



Before the Storm

Indiana Association for Floodplain and Stormwater Management

DECEMBER 2018

SAVE THE DATE

2019 INAFSM ANNUAL CONFERENCE
SEPTEMBER 4-6

GRAND WAYNE CENTER
FT. WAYNE, IN

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Greg Main Scholarship Update

Please remember us when making your end of year donations. We have received \$4227 to date with \$3692 received from the silent auction and \$534 in cash donations—meaning with just \$273 more in donations this year the organization will be able to offer **3 scholarships** for the 2019-2020 school year.



INAFSM would like to offer a special thank you to all the members that participated in the silent auction at the 2018 conference or made cash donations to the fund. You helped to make this year's efforts extremely successful.

2018-2019 Scholarship Recipients

Jenna Klinkedinst



Environmental & Ecological Engineering Major—Purdue University

"I am so very thankful for the support shown by INAFSM in my dreams of continuing my education so that I can have a positive impact on the sustainability of global companies and communities. I hope to continue Greg Main's legacy by helping the watersheds and communities here in Indiana that have been a large part of my childhood, education, and my interest in supporting watersheds around the world."

Veronika Snyder Meyer



Engineering Major—Purdue University Ft. Wayne

"As an intern working under designers and engineers in Fort Wayne City Utilities Engineering Department I have learned a lot about managing storm water runoff and how important that is for the community. I want to grow in my experience and in my knowledge of this area in order to help developing communities in water resources. I am grateful for this scholarship which is an enormous help in my educational career."

Gearing Up For The 2019 Conference

The 2019 Annual Conference will be held on September 4-6, 2019 at the Grand Wayne Convention Center.

Abstract Submittals

The INAFSM Conference Committee is now accepting abstracts for the 2019 Conference. Abstract submission forms may be found on the INAFSM website [here](#). Sessions are 50 minutes in length and include 10 minutes for Q & A. If you can not fill 40 minutes you could submit an abstract for 20 minutes to be combined with another presenter.

All abstract submissions should be received by Thursday, January 31, 2019. Sessions and speakers that have been selected will be notified in April.

Awards Submittals

Its never too early to begin thinking about those in the organization that are deserving of an award. The call for nominations will be coming out soon. Award categories include: Excellence in Stormwater Management, Outstanding Stormwater Project, Excellence in Floodplain Management, Outstanding Floodplain Project, Excellent Strides in Floodplain Management, and Outreach-Education.

Flood Resilience Planning — A Starting Point for Critical Infrastructure Protection

In our busy day-to-day lives, few of us think about the critical infrastructure that makes our way of life possible. We don't recognize the interconnectedness of the roads we drive on, the places we work and learn and which provide our medical care, or the facilities that power all those places. And rarely, if ever, do we imagine what we would do without them.

In 1996, the United States established a national program for what it defines as "Critical Infrastructure" – that which is "so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety." These include the infrastructure our communities rely on every day, such as public works, transportation networks, our healthcare infrastructure, and the networks that support financial services.

The program anticipates many kinds of risk, the most common being natural hazards including earthquakes, tornadoes, and floods. While it can be difficult to predict where a tornado might strike or when the next big earthquake will occur, flood risks are knowable. In Indiana and elsewhere in the United States, communities can use floodplain mapping data to identify where critical infrastructure is in harm's way and take steps to protect it.

Challenges in Protecting Critical Infrastructure from Flooding

Flooding is one of the most common natural hazards in the United States and causes many millions of dollars in damages to infrastructure each year. While most communities, particularly those in flood-prone areas, understand the importance of flood control and hazard mitigation plans, they may not be aware of how their planning fits into the larger context of critical infrastructure protection. Understanding the connection between all the different types of infrastructure in our communities combined

with the fact that so much of it is privately owned can make comprehensive protection difficult.



Flood resilience planning can be an excellent starting point for protection because it takes critical infrastructure into account and provides a framework for communication and coordination between public and private stakeholders. Flood resilience planning focuses on developing strategies to reduce flood risk in the long term through better land use planning and the development of standards and ordinances that go above and beyond minimum protection.

Protecting Critical Infrastructure from Flooding Begins with Planning

Critical infrastructure protection begins with threat and vulnerability assessments to identify the infrastructure at risk and the severity of their risk. However, the risk that flooding imposes may be more obvious with some types of infrastructure than others.

