WATERLINES

News affecting the management and use of Indiana's water resources

DIVISION OF WATER
INDIANA DEPARTMENT OF NATURAL RESOURCES
SUMMER 2015

COLUMBUS REGIONAL HOSPITAL FLOODWALL

A new flood wall in Columbus in Bartholomew County will greatly reduce damages to Columbus Regional Hospital the next time Haw Creek floods.

Columbus is the county seat. It has a population of about 44,000 and is about 40 miles south of Indianapolis. The city is home to many of the county's critical facilities, including the hospital.

Located near the city's center, along Haw Creek, the hospital is a major employer, the only hospital in the county, and the keystone of a 10-county regional health system. The hospital has 225 beds and provides emergency and surgical services and comprehensive care in numerous specialty areas.

On June 7, 2008, a historic flood occurred on Haw Creek, a tributary of the East Fork White River. It caused the hospital to temporarily close for the first time in its 90-year history.

The event was a real-life demonstration of the devastation even a small amount of flooding can cause. The relatively shallow flooding from Haw Creek inflicted millions of dollars of damage on the facility. Flooding reached approximately 6 inches above the first floor and fully inundated the basement via a below-grade loading dock. Those

The flood wall is composed of a series of 15 flood gates that line each pedestrian and vehicular entrance point into the hospital. (Photo by Emilie Pinkson, City of Columbus)

two floors housed the hospital's laboratory, pharmacy, information services, food services, and the heart of its mechanical and electrical systems.

A total of 157 patients and 300 staff members were

Also in this issue

evacuated from the building. Overall, the complex suffered more than $171 million in damages and needed to remain closed for four-and-a-half months.

To guard against the next flood, the hospital embarked on an ambitious project in June 2011 aimed toward protecting the building and keeping it functional during a flood. The hospital's newly completed flood wall surrounds the main hospital structure, its ancillary buildings, the helipad, and additional grounds that offer a safe, dry place for a future evacuation.

The flood wall was built to a height 2 feet above the Base Flood Elevation of Haw Creek in that area and varies in height from knee-high to several feet, based on the relative elevation of the ground around the hospital. There are 15 openings along the 2,400-foot wall to allow foot and vehicle access to the hospital. In the event of a flood, the gate at each of these openings is triggered by water filling an underground basin. None of these 15 water-activated gates that surround the hospital requires human or electrical intervention. A video showing a test of the gates can be viewed at **https://www.youtube.com/watch?v=QR53fXsqkNo&feature=youtu.be**. In addition, the below-grade loading dock that once contributed to the water accessing the basement has been filled.

Approximately 75% of the $4.7 million cost of the flood wall was paid for using FEMA Hazard Mitigation Assistance funds. The remaining costs were paid by the hospital.

Article submitted by FEMA

NON-SUBSTANTIAL IMPROVEMENTS TO RESIDENCES IN THE FLOODWAY – RESPONSIBILITIES OF THE LOCAL FLOODPLAIN ADMINISTRATOR

The Flood Control Act was modified in 1993 by adding Section 13.4 (re-codified as IC 14-28-1-26 on July 1, 1995). This amendment allows construction of non-substantial improvements to residences in the floodway without obtaining a permit from the DNR.

Additions to structures in floodways

Sec. 26. (a) This section does not apply to the construction of an addition to a residence located in a boundary river floodway.

(b) Subject to:

(1) subsection (c); and

(2) the restrictions imposed by the unit (as defined in IC 36-1-2-23) in which the abode or residence is located; a person may construct at least one addition to an abode or a residence that is located in a floodway.

(c) A person may not construct an addition to an abode or a residence located in a floodway if the addition, in combination with all other additions to the abode or residence that have been constructed since the abode or residence was originally built, would increase the market value of the abode or residence to an amount more than 50 percent greater than:

(1) the market value of the abode or residence if no additions have been constructed since the abode or residence was originally built; or

(2) the approximate market value the abode or residence would have in the form in which the abode or residence was originally built if at least one addition has already been constructed.

(d) For the purposes of subsection (c), the market value of an abode or a residence does not include the value of the land on which the abode or residence is built.

This amendment not only relaxed the regulations to allow additions/improvements to residences in the floodway that previously were prohibited by statute, but also essentially shifted

the responsibility of tracking improvements to the local communities.

Non-residential structures fall under other sections of the Flood Control Act and require prior authorization from DNR for improvements, additions, repairs, reconstruction, and new construction.

