

# 2014 Long-Term Recovery Task Force Final Report



Dear Reader:

I am pleased to present the 2014 Long-Term Recovery Task Force Report.

This report summarizes the work that was done by the task force, which was created by Gov. Terry Branstad to oversee the state's long-term recovery from damage caused by severe storms in June and July of 2014. The task force was established after a summer in which Iowa requested and received three Presidential Major Disaster Declarations, covering 57 counties that were impacted by hail, heavy rains, flooding, tornadoes and damaging winds.

The task force, which began its work in August of 2014, brought together partners from a variety of state, federal and non-government agencies, and private industry. Gov. Branstad recognized the need to coordinate and leverage the expertise and resources each member of the task force could bring to the table. The task force was charged with providing an overall network of assistance to support immediate and long-term recovery for communities and citizens affected by these disasters.

This report details the task force's work and recommendations in the areas of housing, transportation, flood risk management and utilities. The task force report summarizes the efforts undertaken by many entities during the recovery from the disaster and captures many best practices and lessons learned that can help us to better prepare for and respond to future similar events.

We thank all members of the task force for the work they did to thoughtfully and thoroughly examine the issues and to offer solutions that would benefit those impacted by the disasters.

Sincerely,

Mark J. Schouten  
Director, Iowa Department of Homeland Security and Emergency Management



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## 2014 Long-Term Recovery Task Force

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## Part I. Overview

During the period of June 3, 2014, through July 7, 2014, the state of Iowa experienced three unique and consecutive storm events. According to the Iowa State Climatologist, June of 2014 brought to Iowa an average of 9.94 inches of precipitation, the third wettest June on record. With the three incidents outlined within this report, 2014 was the wettest year on record in Iowa. Many areas of the state received more than a foot of precipitation, with nine sites shattering previous rainfall records. Some of these records were in place for 136 years, including the greatest amount of 17 inches falling in Cherokee, Iowa. The state also experienced four major outbreaks of severe weather on June 3, 16, 30, and July 6. The impact of the summer storm season affected 57 counties and resulted in three presidentially-declared disasters and two Small Business Administration declarations. Although there was not a federally-declared Individual Assistance event, the State of Iowa Individual Assistance Grant Program received 470 applications and committed over \$1.2 million to the residents of Iowa. The storm events identified were similar in nature but varied on level of impact and destruction.

### **FEMA -DR-4181-IA: Incident Period June 3, 2014 – June 4, 2014**

On the morning of June 3, 2014, the National Weather Service (NWS) Storm Prediction Center indicated that intense storms were developing along a surface warm front near the border between Nebraska and South Dakota. These storms then continued east throughout June 3, gaining strength from moisture fluxes in response to large scale ascent and thermodynamic processes (diabatic processes). These storms reinforced existing low level atmospheric instability in their path. This created an ideal environment for the creation of super cells with intense rain, large hail, high winds, and the formation of tornadoes.

Once in Iowa during the late afternoon and evening hours of June 3, the storms produced straight-line winds in excess of 90 mph, hail in excess of two inches in diameter, rainfall exceeding 5.5 inches in some areas, and an EF2 tornado near the city of Oakland (Pottawattamie County).

Trained weather spotters reported hail in excess of two inches in diameter (just larger than a golf ball) in four counties (Cass, Decatur, Ringgold, and Taylor). This hail broke windows in buildings and vehicles, severely damaged building siding and roofs, and damaged crops. Near the city of Mount Ayr (Ringgold County), hail estimated at 2.75 inches (roughly the size of a baseball), was reported to the NWS. Thirteen people were injured on Interstate 29 in Harrison County when the sudden onset of large hail broke windows in their vehicles causing lacerations. Most were transported by ambulance to the Community Memorial Hospital in Missouri Valley (Harrison County), for treatment, and were later released. Eighty-nine homes in Pottawattamie County, 49 homes in Ringgold County, 17 homes in Harrison County, and numerous others in the affected counties received extensive siding and roof damage as a result of 70-90 mph wind gusts and hail. MidAmerican Energy had more than 2,800 customers without power. More than 1,800 of those customers were located in Pottawattamie County.