With regard to new facilities, the best way to mitigate risk is avoidance. Today, municipalities focus on local-level requirements and have often adopted ordinances based on the one percent annual exceedance probability (AEP) flood (also known as the 100-year flood) elevation to guide the approval of new infrastructure projects. However, these protections may no longer be sufficient, particularly for critical facilities. Consider that most of the



Flood Resilience Planning Continued....

critical infrastructure currently in harm's way is vulnerable because the ordinances that were in effect at the time it was constructed were not always sufficient to protect against the more frequent and more intense rain events that are increasingly common today. Likewise, ordinances today that are based on the one percent AEP floodplain may not afford the protection we will need in the future. In fact, the most recent guidance documents suggest that critical facilities should be placed outside the 0.2 percent AEP (500-year) floodplain or – at a minimum – should be protected to that level.

For existing vulnerabilities, relocating the facility offers the most protection, but it is also the most expensive option and often isn't possible. Relocation usually occurs only after a disaster makes rebuilding elsewhere more cost-effective than flood-proofing the existing structure. However, in many cases flood-proofing an existing critical facility may be the only feasible choice.

Thinking About Critical Infrastructure in Broader Terms

While a community's hazard mitigation plan may address the protection of hospitals, drinking water facilities, wastewater treatment facilities, and other critical public facilities, what happens when flooding shuts down one or more of the community's major employers for an extended period of time putting large numbers of residents out of work?

This scenario became all too real for the residents of Columbus, Indiana and the Cummins Engine Facility, one of the area's largest employers. In the aftermath of the 2008 flooding in south-central Indiana, which caused more than \$100 million in damages to its Columbus facilities, workers weren't able to return to their jobs for about a month. Hoping to avoid repeating that experience, Cummins implemented flood resiliency planning and the plant is now protected to the 2008 flood level (a level even higher than the 0.2 percent AEP flood level at the site).

Critical Infrastructure Protection Doesn't End When the Plan is Complete

As noted earlier, flood resilience planning provides a *starting point* for critical infrastructure protection. Without a doubt, communities that develop flood resilience plans will have a solid foundation for more comprehensive protection. However, having a plan is not enough. Engaging public and private facilities early in the planning process and helping them be more proactive in their facility resiliency planning will lead to more successful planning and provide more protection for the critical infrastructure on which we all depend.

The frequency and magnitude of floods – especially here in the central United States – are on the rise, threatening ever-greater losses in our communities. Flood losses described in financial terms cannot begin to describe the human cost inflicted by flooding in our communities such as job losses and displacement, interruptions in the utilities their homes and businesses depend on, and difficulty in accessing the healthcare facilities in their neighborhoods, to name a few. By planning for critical infrastructure protection now, we can reduce these costs, helping to ensure that the next big flood doesn't become the next big disaster.

Siavash Beik is Vice President and Principal Engineer at Christopher B. Burke Engineering (CBBEL). With more than 35 years of experience working on complex water resources projects including water resources planning and hydrologic modeling for flood control and mitigation, Siavash is passionate about helping communities explore ways to better protect their critical infrastructure from flood risk and minimizing the impacts of flooding.



INAFSM Becomes a Charter Member of NMSA

In an effort to provide more benefits and national information for our members who are interested in MS4 and EPA stormwater issues, INAFSM has become a charter member of the National Municipal Stormwater Alliance (NMSA). The alliance is made up of associations like ours so that we all have a common national voice. Our relationship with NMSA will supplement and complement our continuing work with ASFP. We will continue to share information about NMSA as it becomes available. A summary of the alliance's purpose, goals, and status can be found on their website [here](#).

National Stormwater Report Card

The National Municipal Stormwater Alliance (NMSA) is partnering with the American Society of Civil Engineers (ASCE) to develop a new [National Stormwater Report Card](#). You may be familiar with ASCE's Infrastructure Report Card that does not currently include urban stormwater runoff. This effort by NMSA is meant to support and complement the existing ASCE report card by increasing coverage of the water sector. Please take a few moments to complete the NMSA survey and [see the flyer](#) for more details.

Creekside Corporate Park Taking Zionsville by Storm



An award-winning office park is taking the town of Zionsville by storm. Creekside Corporate Park, owned by the Zionsville

can accommodate users from 15,000 to 150,000 square feet. If each parcel is optimally developed, Creekside could yield more than 540,000 square feet of office space and 15,000 square feet of restaurant or retail space.