The language differs from federal regulations. There is a cumulative requirement in regard to the non-substantial additions/improvements and restricted to a maximum of only 50% using fair market value comparisons. The local floodplain administrator must ensure that any initial proposed addition/improvement is non-substantial, and that administrator must maintain records that are easily tied back to ensure that any future additions/improvements are calculated cumulatively in accordance with the statute.

With a stated threshold to the allowable "improvements," how does a local community successfully track these residential improvements? More and more communities are using highly sophisticated permitting systems and GIS to assist in tracking information (tagging sites).

More importantly, the local floodplain administrator must be aware that requiring the applicant to demonstrate any proposed residential addition will not adversely affect the efficiency or unduly restrict the capacity of the floodway.

Four particularly important items should be noted:

1. The **floodway is a high-risk area** — Higher velocities in the stream, carrying more debris and risk of impact during time of flood. Overall this is not a wise place to have a residence. This is what legislators originally recognized when the Flood Control Act was written.

2. Most homes in the floodway were built before the risk was identified. They would not be allowed today. **Most are built too low** to be protected from damage during a regulatory flood event. Making an addition or improvement to a home already too low puts even more investment at risk for flood loss. Perhaps the owner should **consider elevating** the addition or entire structure, including the addition.

3. If a home becomes substantially damaged in the floodway, the owner must then bring the building into compliance. It doesn't matter if the owners just put on that non-substantial addition or improvement before the flood.

4. Owners should **weigh all the costs and the risks**. They should be aware of the benefits of flood insurance and the potential costs of not having flood insurance.

Local floodplain administrators must document these improvements. If a community participates in the NFIP, DNR — as the coordinating agency for the NFIP — may periodically review permit records. The community should be prepared to demonstrate how it is tracking non-substantial additions/improvements to residences in the floodway.

CONGRATULATIONS

The CFM exam was offered in Indianapolis on March 10. This offering resulted in five new CFMs for Indiana and one for Tennessee. Congratulations to Ashton Fritz of Carmel, Bob Hrezo of Greendale, Michael Lautzenheiser of Bluffton, Brian Powers of Indianapolis, Randy Sexton of Albion, and Donald Anthony of Franklin, Tennessee.

This national program for professional certification of floodplain managers was established by the Association of State Floodplain Managers. The program recognizes continuing education and professional development that enhance the knowledge and performance of local, state, federal and private-sector floodplain managers.

AO ZONES?

Two Indiana communities have had AO Zones on their Flood Insurance Rate Maps (FIRMs) for several years. Now, two more Indiana communities are seeing this perhaps unfamiliar flood zone designation on their new FIRMs. This may raise some questions.

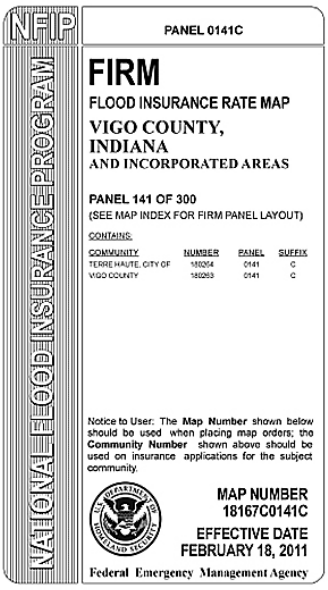
Where are they? In Indiana, Unincorporated Vigo County (south side of Terre Haute) and the Town of Medora (Jackson County) have had these shallow flood areas designated as AO Zones for several years. More recently, areas of shallow flooding have been mapped as AO Zones in Unincorporated Jackson County (just outside Medora) and the City of Franklin (Johnson County). *Please note that at the time of this article the AO Zones for the City of Franklin are on preliminary FIRMs and not yet effective.*

What are they? AO Zones are shallow flood areas (1-3 feet) where FEMA provides a base flood depth. Because there is no Base Flood Elevation (BFE), the rules are different. When you see these zones on a FIRM, they typically state the base flood depth after the zone—Zone AO (Depth 2 feet). However, some AO Zones do not state a specific depth.

What are the building requirements in an AO Zone? AO Zones will not be located in the floodway, so development in these areas will not require authorization from the DNR. AO Zones are one of the flood zone designations for the Special Flood Hazard Area and subject to local floodplain regulations. Local permits are required for development in AO Zones.

