

**DRAFT**

# Map Modernization Plan for

The State of  
Wisconsin

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**Wisconsin**

**Department of Natural Resources**

**Madison, Wisconsin**

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# Mapping Plan for Wisconsin

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## **Introduction**

The nation's floodplain maps are outdated and poorly defined. In February 2003, Congress passed a budget that included a substantial increase in funding for updating the country's flood hazard maps.

State Map Modernization Implementation Plans were developed this past summer in anticipation of passage of a proposed increase in funding for updating the nation's floodplain maps. Since that plan was drafted, new performance measure categories have been established and FEMA has encouraged states/locals to take on additional authority. FEMA has actively worked with State and local partners and identified the activities that were the highest priority for state and local involvement. Those activities include flood map needs assessment, project scoping, project management, map production, serving flood data to public via the web, out reach and maintenance. FEMA has indicated that they are interested in devolving authority to the lowest government entity possible.

On February 5&6, 2003, FEMA led a workshop with some of its partners in which a revised list of performance measures categories was developed. The categories are: *population density, growth, repetitive flood damages, risk, accuracy & adequacy of the product, NFIP policy base, comprehensive watershed approach, response to major floods, ability to leverage other FEMA and federal agency work, availability of leverage cost sharing with state/regional/local organizations and quick successes.* At this workshop, FEMA provided information on the reporting requirements they face associated with the Government Performance Results Act. FEMA is asking state and local entities that want to partner with them to present their "business case". Partners must be able to document results – so that FEMA can document results. FEMA has indicated that States/Locals do not have to develop a business case document until FY04. Though the performance measures associated with the new categories are not yet available, Wisconsin DNR has taken the draft MMIP submitted last summer and included some of the business case components in this updated FY03 Wisconsin Map Modernization Implementation Plan.

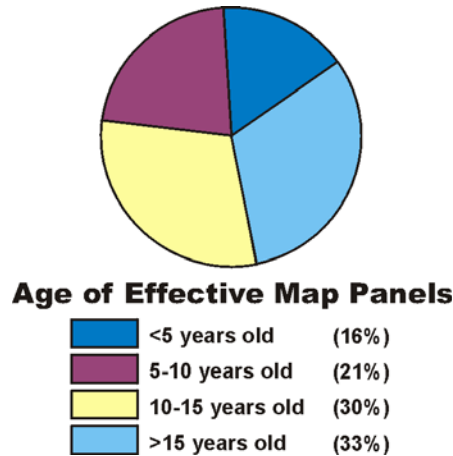
## **Background and Purpose of Plan**

Floods cause a significant threat to life and property in Wisconsin. Wisconsin is tenth in the nation in documented flood damages. Flooding has been a principle cause in 16 out of 24 Presidential Disaster Declarations in Wisconsin from 1971 through 2001. The Federal Emergency Management Agency's (FEMA's) flood hazard maps are essential tools for flood hazard mitigation in **Wisconsin** and in the United States in general. In addition, Wisconsin has "Smart Growth" legislation that requires communities develop Comprehensive Land Use Plans. Flood hazard maps are an important component these land use plans. FEMA's flood hazard maps are also used in disaster response and mitigation.

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As shown in the figure below, most of the flood hazard maps in **Wisconsin** are outdated.



In many cases, the older maps reflect outdated flood hazard information that limits their utility for insurance and floodplain management purposes. Additionally, most of the maps were prepared using now outdated road network information and manual cartographic techniques, which make the maps difficult for State and local customers to use and expensive for FEMA and the **Wisconsin** to maintain. In addition, FEMA has not produced flood maps for many streams in **Wisconsin**.

To address this problem, Congress passed a budget for Fiscal Year (FY) 2003 (which started on October 1, 2002) that includes an additional \$150 million for implementing a national Flood Map Modernization Program. The President's budget for FY04 proposes that this supplemental funding for Flood Map Modernization be increased to \$200 million. Similar funding levels are proposed for subsequent fiscal years.

This Plan was prepared to assist FEMA in the development of regional and national plans for implementing the FEMA Map Modernization Program. This Plan identifies the role the State of Wisconsin is requesting to play in Map Modernization Implementation and how these activities will be managed and performed. This Plan identifies mapping priorities, explains how mapping priorities were established for each county in Wisconsin, and outlines an approach for addressing these mapping priorities and documenting results.

## ***Program Management***

When Wisconsin became a state in 1848, rights of navigation of state waterways were incorporated into the State Constitution. The Wisconsin constitution indicates that navigable waters in the State of Wisconsin are held in trust for the citizens of the United States. Since becoming a state, a sizeable body of common law has established that the State has the affirmative duty to protect and preserve these public trust waters. This is called the Public Trust Doctrine.