Record rainfall was reported in several locations throughout Iowa, including 5.56 inches received in the city of Lamoni (Decatur County) and six inches in the cities of Lewis and Griswold (Cass County). With spring planting having just concluded in much of the state, young crops were severely damaged and

destroyed by hail and heavy rains. Damage to many roads was extensive, with roadbeds washed away, road surface scouring from overtopping, aggregate washout, culvert collapses, and bridge damage. This damage rendered many of the affected roads impassable until repairs could be made and severely impacted the ability of emergency responders in the area.

In response to the situation, Governor Branstad issued three State of Iowa Proclamations of Disaster Emergency. The first was issued on June 3, 2014, directing the execution of the Iowa Emergency Response Plan in Pottawattamie County. Succeeding proclamations resulted in a total of 11 counties to be in a State of Disaster Emergency. These actions were taken pursuant to Iowa Code § 29C.6 and Section 401 of the Stafford Act. Subsequently the event received a Presidential Disaster Declaration for nine counties, FEMA-DR-4181-IA.

#### **FEMA-DR-4184-IA: Incident Period June 14, 2014 – June 23, 2014**

Following the incident outlined above in southwest Iowa, a persistent low-level jet stream from the northwest pushed alternating warm and cold fronts into Iowa in a ‘training effect’ that occurred from June 14 through June 23, 2014. Combined with moist air and persistent low dew points throughout Nebraska, South Dakota, and Iowa, these fronts created ideal conditions for severe storms to form each day from June 14, 2014, through June 23, 2014. These intense conditions ultimately produced severe storms with heavy rains, large hail, high winds, and tornadoes throughout parts of Iowa.

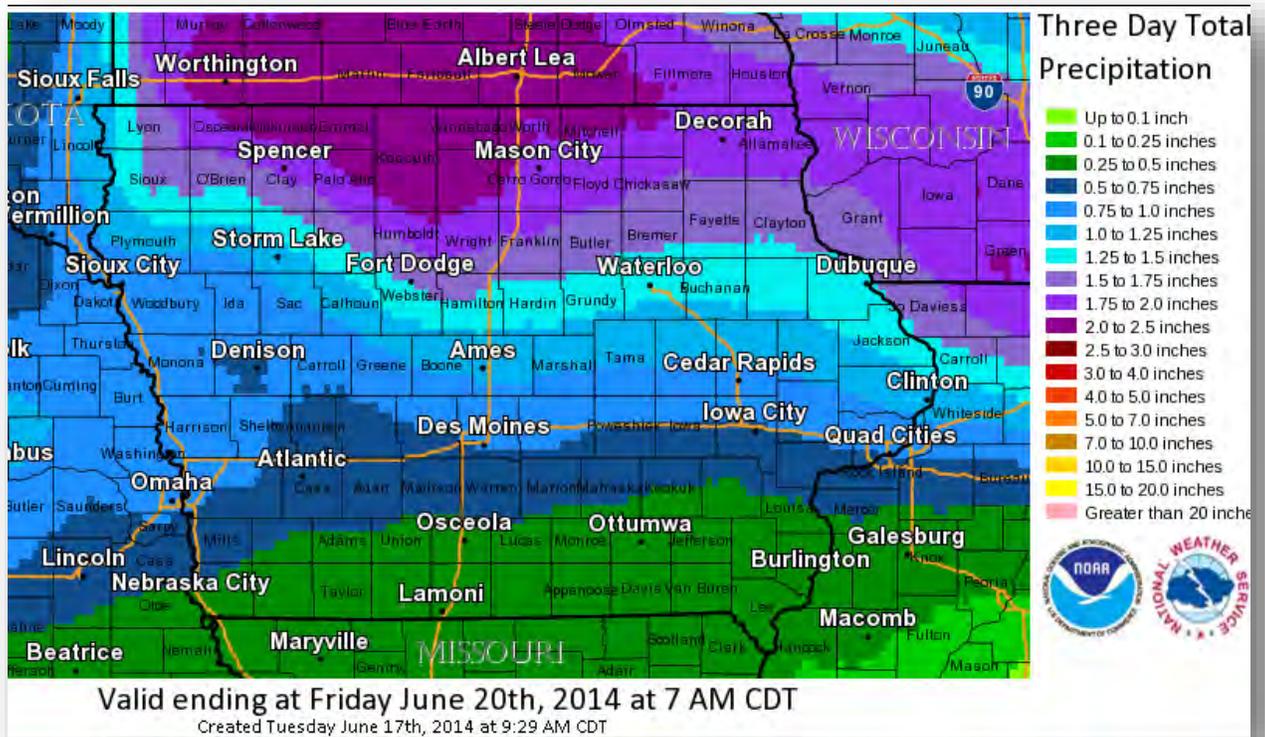
Between June 14 and June 23, all but a very small section of Iowa had received at least one inch of precipitation. The Iowa State Climatologist reported that Iowa received an average of 3.4 inches of precipitation during the period. Northwestern Iowa had received over eight inches of precipitation, causing extensive flooding.

