

Floodplain Management *Today*



NEBRASKA DEPARTMENT OF NATURAL RESOURCES FLOODPLAIN SECTION

FEBRUARY 2012

Developing with Flooding in Mind Has Significant Financial Benefits

By Bill Jones

When building in mapped floodplains it is important to understand that flood insurance rates can have significant impacts. Development taking place after a Flood Insurance Rate Map (FIRM) has become effective (Post-FIRM development) is rated for flood insurance based on the elevation of the lowest floor compared to the Base Flood Elevation (BFE). The lowest floor includes the basement, crawl space, or any other enclosed space under the house.

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In the State of Nebraska, it is required that all new buildings in mapped floodplains must have their lowest floor at least one-foot above the BFE. As shown in the table below, each additional foot above the BFE can provide significant benefit.

In designated Zone AE floodplains elevating to 2-feet above BFE compared to the minimum 1-foot state standard reduces the flood insurance premium for a \$75,000 house from \$575 to \$374 per year. In Zone A elevating to 2-foot above BFE reduces premiums for the same \$75,000 house from \$940 to \$386 per year. Zone AE floodplains are typically located in urban areas, whereas Zone A floodplains are typically located in small communities and rural areas. Rates for the two zones are different because Congress requires that the National Flood Insurance Program (NFIP) be actuarially sound and analysis shows greater flood losses in Zone A than in Zone AE rated at comparable elevation differences between lowest floor and BFE.

Comparison of Post-FIRM Construction Flood Insurance Rates

Elevation above BFE	Rates per \$100 of Coverage (Basic/Additional) ¹	
	Zone AE	Zone A
+2 ft.	0.42/0.08	0.44/0.08
+1 ft.	0.75/0.10	1.35/0.13
0 ft.	1.78/0.13	1.35/0.13

¹Basic refers to insurance purchases up to \$60,000. Additional is for insurance purchases from \$60,000 to \$250,000 (policy maximum). Premiums also include a \$40 Federal Policy Fee and a \$70 fee for Increased Cost of Compliance.

Rates for the two zones are different because Congress requires that the National Flood Insurance Program (NFIP) be actuarially sound and analysis shows greater flood losses in Zone A than in Zone AE rated at comparable elevation differences between lowest floor and BFE. (Continued on page 2)

Developing with Flooding in Mind Has Significant Financial Benefits

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For insurance purposes, it may be beneficial to consider bringing in fill to the site and elevating the building pad above the BFE. With survey and an application to FEMA with a one-time \$425 fee, the building pad can be removed from the flood insurance requirement entirely. Be aware that an "Acknowledgement of Fill" form is required from the community to process a Letter of Map Amendment Based on Fill. However, not all communities are willing to assume this added responsibility.

Providing this information to prospective developers before construction begins could provide significant financial benefit over time; in addition, to the added flood protection it would provide for the building.

Hazard Mitigation Opportunities

By Craig Wacker

The past several years have been particularly devastating to the state of Nebraska in terms of natural disasters. According to the Nebraska Emergency Management Agency (NEMA) in the past 6 years there have been 23 federal emergency/disaster declarations at an average yearly cost to the State of about \$5 million per year. Compare that to the prior six years (1991-2006) where there were 13 federal emergency/disaster declarations at with an average annual cost of \$543,000. That equates to nearly ten times the cost and almost twice the disasters.

While these events are devastating when they occur and nearly impossible to predict, we can take steps to lessen their impact in the future, particularly flood related disasters. While we will never know when and where a tornado will hit or if a blizzard/ice storm will cripple a community, we do generally know where floodwaters will rise. This is illustrated in the figure (opposite page) showing the disaster declaration due primarily to 2011 flooding on the North Platte and Missouri Rivers. Of the 23 declarations in the past six years 13 listed flooding as a contributing factor.

