to:

- Increase farmer’s awareness of the Iowa Nutrient Reduction Strategy and increase their adoption of practices that have environmental benefits
- Support Iowa State University and other partner’s efforts in developing environmental performance metrics and,
- Attract significant funding from public and private sources to the state water quality improvement initiative

Leeds said that he expects the group to attract “tens of millions of dollars” annually to these efforts. The alliance will look to large agriculture and food corporations, private foundations and government programs to accelerate water quality issues in Iowa. *Source – partially taken from the Des Moines Register, August 25 2014*

## Drainage law books available

IDDA is still selling the “Road and Drainage Laws” book that we published. If you are interested in purchasing a book(s) contact John Torbert in the IDDA office.



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**does not pollute water.** Vander Veen asked the audience how much air pollution an empty road causes regularly. The answer was zero. He then asked how much air pollution a road with lots of traffic on it causes regularly. The answer was, again, zero. “The cars are creating air pollution, and the road is the conduit for the cars, but the road itself does not create air pollution,” he explained. “So often, when we look at tile drainage, I hear claims that drainage pollutes. It doesn’t – but it can be conduit for pollution and we need to continue to work on land management practices to try to minimize that.”

**5) Subsurface drainage encourages crops to develop stronger root systems, which helps them in dry conditions.** High water levels in the soil tend to cause crops to develop a shallow root system. When dry conditions develop, the crops with the shallow root system are usually the first to suffer. Tile drainage lowers the water level in the crop root zone, which encourages crops to develop healthy, deeper root systems in the soil. These more extensive roots allow these crops to better withstand dry conditions. Tile drainage contractors know that even in dry conditions you see where the tile runs are in the field because the crops are actually better immediately over the tile. Tile drainage improves crop production and crop yields in dry times as well.

**4) Editors note – this point was specific to Canada and will not be reprinted here.**

**3) There are benefits of tile drainage that extend beyond increased crop productivity.** There are several benefits of subsurface drainage to farmers beside increased crop productivity, Vander Veen explained. “Improved trafficability in one. Drainage reduces the fuel consumption when working the land” Tile drainage allows farmers to take advantage of optimal planting times. And finally, environmentally conscious methods of farming, like no till and conservation tillage practices depend on well-drained land to be effective, he pointed out.

**2) Subsurface drainage improves crop productivity, which reduces pressure on land conversion and improves our ability to produce food for a growing population.** As Vander Veen pointed out, the world’s population is continuing to increase, and we’re running out of space for everyone. “We’re not making new agricultural land – and we are building on what we have,” he said. “There are extra pressures on our agricultural production capability like biofuel production and loss of prime agricultural land due to urban development. These are all good important things, but at the end of it all, we still

have to produce food. How do we do that for a growing population?” His solution is to try to improve production with what land we have using soil moisture management, a combination of drainage and irrigation. “To me, that’s the least intrusive and one of the best ways of trying to continue to improve our food production capabilities.”

**1) Conservation goals can coexist with agriculture and subsurface drainage.** Jack Miner was a world-renowned naturalist who was awarded the Order of the British Empire in 1943 for the greatest achievement in conservation in the British Empire. Miner was born in the United States and his family moved to Canada where his father worked as a clay tile manufacturer. “To make the tile, clay was removed from ground, which created pits,” Vander Veen explained. “The pits filled with water and they became the very first geese sanctuaries.” During the time that Miner was getting recognition as a world-renowned conservationist, he continued to make drainage tile. He recognized the balance between agricultural drainage and conservation and resource management. Before ending his presentation, Vander Veen recited one of Miner’s poems, which, with verses like the one below, was a hit with the audience.

*If your land is wet and you’re burdened with debt  
And encumbrance begins to accrue,  
Obey nature’s law, by removing the cause,  
Drain your farm or it will drain you.*



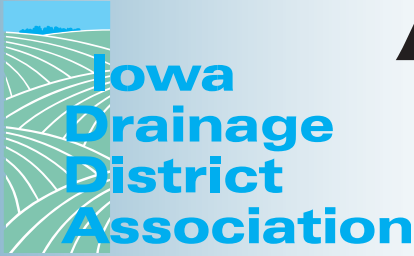
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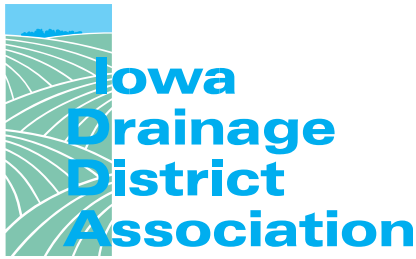
# Annual Conference