Storm spotters, law enforcement, and emergency personnel reported high winds, with some gusts in excess of 70 mph, hail exceeding three inches in diameter in some areas, heavy rains, and numerous funnel clouds and tornadoes in the multiple storms that progressed through Iowa starting on June 14. One tornado was videotaped by a trained storm spotter in Humboldt County on June 16.

National Weather Service damage surveys concluded that two EF1 tornadoes occurred in Iowa on June 16 in rural Butler County. The first tornado cut a path of just over three miles long and 250 yards wide, the second tornado occurred just minutes after the first. More than 20 structures were reported to be a total loss due to damage sustained by these tornadoes.

National Weather Service damage surveys concluded that a downburst with peak wind speeds of 105 mph occurred in the early morning hours of June 17 in the Cedar County town of Durant. Storm spotters also reported a tornado near the city of George in Lyon County, on June 17.

As a result of multiple precipitation events in northwest Iowa river watersheds, the Rock River, Big Sioux River, and Little Sioux River all left their banks causing record flooding.



On June 17, the Rock River at Rock Rapids (Lyon County), Iowa crested at 26.98 feet, five feet higher than its previous record crest, and more than twice flood stage. This severely impacted the city of Rock Rapids. The Rock River also broke its previous record in the city of Rock Valley (Sioux County), cresting at 22.59 feet. This was more than two feet higher than the previous record, and more than six feet above flood stage. Due to high flood waters, multiple residential care facilities were closed and 54 residents were evacuated to alternate locations. The American Red Cross opened four shelters in the affected area assisting 110 occupants from Rock Rapids, Rock Valley, and Cherokee. The water treatment facilities in both Rock Rapids and Rock Valley were surrounded and impacted by high water which caused boil orders for both communities.



Just downstream of where the Rock River meets the Big Sioux River is the Sioux County city of Hawarden. Here, the Big Sioux River crested at 27.92 feet, more than three feet above the previous record. Near the Plymouth County city of Akron, the Big Sioux River reached a new record of 25.8 feet, more than two feet over its previous record, overtopping levees and flooding Iowa Highway 3 near Westfield in Plymouth County. Floodwaters from the Big Sioux River breached a levee in rural Plymouth County on June 19 causing flooding of farmland and floodwaters to reach an emergency sandbag structure that was built to protect the city of Akron. The Big Sioux also reached flood stage on June 18 in Sioux City (Woodbury County), ultimately cresting over five feet above flood stage on June 20. The Omaha District of the U.S. Army Corps of Engineers stated that the outflow from the Big Sioux River reached 100,000 cubic feet per second – a new record.

The Little Sioux River reached flood levels in several areas, starting in Dickinson County, and continuing through Clay, Buena Vista, Cherokee, Woodbury, Monona, and Harrison counties.

As floodwaters from the Big Sioux River flowed into the Missouri River, significant rises in river levels were experienced. Downstream in the Missouri River, where the Little Sioux River flows into the Missouri River, flooding occurred on June 21. This flooding continued on the Missouri River from Monona County, Iowa, south until leaving the state. Flooding on the Missouri River in Iowa crested at 21.85 feet on June 23 in Fremont County.

Other rivers also reached flood stages, including the Little Sioux River near the Woodbury County city of Correctionville, which reached major flood stage of 21.43 feet. The West Fork Ditch near the Woodbury County city of Hornick reached 25 feet, just inches short of its record. The West Fork of the Des Moines River reached minor flood stage near the city of Emmetsburg in Emmet County.