There are numerous solutions for preventing flood damage, and there are several different funding mechanisms for communities to use to enact many of those solutions. Within the Department of Natural Resources (NDNR) we work with five different funding mechanisms all of which are funded through the Federal Emergency Management Agency (FEMA). The cost share for these programs is 75% federal and 25% local. There are many ways that local match can be met it does not all have to come from a local community's budget. *(Continued on page 3)*

Mark Your Calendar

Floodplain 101 Workshop

North Platte – April 10, 2012

Norfolk – April 11, 2012

Omaha – April 12, 2012

Annual NeFSMA Conference

Date and Location – TBD

Further information on upcoming events is posted, when available, on the Nebraska Floodplain and Stormwater Management Association (NeFSMA) website at <http://nefsma.com>.



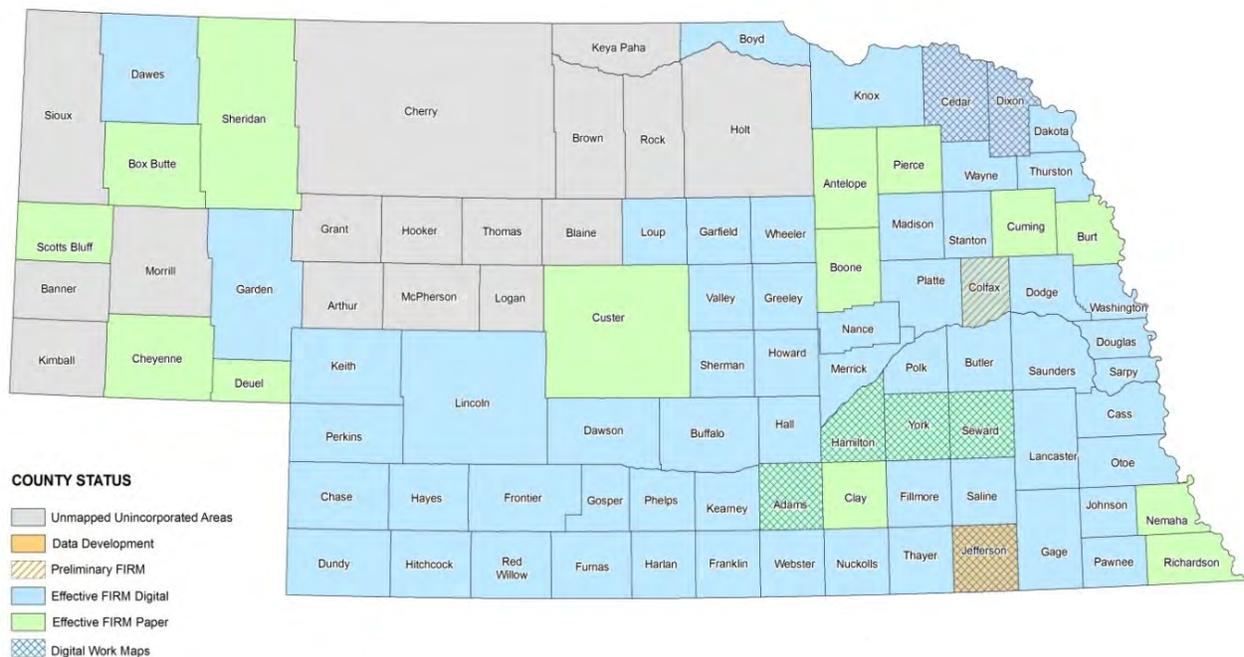
Floodplain Mapping Status

By Nataliya Lys

As the state agency responsible for all matters pertaining to floodplain management in Nebraska, the Nebraska Department of Natural Resources (NDNR) has an active role in producing and providing technical data and floodplain maps to Nebraska communities. A floodplain map is a vital tool for the floodplain management regulations and for the mitigation of flood damages. As shown in the figure below, 56 of Nebraska's 93 counties have effective Digital Flood Insurance Rate Maps (DFIRMs) and one county (Colfax) has a preliminary DFIRM. Effective and preliminary DFIRMs are available through NDNR's Interactive Floodplain Map at <http://maps.dnr.ne.gov/Floodplain/default.aspx>.