The property's planned unit development (PUD) ordinance requires developments to utilize LID stormwater features for parking lots and building rooftops. To set the design standard, the roadway within the development utilizes roadside bio-swales to handle stormwater runoff. The roadway system utilizes nearly 3,100 linear feet of bio-swales with amended soil and native plants to treat the stormwater runoff within the right-of-way. Two additional rain gardens were also installed prior to the discharge to the natural stream traversing through the development.

Redevelopment Commission, is a state-of-the-art conservation office park. HWC Engineering provided project management, project engineering, surveying and construction inspection for the project, which includes corporate headquarters and office buildings built alongside beautiful ravines and woodlands. Of its 66 acres, 41 acres are developable and 25 acres are maintained for green space and passive recreation.

Creekside is the first office park in the Indianapolis region to fully utilize low impact development (LID). As a result, there is very little stormwater discharge off the property and into adjacent waterways. LID focuses on cleansing water at the source through the use of rain gardens, native plants and drainage bio-swales. Each of these stormwater quality measures also requires a unique mixture of engineered soil to ensure proper drainage and plant survival. Aside from these environmental benefits, by reducing the need for or size of traditional stormwater storage systems, LID also allows users to maximize parcel space.



The conceptual master plan also includes a new pedestrian bridge over Eagle Creek, which provides a second connection between Creekside Corporate Park and the town of Zionsville's Village District. Creekside also includes nearly a mile of trail within its natural areas. These trails tie into the Zionsville Parks Department trails on the north side of Eagle Creek. Additionally, these trail options support physical activity and provide an opportunity for people to exercise or take a relaxing stroll through the woods. As part of the trail system, the corporate park includes an outdoor fitness area open to the public and within easy access for employees within the park.



Creekside's conceptual master plan includes 14 parcels, but the park has been designed with great flexibility. Creekside



Ward's Floodplain Model

INAFSM has a Ward's Floodplain Model available for checkout to any member trained to use the model. The model is designed to show the impacts that unplanned development and human interactions have on floodplains and stormwater. The model allows the presenter to use hands on demonstrations to show these impacts. Interested in checking out the model? [Contact us!](#)



ASFPM Member Award

We are very pleased to announce that Siavash Beik just received the ASFPM Meritorious Lifetime Achievement in Floodplain Management Award! This prestigious award was given to Siavash at the 2018 ASFPM National Conference last June. Congratulations Siavash! We are all very proud of you!!



This award recognizes individuals who, throughout their career, have achieved success in a significant aspect of floodplain management. These efforts shall include, but not be limited to, policy, outreach, implementation, education, government, research, litigation or other actions that demonstrate the advancement of flood loss and risk reduction within the nominee's professional realm. Unlike many our other award categories, individuals from the federal and private sectors are eligible for nomination for the Meritorious Lifetime Achievement in Floodplain Management Award.

Floodplain Training Opportunities

December 12—[How to Conduct a Substantial Damage Assessment](#) (webinar)

May 6—[Hazard Mitigation Assistance: Developing Quality Application Elements: E0212](#) (EMI)

March 11 — [Recovery from Disaster: The Local Community Role: E0210](#) (EMI)

March 18—[Managing Floodplain Development thru the NFIP: E0273](#) (EMI)

March 25—[NFIP/Community Rating System: E0278](#) (EMI)

May 13—[Retrofitting Floodprone Residential Buildings: E0279](#) (EMI)

July 15—[Advanced Floodplain Management Concepts II: E0282](#) (EMI)

Are there any training opportunities that you know of and would like to share with other members? Please contact the Outreach Chair at outreach@inafsm.net with the information.

Stormwater Training Opportunities

December 13 — [A Multi-Faceted Approach to Managing Stormwater Projects](#) (Webinar)

January 23—[A Pathway to Digitizing Your Stormwater Program](#) (Webinar)

February 7 — [Estimating Parameters for an Effective Sediment Basin/Trap](#) (webinar)

[Construction On-Demand Webcasts](#)
[Erosion Control On-Demand Webcasts](#)
[Stormwater On-Demand Webcasts](#)

Are there any training opportunities that you know of and would like to share with other members? Please contact the Outreach Chair at outreach@inafsm.net with the information.