Following major floods in 1965, the state legislature created Chapter 87.30. This chapter of the state statutes requires communities to enact floodplain zoning and requires the WDNR "ensure

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that hydrologic and engineering studies are reasonable and accurate”. Since this chapter of the statutes was created, Wisconsin has reviewed and if adequate, approved hydrologic and engineering studies used to develop floodplain zoning maps. Wisconsin has developed its floodplain engineering standards and maintains an archive of approved flood hydrologic and hydraulic models. Wisconsin’s floodplain engineering standards are intended to prevent development of land in the floodplain from causing negative impacts on nearby landowners. These standards are consistent with the Association of State Floodplain Managers’ (ASFPM) No Adverse Impact initiative. Wisconsin requires anyone causing a measureable increase in flood elevations on neighboring properties to purchase easements from the affected landowners. In addition, Wisconsin has what is called a “zero rise floodway”. This means that the floodway must be wide enough that filling of the flood fringe will not cause an increase in the flood profile. Federal standards allow a narrower floodway – filling of the flood fringe can cause up to a one foot increase in the flood profile. Finally, Wisconsin requires new development in the flood fringe to be elevated two feet higher than the minimum federal requirements to account for ice and debris blockages and other uncertainties associated with flood height predictions.

In addition to authorizing legislation and higher engineering standards than the minimum required by federal law, WDNR has the inhouse engineering and Geographic Information System (GIS) technical expertise needed to successfully implement Flood Map Modernization in Wisconsin. WDNR has sixteen (16) Water Management engineers trained in hydrology and hydraulics and a nationally recognized GIS support section. Wisconsin Water Management Engineers (WMEs) have substantial experience in setting 1% chance flood elevations - Wisconsin Water Management Engineers assist zoning administrators by doing the modeling necessary to set Base Flood Elevations (BFEs) in Approximate Zones.

Wisconsin’s floodplain management program recently received a significant upgrade due to a successful budget request. In August of 2000, the Wisconsin legislature provided WDNR with funding to enhance the use information technology (specifically GIS) to improve staff effectiveness and customer service in the water management programs. This budget item (called the Wisconsin Waters Initiative) provided funding to improve WDNR’s IT infrastructure, provide GIS tools and training for staff, make existing floodplain maps and data available over the web and develop an inventory of digital elevation data in Wisconsin.

### ***State Role in the Flood Hazard Mapping Program***

- ***Level of Participation***—The State is requesting FEMA authorization to perform and/or manage all of the mapping activities in the state. Wisconsin has a Cooperating Technical Partner agreement with FEMA. The nature and scope of the activities in this partnership agreement need to be updated to reflect the broader range of activities being requested by the State. It is the State’s understanding that FEMA will provide the State with appropriate funds to perform specific mapping activities.

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- *Lead agency:*  
The Wisconsin Department of Natural Resources is the agency responsible for the floodplain management program mandated by state statutes.
- *Other agencies and/or organizations involved, and their roles:*
  - The Wisconsin Land Information Program – Wisconsin passed legislation in 1989 funding the automation of land records. The legislation listed zoning as one of the six foundational elements. Funding from this program has enabled all 71 counties non tribal counties in Wisconsin to develop GIS capability and create extensive local base data. Because of the Wisconsin Land Information Program, the quality and extent of base map should substantially improve the integrity of the DFIRMs and will substantially reduce data acquisition costs.
  - Wisconsin Land Information Board – The legislature created this board to oversee the implementation of the WLIP. This board has representatives from DOA, DNR, DOT, the Department of Agriculture, Trade and Consumer Protection (DATCP), local governments and is chaired by the State Cartographer. In August, 2001, the board established an Elevation Task Force to develop a plan to upgrade the Digital Terrain Model (DTM) data in Wisconsin. In addition, the Wisconsin Land Information Board has some discretionary funding for strategic initiatives. In FY 03, the Board created a new strategic initiative grant category to support Wisconsin’s Map Modernization Implementation Plan. The Board allocated \$268,000 for Flood Map Modernization projects in Wisconsin. Should Wisconsin not receive funding for Map Modernization these funds will be reallocated.
  - Wisconsin Emergency Management – Digital FIRMs will be used by DEG for disaster response and flood hazard mitigation. WEM develops the State Hazard Mitigation Plan and manages FEMA funding to communities for development of community Hazard Mitigation Plans and flood hazard mitigation projects.
  - Wisconsin Dept. of Transportation – WDOT conducts hydrologic and hydraulic analyzes on proposed bridges over waterways to determine if proposed bridges will increase flood profiles. WDNR and WDOT have a Memorandum of Understanding to address situations where the flood profile upstream of bridges is increased. In addition, WDOT has initiated a height modernization project to upgrade the vertical control network in Wisconsin.
  - Wisconsin Department of Administration – Wisconsin’s Coastal Management Program formulates strategies, goals and policies for managing Great Lake’s coastal hazards through the Interagency Coastal Hazards Work Group. DOA, DNR, the University of Wisconsin Seagrass Program and WEM are represented on this work group.
  - Southeast Wisconsin Regional Planning Commission (SEWRPC) – SEWRPC has an engineering staff devoted to floodplain modeling and mapping.