FIRMs MAPPING STATUS IN NEBRASKA

As of January 2012



Last year, NDNR launched the Lower Little Blue Watershed Risk MAP Project that will assess and remap flood risks within Jefferson County. The project is undergoing a Data Development stage. Preliminary Map Production is scheduled for completion in December 2012.

In the past year, through the support of a Community Development Block Grant from the Nebraska Department of Economic Development, NDNR has produced Digital Work Maps for five counties: Adams, Hamilton, Jefferson, Seward and York. These maps revised and updated the 1-percent annual chance floodplain boundaries within the counties. The Work Maps were prepared according to the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners* using the most current data including Light Detection and Ranging (LiDAR) topographic data and were produced with the intention of being published as DFIRMs in the future, if FEMA initiates Risk MAP Mapping projects within those watersheds.

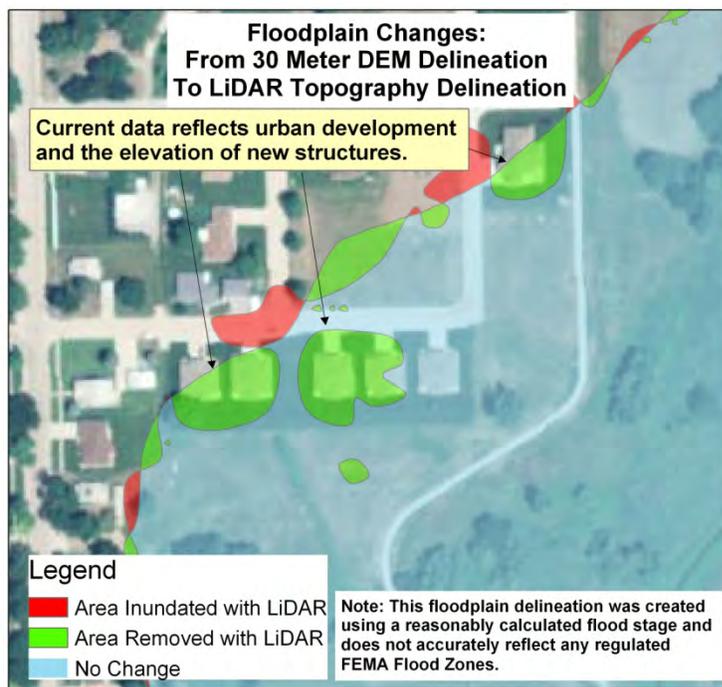
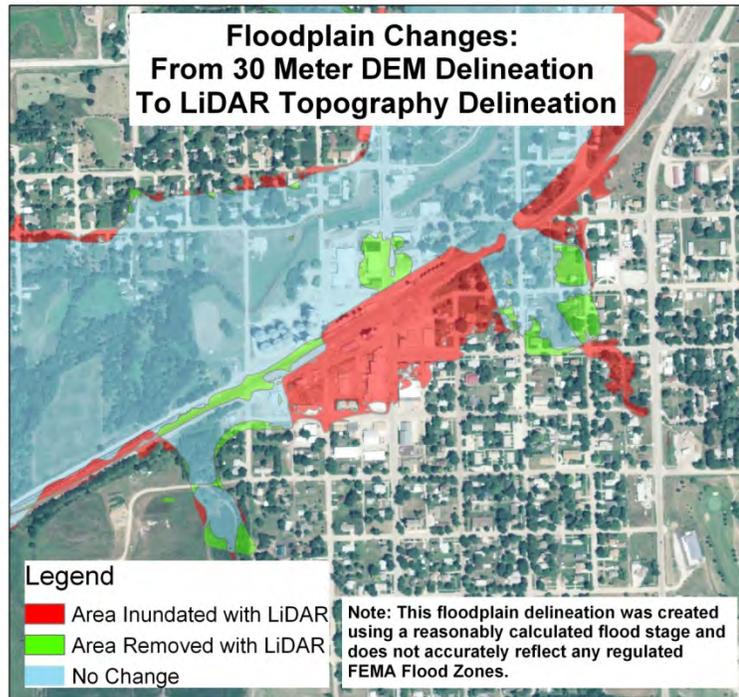
LiDAR: Visualizing Changes to the Floodplain