December 5, 2014

Starlite Village Hotel • Fort Dodge, Iowa

- 7:30 a.m. Registration Opens
- 8:30 a.m. IDDA Annual Business Meeting
- 9:00 a.m. Mr. Dean Lemke, Agribusiness Association of Iowa: "A perspective of four+ decades on water policy in Iowa."
- 9:45 a.m. Ms. Sarah Carlson, Practical Farmers of Iowa, "Cover Crops 101"
- 10:20 a.m. Dr. Matt Helmers, Iowa State University: "Impact of land use on drainage flow."
- 11:00 a.m. Drainage clerks to adjourn to separate room
- 11:00 a.m. Mr. Shawn Richmond, CREP Coordinator, IDALS: "The Iowa CREP Program."
- 11:30 a.m. Mr. Matt Lechtenberg, State Water Quality Coordinator: "Update on the Nutrient Reduction Strategy."
- 11:45 a.m. Sponsor Presentations
- 12:15 p.m. Buffet lunch
- 1:00 p.m. Resource Panel with open discussion time—get your drainage questions answered.
- 1:45 p.m. Adjourn

# Registration Form



## Annual Meeting

Friday, December 5, 2014

Starlite Village Hotel • Fort Dodge, Iowa

Name \_\_\_\_\_

County/Company \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_ E-mail \_\_\_\_\_

Please use one registration form for each person attending. **Pre-registration cost is \$50 for IDDA members and \$60 for non-members. On-site registration will be \$60 for members and \$70 for nonmembers.** Registration fee includes morning coffee & rolls, noon meal, all conference handouts and conference gift item. Speakers and some sponsors are exempt from the registration fee. On-site registration will also be available. Registration refund requests must be in writing.

Send check, warrant or money order to:  
IDDA  
c/o TP Anderson Company  
P.O. Box 509  
Humboldt, IA 50548

Questions – Contact IDDA Executive Director John Torbert at 515/221-1961 or jtorbertidda@gmail.com.

Please return registration form no later than Monday, Dec. 1, (if possible) for purposes of meal count. Refund requests must be in writing.



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# Tri-State Drainage Forum to be held on November 18

The annual Iowa/Minnesota/South Dakota Drainage Research Forum moves back to Iowa this year. The forum will be held on Tuesday, November 18 at the ISU Alumni Center.

A tentative agenda for the program is shown below. For further information, you can go to - <http://www.aep.iastate.edu/drf/>

The program will feature results and updates on drainage research and on-farm projects by university and agency and research leaders from the three states. Pre-registration is \$50 and must be received by November 11. After that, the registration cost increases to \$75.

For further information on the program, you can contact Dr. Matt Helmers at ISU at 515/294-6717 or [mhelmers@iastate.edu](mailto:mhelmers@iastate.edu)

# Ralph Christiansen, former IDDA president, passes away

Ralph Christiansen, who was instrumental in the formation of IDDA and served as its president for many years passed away in August.

Ralph had a long history of distinguished public service. In addition to his work with IDDA, Ralph served as a Justice of the Peace and as Mayor of Fonda, Iowa. He was then elected to the Board of Supervisors in Pocahontas County and proudly served in that role for 24 years. He also served on the Pocahontas County Board of Health and on several area mental health boards. After his retirement, Ralph worked with wind turbine development in Pocahontas County.

A man of many talents, Ralph was an accomplished wood worker, long time sheep shearer and avid fisherman. He served in the Army during the Korean Conflict as a high-speed radio operator.

## Tentative Agenda for 2014 Drainage Research Forum—Tue., Nov. 18

8:00 AM Registration and refreshments

8:50 AM Welcome – Chris Hay, Matt Helmers, and Gary Sands

9:00 AM Importance of multi-state collaboration –John Lawrence (Iowa State University), Michael Schmitt (University of Minnesota) and Karla Trautman (South Dakota State University)

9:30 AM History and future of drainage research – Wayne Skaggs (North Carolina State University)

10:30 AM Break

10:45 AM The Drainage Research Forum over 15 years – Gary Sands (University of Minnesota)

11:15 AM Hydrologic impacts of drainage systems – Larry Weber (University of Iowa)

11:45 AM Phosphorus export at the drainage district scale – Bill Crumpton (Iowa State University)

12:15 PM Lunch and Special Recognition

1:15 PM Estimating Impacts of Subsurface Drainage on Evapotranspiration Using Remote Sensing – Chris Hay (South Dakota State University)

1:45 PM Controlled Drainage and Sub-irrigation in Missouri - Kelly Nelson (University of Missouri)

2:15 PM Seven years of observation of drainage water management in SW MN – Jeff Strock (University of Minnesota)

2:45 PM Break

3:00 PM Nitrate removal from various bioreactor materials – Gary Feyereisen (USDA-ARS)

3:30 PM Modeling the cumulative effects of alter

# Iowa Drainage District pushes EPA to ‘Ditch the Rule’

*Editor’s note – IDDA and the Midas Council of Governments hosted a joint meeting in Fort Dodge on August 20 to discuss the “Waters of the United States” (WOTUS) rule that has been proposed by the United States Environmental Protection Agency. Gary Baise, an attorney from Washington D.C. was one of the featured speakers at the meeting. Below is a blog that he posted shortly after the meeting.*

During the week of August 18, 2014, I addressed the Iowa Drainage District Association regarding EPA’s proposed definition of “Waters of the United States.” The meeting in Ft. Dodge, Iowa, allowed farmland owners to learn about EPA’s proposal.