All new construction and substantial improvements of residential structures shall have the lowest floor (including basement) elevated above the highest adjacent grade:

- At least as high as the depth number specified in feet on the community's FIRM (plus 2 feet—required by Indiana), or
- At least 2 feet if no depth number is specified (plus 2 feet—required by Indiana)


NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0141C

FIRM

FLOOD INSURANCE RATE MAP

VIGO COUNTY, INDIANA AND INCORPORATED AREAS

PANEL 141 OF 300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
TERRE HAUTE, CITY OF	180264	0141	C
VIGO COUNTY	180263	0141	C

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
18167C0141C

EFFECTIVE DATE
FEBRUARY 18, 2011

Federal Emergency Management Agency

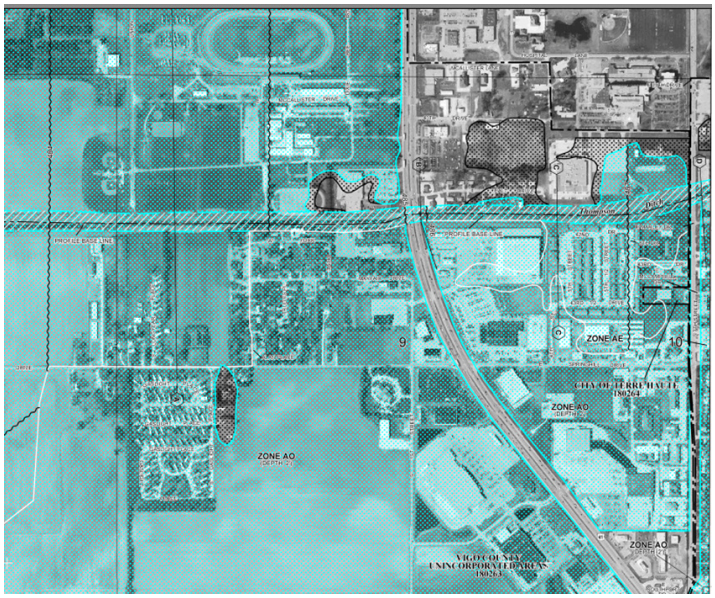
All new construction or substantial improvements of nonresidential structures shall meet the above requirements or, together with attendant utility and sanitary facilities, be floodproofed to the same elevation.

In AO Zones, adequate drainage paths are required around structures on slopes to guide floodwater around and away from proposed structures. (Requiring this through the community is a good idea because it will prevent local drainage problems from causing surface flooding.)

How is compliance verified in an AO Zone? A FEMA elevation certificate is needed to verify compliance for elevated structures in an AO Zone. There is a specific section of the elevation certificate to complete (Section E plus F) for an AO Zone. An elevation survey is not required.

A FEMA floodproofing certificate is needed to verify compliance for floodproofed structures in Zone AO. A Registered Professional Engineer must sign the floodproofing certificate.

How do they rate a structure for flood insurance in Zone AO? Rating is generally determined by when the structure was built, how it was built, and whether it is a residential, non-residential, or other residential building. Other residential building is a residential building that contains more than four apartments/units. This category includes condominium and apartment buildings as well as hotels, motels, tourist homes, and rooming houses where the normal occupancy of a guest is six months or more. These buildings are permitted incidental occupancies. The total area of incidental occupancy is limited to less than 25% of the total floor area within the building. Examples of other residential buildings include dormitories and assisted living facilities.



Vigo County FIRM Panel 141 with AO zones.

If the building was constructed before the community's first floodplain maps, it would have been considered Pre-FIRM for rating purposes, and the premium subsidized (artificially low) prior to the reforms to the National Flood Insurance Program in 2012 and 2014. Pre-FIRM structures that are primary residences for which the owners have maintained continuous coverage are still eligible for subsidized rates. Generally, subsidized policies are now being slowly phased out. Rates for all other pre-FIRM structures are on a steady path of increases until full-risk rating is achieved or have already transitioned to full-risk rating. Additional factors in rating a Pre-FIRM structure include the type of construction (i.e., no basement/enclosure, with basement, elevated on crawlspace).

Buildings constructed after the community's first floodplain maps and substantially improved structures are considered post-FIRM. Rating for post-FIRM structures is based on compliance. The key component is the elevation of the lowest floor. However, the elevation of mechanical equipment and crawl space construction can create a problem if it's not done in accordance with the community's floodplain regulations. If the "as-built" elevation certificate confirms that the lowest floor is equal to or greater than the community's elevation requirement, the lowest rate is used.

In Indiana, the minimum elevation requirement for most structures is the Flood Protection Grade, which is 2 feet above the base flood elevation. In an AO zone, depth 2 feet, would require that the lowest floor be at least 4 feet above the highest adjacent grade (original grade). Because the base flood is stated as a depth, building elevations in an AO Zone are documented on the elevation certificate as measurements in either feet or meters, not by an elevation survey.