By Andrew Christenson

At a fundamental level, Light Detection And Ranging (LiDAR) data provides two advantages over conventional 10 ft. ground contours for floodplain delineation. The advantages include a vertical accuracy that typically allows for the generation of 2 ft. ground contours, and, LiDAR contains ground information that was collected within the past several years. Comparatively 30 Meter Digital Elevation Models (DEMs) were generated from 10 ft. ground contours based on data collected throughout the mid 1900's.

A more accurate representation of the floodplain does not necessarily mean the floodplain delineation will change in a certain way. Flood depths may increase, decrease, or stay the same with more accurate data. Also, these changes may not be the same along a particular floodplain reach because each section of the floodplain channel is different.

More recent ground information will likely change the floodplain delineation regardless of its accuracy. These changes are seen in urban areas where the effects of floodplain and local development can be visualized and where erosion and deposition have changed the landscape. The figure at left illustrates this type of change.



There are some drawbacks to using LiDAR (instead of conventional contour data) for floodplain delineation: the main drawback is processing time. LiDAR data sets are very large and require much more time to generate products and maps from that data. Often data is provided in a format that is difficult to handle and maintain without the proper software; making projects and processes more expensive to LiDAR users and producers. *(Continued on page 6)*

LiDAR: Visualizing Changes to the Floodplain

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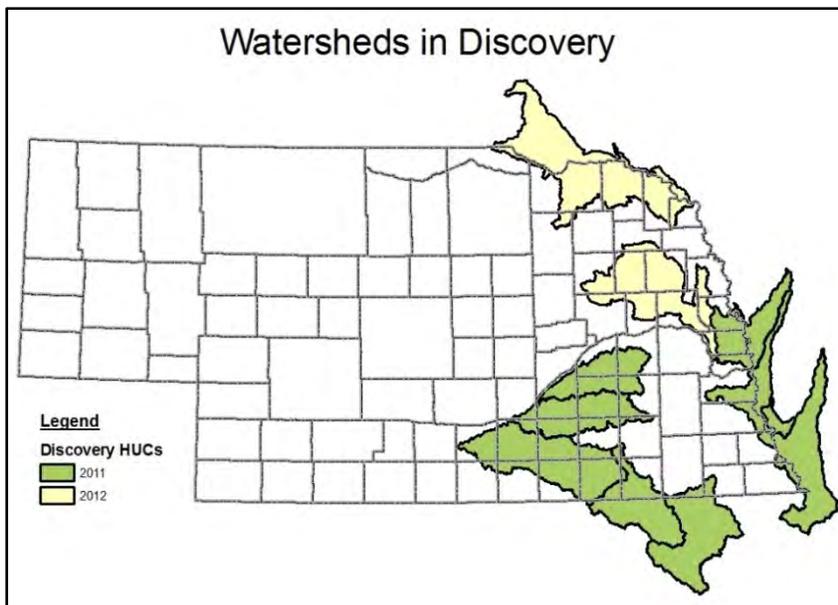
Another advantage LiDAR provides for floodplain delineation is the wealth of land features that can be processed and identified from the LiDAR. These features include: channel changes, plant and tree growth, agricultural action, urban and floodplain development, roads, bridges and dams.