I found the attendees had done their homework on the EPA proposed rule.

My role was to discuss the EPA proposed rule and its impacts. This is the type of meeting EPA’s Administrator Gina McCarthy should attend, to find out what her Agency may be doing to production agriculture.

IDDA is a non-profit and seeks to promote the benefits of drainage districts and levee districts and safeguards the rights and privileges of the districts as provided by Iowa law.

Most simply do not believe EPA is telling the truth on new Waters of the U.S. definition.

The leaders of IDDA passed out an EPA document, which was the subject of derision. EPA’s document, aimed at farmers, claims EPA is seeking to reduce confusion about Clean Water Act protections; clarifies types of waters covered under the CWA; saves businesses time and money; provides more benefits to public than costs and helps states to protect their waters.

The individuals I spoke to simply do not believe EPA is telling them the truth. (Remember the line, if you like your doctor you can keep your doctor?)

In addition to my presentation, three individuals spoke from an Iowa perspective. One was from the Agribusiness Association of Iowa; another was a manager with the Division of Soil Conservation from the Iowa Department of Agriculture and a representative from the Iowa Farm Bureau.

All the Iowa representatives disagreed with EPA’s assertion that the new definition of “water” would not expand federal control over land and water resources in Iowa. They all believed that EPA’s new proposed rule would trigger substantial additional permitting and regulatory requirements.

In a handout from the Waters Advocacy Coalition, it was asserted that EPA’s proposed rule “...provides essentially

no limit to CWA federal jurisdiction.” The WAC talking points claim that EPA’s revised definition of WOTUS will adversely affect jobs and economic growth.

The handout declared “The potential adverse effect on economic activity and job creation in many sectors of the economy has been largely dismissed by the agencies (EPA and Corps of Engineers) and certainly are not reflected in EPA’s highly flawed economic analysis for the proposed rule.”

The attendees were also advised in the WAC paper that EPA’s proposed rule will cover many small ditches which are remote and carry only minor volumes of water.

The papers handed out at the IDDA meeting were clear on the point that EPA’s proposal provides “...no meaningful limit to federal jurisdiction.” The IDDA meeting presenters told the attendees that if EPA’s rule is adopted, the Iowa Nutrient Reduction Strategy would grind to a halt.

## Permits for repairs?

A new issue was raised that I had not considered in my columns on this proposed rule. The drainage leaders believe EPA’s proposed rule may require CWA permits for drainage repairs and improvements which would take control of drainage districts away from trustees and county supervisors, in violation of Iowa law.

Attendees were also told that EPA’s proposed rule will create a “...disincentive to adopt conservation practices by farmers and landowners due to the cost of time and paperwork.”

Iowa farmers along with directors and trustees of drainage districts are educating themselves on what they believe are the massive negative consequences of EPA’s revised definition of WOTUS. If producers in your area have not begun to address EPA’s expansion of control over your land and water resources, I suggest you contact the IDDA because it is looking into the future and does not like what it sees regarding EPA’s effort to control agricultural production in Iowa.

A representative from the Iowa Farm Bureau explained its effort to educate farmers as to the forthcoming dangers and described the efforts called “Ditch the Rule”. If the rule is not ditched, tillage and animal agriculture may face a difficult future. *To comment on the rule, go to [www.ditchtherule.fb.org](http://www.ditchtherule.fb.org) and follow the instructions to log your comments.*



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# Executive Director Notes

If you have not already done so, please take the time to comment to the EPA on the Waters of the United States (WOTUS) rule. It is extremely important that EPA hear from you about the potentially devastating impacts of this rule. Information on how to comment is contained elsewhere in this issue.

The agenda for the 2014 annual meeting is in place and we are now accepting registrations. I hope to see all of you at our meeting on December 5. The agenda and a registration form are part of this newsletter.

Finally, I was saddened to learn of the death of former IDDA president Ralph Christiansen. Ralph was instrumental in the formation of IDDA and gave countless hours to the organization. I can truly say that I am a better individual for having had the privilege to work with Ralph for many years. In his later years, Ralph was in a nursing home due to declining health. I would visit him occasionally and was amazed (but not surprised) that he continued to keep with IDDA and drainage issues. IDDA would not be the organization it is today without the groundwork that Ralph laid.

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