More Questions? Contact the Division of Water at **water_inquiry@dnr.IN.gov**.

THE COMMUNITY RATING SYSTEM'S COMMUNITY SELF ASSESSMENT TOOL: NOT JUST FOR CRS COMMUNITIES!

The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions to reduce flood damage to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management.

While joining the CRS program may not be the right path for every community, many communities can benefit from a more thorough understanding of their flood hazard and a comprehensive cataloging of those properties, areas, and assets that are most at risk. The Community Self Assessment is designed to do just that—it is a tool that will enable a community to better understand its flood exposure and begin the process of deciding how its members wish to reduce their risks. The

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tool can be found at **crs2012.org/self-assessment/**. It could also be a useful tool during the development of a community's Hazard Mitigation Plan.

The more than 100 questions and follow-ups function as a foundation for greater understanding of the flood risks to the community using the knowledge of local community officials and others. Before using the tool, the community will want to have a few materials on hand; however, every community may need to have different materials available in order to complete the assessment. Therefore, the suggestions below are not meant to be all inclusive, but rather only suggestive of what material might be helpful in assessing the flood risk.

Not all the documents listed may be available to the community in a timely manner, but a few of the most helpful items include: a map of the community (GIS-based, if possible); the Flood Insurance Rate Map and Flood Insurance Study (if applicable) for the jurisdiction; the community's Hazard Mitigation Plan; records of high water marks (if available); and other data, including photos, news articles, and other ephemera of past flooding events. Also helpful are lists naming or locating critical and essential facilities, major employers, and industrial and commercial areas.

The tool can be used to identify flood risk reduction activities and develop programs that are most appropriate for the community. On the flip side, not all programs and activities are appropriate for all communities. For example: Non-coastal communities will find little value in activities related to Coastal A Zones, and a densely populated urban village might not be able to use Open Space Planning activities if it is built with limited parkland or other unused areas. The tool is meant to help focus a community's efforts in an efficient manner. This information will help a community identify appropriate flood risk reduction activities.

The Self Assessment is designed to be able to be completed by one person in about a day. However, the tool becomes much more valuable if representatives from all the departments that will be included in a community's flood risk reduction efforts are involved. Depending on the community, its size, population, flood exposure, and other factors, this may mean that representatives from the community's executive's office; clerk's office; and departments of public works, environmental, sanitation, parks, emergency management, police, fire, utility, planning, zoning, GIS, building, and other pertinent offices should be involved. Of course, not all communities will have these departments, but the net should be cast as widely as possible to garner the most comprehensive body of knowledge about the community's flooding risk.

When the Assessment team has been gathered, it is time to get to work. The questions of the Self Assessment are grouped into five subject task areas or "steps."

1. Your Floodplain (What's in your floodplain? What data do you have?)
2. Identifying and Mapping Your Hazards (Which hazards threaten your community? Where?)
3. Identifying Assessment Areas (Which types of areas are at risk from which types of flooding?)
4. Analyzing Your Assessment Areas (What's in these specific areas?)
5. Overview and Next Steps (Given all of this, how might you reduce your exposure?)

These five steps can provide a roadmap to more resilient communities by providing a framework to more thoroughly understand the physical threats to the jurisdiction and comprehensively cataloging those properties, areas, and assets most at risk.

Step 1 will build the framework for later analysis with foundational questions that serve to paint a picture of the geography of the flooding in the community and how the community is currently equipped to handle a flooding emergency.

Step 2 asks the community to literally map out the hazards it faces. This may have already been done in a general way, but Step 2 enables those participating in the exercise to think even more critically about the problem.

There are no assessment questions in **Step 3**. Rather, this step is to be used as a way of identifying

areas of concern. Using the map created or updated in the prior section, the team will identify unifying traits for those areas determined to be at risk. A trait, or "characteristic," can be nearly any common feature or attribute to the people, buildings, use, geography, or other identifier in an area. A characteristic can be language spoken, age of residents, land use, other hazards (such as sinkholes or ice jams), dam failure inundation areas, critical facilities, rental properties, etc. Any quality that may make an area unique should be considered. Importantly, the area may not actually even be in a mapped flood hazard area, but may be an area that needs consideration in the event of an emergency.

In **Step 4**, the team will continue to break down each assessment area identified in Step 3. Thirteen questions for each area will help the community better understand the needs and risk for that particular location. Each question asks that the team name specifically what the characteristics of the assessment area are and follows up with secondary questions for some answers. The team should be illustrative in this exercise. Remember, the point of this exercise is to lay the foundation for future flood resilience.