The Federal Emergency Management Agency (FEMA) has a goal, outlined in the Risk MAP Multi-Year Plan for floodplain mapping: "to verify that 80 percent of the flood hazard information [in the US] reflects current conditions" (Federal Emergency Management Agency, 2010). This goal is primarily filled through the use of LiDAR data; which acquired through partnership between organizations such as: FEMA, NDNR, the Natural Resources Conservation Service, the Nebraska-Iowa Regional Orthophotography Consortium, Natural Resources Districts, local governments, etc.

What Is Discovery?

By Crystal Lesmeister

Discovery is the process that allows the Federal Emergency Management Agency (FEMA) and watershed stakeholders a more comprehensive and holistic understanding of the flood risk and flood mitigation capabilities within a watershed. Data gathered during Discovery includes information that influences flood risk decision-making, historical flooding information, existing flood hazard data and information, and mitigation activities. Last winter and spring, a number of Discovery meetings were held in Southeastern Nebraska. This spring NDNR will be conducting Discovery in two additional watersheds: Lewis & Clark Lake and Lower Elkhorn.



If you participated in one of the Discovery meetings last year, you might be curious to know what has occurred since the meeting took place. Regrettably, no new mapping projects have been initiated since the Discovery meetings took place. However, this does not necessarily mean that a mapping project will or will not occur in the future. Each year during FEMA's annual planning process information from Discovery, along with other factors, will be used to determine

which projects to fund based on FEMA's priorities and the availability of funding. Which means a project may be funded months or years after Discovery. If a project is initiated, FEMA or one of its technical partners will contact and coordinate with key watershed stakeholders to develop a project charter and project scope.

NDNR's Employees Win the NMA's 2011 EXPO Special Project Team Award

By Shuhai Zheng

NDNR's Coordinated Needs Management Strategy (CNMS) project team won the "2011 EXPO Special Project Team Award" from the Nebraska State Government Chapter of the National Management Association (NMA). The purpose of this special project team award is to foster good government through good management and to recognize an organizational unit or project team whose accomplishments represent the best possible application of management principles. At NMA's 2011 EXPO on December 8, 2011, Secretary of State John A. Gale presented the 2011 Team award to the CNMS team (see photo).



NMA's 2011 EXPO Special Project Team Award Goes to NDNR's CNMS Team

Pictured from left: Lucas Hadenfeldt, Crystal Lesmeister, Katie Ringland, Jeff Vifquain, Nataliya Lys, Shelley Schulte, Shuhai Zheng, Kevin Schwartman, James Gilbert, Secretary of State John A. Gale, and NDNR Director Brian Dunnigan; Not pictured: Amy Wright

The objective of NDNR's CNMS project was to determine the validity of 257 engineering studies on various streams throughout the state. The validity was assessed by checking 17 elements of each study to determine if the conditions on the ground were still satisfactorily represented on Flood Insurance Rate Maps (FIRMs). Once checked, the findings were input into a geospatial database that was submitted to the Federal Emergency Management Agency (FEMA) to be incorporated into a regional and a national CNMS database. The database also contained over 46,000 miles of Zone A streams that NDNR was responsible for reviewing and correcting. In the future this database will be used by NDNR and FEMA to help establish floodplain mapping projects and priorities.

The CNMS project was funded with a FEMA grant and had an aggressive six month schedule. With a strong support from the agency directors, a project team was assembled of ten individuals from three departmental divisions. The project was completed by the end of 2010 and first in FEMA Region VII, which covers Iowa, Kansas, Missouri and Nebraska. It was completed on schedule and under the budget. Since the project was under budget NDNR, with FEMA's consent, took the initiative and incorporated an additional 12,000 miles of unmapped streams into the database. The result was the delivery a comprehensive, high quality product which exceeded FEMA's initial expectations. Congratulations to every team member for winning this outstanding award.



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WANT MORE INFORMATION?

Visit NDNR's Floodplain Website at

<http://dnr.ne.gov/floodplain/floodplain.html>



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