## **Mapping Needs Assessment and Priority Setting Approach**

In FY 02, FEMA provided supplemental funding to the State of Wisconsin through the Community Assistance Program (CAP-MAP) to evaluate the mapping needs in Wisconsin and develop the state’s Map Modernization Implementation Plan. Thirteen of Wisconsin’s Water Management Engineering positions are located in field offices. These field engineers have routine contacts with community floodplain zoning administrators – making them knowledgeable about the floodplain mapping needs in the state. In addition, Wisconsin DNR has 4 planners and 30 water management specialists that work with community zoning staff on shoreland, wetland and floodplain zoning on a regular basis. WDNR field engineers surveyed communities to document community needs.

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This mapping needs assessment included the following tasks:

- Soliciting mapping needs information from counties and communities;
- Reviewing available community-specific data (e.g. an inventory of Digital Terrain Model data has been developed);
- Conducting a benefit/cost analysis on all streams that need to be remapped using the MNUSS benefits calculation formulas and U.S. Census data. The major focus of the MNUSS benefit calculation formulas is housing density and growth.
- Generating a priority listing by county based on the benefit/cost ratio; and
- Assessing the past flooding history based disaster declarations that have occurred in Wisconsin.

Wisconsin DNR has created a GIS data layer that identifies all of the waters in the state that presently have detailed studies, approximate mapping and mapping needs.

## ***Proposed Approach To Address Mapping Needs***

WDNR proposes to revise all the maps in the state. The **Wisconsin DNR** ranked each county to determine the order in which the counties' mapping needs should be addressed. Priorities were established based on availability of DTM data, benefit cost ratio, floodplain mapping efforts underway and distribution of workload. The results of the ranking and priority-setting process are summarized in Table 1. Wisconsin proposes to do countywide studies in accordance with the priority ranking attached. This ranking may be adjusted based on the amount of county cost share and/or the availability of local/state funding.

## ***Proposed Approach To Map Production***

*Mapping activities that would be managed by the WDNR include the following (needs assessment, scoping, outreach & community coordination, digital base map collection/coordination, digital base map development, field surveys, hydrologic & hydraulic analyses, floodplain mapping, digital FIRM production, and post-preliminary processing.)*

- State would select contractors to perform map modernization tasks and/or Flood Insurance Studies. Wisconsin has issued a Request for Qualifications (RFQ). The State will develop a list of contractors qualified to do floodplain modeling and mapping from contractors that respond to the RFQ.
- WDNR will direct/manage these mapping activities. WDNR's floodplain management program has been in existence since 1967 and recognized as one of the best in the nation.
- Wisconsin DNR has sixteen water management engineering positions with floodplain engineering responsibilities. Thirteen of these engineering positions are in field offices. In addition, WDNR has a well established, experienced GIS program with approximately 40 staff.

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Wisconsin also has a regional planning commission (Southeast Wisconsin Regional Planning Commission) with experienced hydrologic engineering staff.

- Over the years, WDNR has conducted approximately 30 county wide flood studies. In addition, Wisconsin has procedures in place wherein WDNR engineers set regional flood elevations in areas without flood profiles when requested by zoning administrators. WDNR has an inventory of hundreds of these site specific flood studies. WDNR maintains a library of all approved floodplain models (approximately 5,000) in Wisconsin.
- Cost share: As indicated earlier in this document, the Wisconsin Land Information Program has allocated \$268,000 for Strategic Initiative Grants to directly support Flood Map Modernization in Wisconsin. A total of 18 grant applications were submitted. The WLIB has funding the top six projects. In addition, to these Strategic Initiative Grants, a number of communities in Wisconsin have base mapping and Digital Terrain Models that are eligible for cost share. There are also a number of projects underway in the State where the floodplain modeling, flood profiles, and mapping are being updated with local funding. Estimated cost share amounts for each county are included in the priority listing of Wisconsin Map Modernization projects (Table 1).

## ***Funding Requested***

- Wisconsin DNR is requesting \$100,000 to cover outreach and project scoping. In addition, a list of early implementation projects for FY 03 is attached (Table2). The funding needed for each of the projects is included in this table. Three of these projects are included in Region V's early implementation list.