Help INAFSM Promote Your Good Work on Social Media

If you are on LinkedIn, Facebook, or Twitter INAFSM needs YOU! We need you to connect with us by following and liking our pages. Please also share our posts and offer comments on our posts. This brings more attention to best practices in floodplain and stormwater management.

Facebook:
<https://www.facebook.com/INAFSM96>

LinkedIn:
<https://www.linkedin.com/company/10428091>

Twitter:
<https://twitter.com/inafsm>

Requirements of the Flood Control Act

The Flood Control Act (IC 14-28-1) is a state law that requires proposed fill, excavation, construction of a building, and other development activities in the floodway to be approved by the Indiana Department of Natural Resources prior to construction. Smart development of the floodplain saves money, resources, and lives. The purpose of the Flood Control Act is to prevent loss of property and loss of life caused by flood events.

Allowing floodplains to remain undeveloped reduces the impacts of floods, and while preserving these areas is a wise choice, many property owners and communities often desire development for various reasons. The DNR reviews projects proposed in the floodway to mitigate the effects of developing in these high risk areas and to ensure the development won't adversely affect the expected height of flood water during a regulatory flood (also known as the base flood, 100-year flood, and 1% annual chance flood).

Many people confuse the terms floodway and floodplain. For regulatory purposes, it's important that we know the difference between these terms. Floodplains are high hazard areas that are expected to get wet during a flood event. Floodplains are comprised of two parts: the floodway and the flood fringe. Under the Flood Control Act, the DNR only has jurisdiction over construction in the floodway portion of the floodplain. This is the area required to convey rapidly discharging water during a regulatory flood event. Some floodplains are shown on FEMA's Flood Insurance Rate Maps (FIRMs) and some floodplains are delineated so that the floodway and flood fringe areas are clearly

shown. However, that's not always the case. It's important to note that all streams have a floodway – whether shown on a map or not. The DNR can help determine what is considered floodway if a community or private property owner isn't sure. The Division of Water's "Best Available" flood hazard layer can be viewed on the Indiana Floodplain Information Portal (INFIP) and on the Division of Water Online Research Center (DoWORC). Both maps can be accessed from the Division's website: <https://www.in.gov/dnr/water/>.

In addition to the state's permitting authority under the Flood Control Act, communities that participate in the National Flood Insurance Program (NFIP) have adopted a local floodplain ordinance that applies to the entire floodplain – not just the floodway. This means that before starting any construction project in the floodplain, coordination with the local Floodplain Administrator's office in addition to the DNR Division of Water should occur.

Even communities without a local floodplain ordinance must comply with the Flood Control Act and should ensure that projects in the floodway are approved by the DNR prior to granting local approval.

Contact the DNR Division of Water before starting any construction project in the floodway. Information about the permit application process can be found on the [Division of Water website](#). Questions about the application process can be directed to the Technical Services section of the Division of Water at toll-free (877) 928-3755, Option 1 or water_inquiry@dnr.IN.gov.

-Allysson Oligier, Division of Water

Changes Coming to FEMA Funding Priorities

A member of our organization, Rodney Renkenberger, was integral in working with ASFPM to provide information to FEMA regarding changes to the Pre-Disaster Mitigation Program (PDM). Previous rules made traditional flood mitigation projects the lowest priority when awarding grants. The PDM priorities made non-flood hazard mitigation projects and flood hazard mitigation projects excluding acquisition, elevation, or reconstruction higher priorities than flood hazard mitigation project that included acquisition, elevation, or reconstruction. Rodney was able to provide data by going through all the awarded grants and showing that only \$740,000 was

awarded in 2017.

The data found by Rodney allowed ASFPM to go to FEMA leadership and make a persuasive argument that changes to the program were needed. The different types of hazards are being looked at under a single priority level, and the disadvantage for employing acquisition, elevation, and reconstruction were de-emphasized.

The end result of these changes is that traditional non-structural flood mitigation projects are on the same competitive footing as all natural disaster mitigation types.



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INAFSM encourages interested parties to contribute articles, photographs, and other items of interest for publication. Items and other editorial matters should be directed to:

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The opinions contained in certain articles are those of the individual author(s) and do not necessarily reflect the opinions of the INAFSM Board and/or its members. INAFSM reserves the right to edit material prior to publication.

“Promoting sustainable floodplain and stormwater management”

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