Finally, in **Step 5**, members of the community will have the opportunity to reflect on what they have learned during the Self Assessment. A series of 15 statements for team consideration will, if checked as "true," open a dialog box of recommendations and "next steps" that the community may have emailed to them for future reference and consideration in their flood hazard risk planning. For example, clicking "true" to the statement, "We have natural features that should be protected from development or areas that perform important natural floodplain functions," will provide recommendations and suggestions on how to manage those areas to the benefit of maintaining their natural functions in helping reduce the flood risk to the community.

These recommendations can be collected and used as basis for further research and action in the community to address their flood risk, regardless of the community's intent to join the CRS.
After completion of the CRS Community Self Assessment, even those communities that had a good notion of their flood hazard should—with the cross-pollination of knowledge and ideas from all the people on the team—leave the exercise with a deeper, more comprehensive understanding of the flood risk they face, and the steps they can take to become more resilient.

Article submitted by FEMA

ATTENTION

UNLESS YOU NOTIFY US, THIS WILL BE YOUR LAST PRINTED ISSUE

To decrease operating costs, the DNR Division of Water is reducing its printing of Waterlines. To best serve you, a self-addressed-stamped postcard is provided in this issue. Please mark the postcard indicating how you would like to access Waterlines in the future. Three options are available.

1. At **dnr.IN.gov/water/5049.htm**.

2. By email. Click on the included link to go to the newest issue. If you wish to be notified by email, you will need to provide your email address.

3. If you have no Internet access and require a printed copy, mark the postcard accordingly and provide your mailing address.

Failure to indicate your preference by returning the postcard by Aug. 28 will be interpreted as you saying either option 1 or 2 will work, and you will be removed from the postal mailing list.

CONFERENCE CORNER

INDIANA ASSOCIATION FOR FLOODPLAIN AND STORMWATER MANAGEMENT

Indiana Association for Floodplain and Stormwater Management (INAFSM) Conference. Sept. 9-11. This 19th annual gathering of floodplain and stormwater professionals from across Indiana and the Midwest will be at Pokagon State Park in Angola. See **inafsm.net/2015-conference** for more.

FEMA's Emergency Management Institute (EMI)

L363: Multi-Hazard Emergency Management for Higher Education. Jul. 14-16. Stevens Point, Wis. This three-day course provides institutions of higher education with the knowledge and planning strategies to better protect lives, property, and operations within the context of comprehensive emergency management by using the Incident Command System (ICS) to develop and carry out an Emergency Operations Plan (EOP).

E278: NFIP/Community Rating System. July 27-30, Aug. 31 - Sept. 3. This course covers the CRS, a nationwide initiative of FEMA's National Flood Insurance Program. It describes activities eligible for credit under CRS, how a community applies, and how a community modifies an application to improve its classification.

E273: Managing Floodplain Development through the NFIP. Sept. 21-24. Emmitsburg, Md. This basic NFIP four-day course lays the foundation for working with the NFIP in application in the field, and is targeted for local, tribal, state and federal floodplain managers. Topics covered include outreach, mapping (risk determination), rules and regulations, permitting, elevation certificate, substantial damage and substantial improvement, flood insurance and legal issues.

EMI also offers many more courses in Emmitsburg, around the country and through webinar training opportunities. For additional information on EMI classes and webinars, please visit EMI's website at **training.fema.gov/emicourses/docs/schedules/2015%20emi%20course%20schedule%202nd%20semester.pdf?d=2/20/2015**.

Indiana Department of Homeland Security

Please visit the Indiana Department of Homeland Security's Training Calendar for upcoming courses and training at **dhs.IN.gov/emermgtngpgm.htm**.

The work that provides the basis for this publication was supported by funding under a cooperative agreement with the Federal Emergency Management Agency. The author and publisher are solely responsible for the accuracy of the statements, and interpretations contained in the publication. Such interpretations do not necessarily reflect the views of the Federal government.

THANK YOU

Thank you to those contributing to this issue of *Waterlines:* Debbie Smith, Marty Benson, Bill Marsh, and Ed Reynolds.

Editor – Anita Nance

Waterlines is published biannually as a public service by the Division of Water, Indiana Department of Natural Resources.

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Division of Water
Indiana Department of Natural Resources
402 West Washington Street, Room W264
Indianapolis, Indiana 46204-2641
Phone: (317)232-4160
Toll free 1-877-WATER55

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