Road damage throughout the area was extensive, with roadbeds washed away, road surface scouring from overtopping, aggregate washout, culvert collapses, and bridge damage. This damage rendered much of the affected roads impassable until repairs could be made. This damage also impacted the ability of emergency response in the area, agricultural operations including care of young crops in fields, farm-to-market deliveries, and other commercial cargo from reaching its destination. The Iowa Department of Transportation reported the closure of Iowa Highway 9 in the city of Rock Rapids in Lyon County, on June 17, and U.S. Highway 18 in the city of Rock Valley in Sioux County. U.S. Highway 9 is a major highway for emergency services between county hospitals in northwestern Iowa and more advanced medical care at hospitals in Sioux Falls, South Dakota. The Big Sioux River forced the closure of Interstate 29 just across the border from Iowa in South Dakota on June 19. This closure resulted in a 454-mile detour for traffic, adding an additional four hours for through traffic to go from Council Bluffs (Pottawattamie County), Iowa, to Sioux Falls, South Dakota. This detour took traffic through Iowa and into Minnesota, before reconnecting with Interstate 29 west of Sioux Falls, SD. This detour resulted in extra traffic on Interstates 80 and 35 in Iowa and extra road wear on these roads. The portion of Interstate 29 was reopened on June 20.

Damage sustained in Lyon and Sioux counties was sufficient in severity and magnitude to warrant a Small Business Administration declaration of disaster. Sixty homes were categorized as majorly damaged or destroyed in Rock Rapids (Lyon County) and Rock Valley (Sioux County), exacerbating an already depleted housing stock. The loss of these homes has created an additional burden to an area that was struggling to house families prior to the flooding. Power outages were numerous due to damaging winds and hail. MidAmerican Energy reported via their website that a peak of 18,595 customers were without power on June 17. Alliant Energy reported via their website that a peak of 12,643 customers were without power on June 17.

The Fort Calhoun Nuclear Power Station in Blair, Neb., activated its Operation Control Center operations starting on June 17 due to rising Missouri River levels. The station also mobilized its sandbagging and flood protection equipment. The Fort Calhoun Nuclear Power Station is directly across the Missouri River from Iowa, and its operations directly affect Iowa. On June 20, the power station started taking steps to shut down the nuclear reactor, and activated its Operation Control Center 24 hours a day. By June 21, the Missouri River had crested at the power station, and shutdown operations were cancelled.

In response to the situation, Governor Branstad issued four State of Iowa Proclamations of Disaster Emergency. The first was issued on June 17, 2014, directing the execution of the Iowa Emergency Response Plan in Cedar, Lyon, Plymouth, Pocahontas, and Sioux counties. Succeeding proclamations resulted in a total of 29 counties to be in a State of Disaster Emergency. These actions were taken pursuant to Iowa Code § 29C.6 and Section 401 of the Stafford Act.

### **FEMA-DR-4187-IA: Incident Period June 26, 2014 – July 7, 2014**

Immediately following the major storm events that encompassed 35 counties from southwest Iowa through northern Iowa, storm systems continued to develop and travel through the state of Iowa into the month of July. The last round of severe weather and prolonged period of heavy rain events began on June 26. According to the state climatologist, between June 20 and July 19, the majority of the state of Iowa received 125 percent to more than 175 percent of the mean accumulated precipitation for the same time period. This included a severe weather outbreak that spanned the state from its borders with Nebraska, Illinois and southern Wisconsin, altogether affecting 40 counties. According to the Des Moines office of the National Weather Service, the period of June 26-30 was very active and could be considered one synoptic scale weather system including upper trough and associate surface boundaries. As a result of the heavy rains produced by this system, residual flooding continued through the week of July 1-4, followed by further intense rainfall and severe weather that occurred on July 5 and 6.



Widespread flash flooding took place in many areas already hit with the damaging winds and tornadoes due to a combination of training and efficient rain-producing storms. Most locations under the squall line picked up a quick one to two inches of rain in under 30 minutes, which the already saturated ground simply could not handle. Some reporting stations recorded four to six inches of rain for the calendar day. Despite a break in repetitive severe weather July 1-4, several major river basins in Iowa were at or above flood stage. According to the United States Geological Survey river gauge data, the Cedar River was in major flood stage until July 5, the Iowa River was in major flood stage until July 7, and the Mississippi River on Iowa's eastern border was in major flood stage as late as July 15. Many communities in the eastern half of the state continued to fight the flooding through the period of major flood stage.

Iowa soils, previously saturated by numerous significant and sometimes exceptional severe weather episodes, would be subjected to yet another round of sustained persistent severe weather into the month of July. The University of Iowa (Johnson County), was required to install removable floodwalls around the Art Building West to protect the structure, which contains a library and classrooms, from flooding from the Iowa River. Multiple communities, including Parkersburg in Butler County, Lisbon in Linn County, and Burlington in Des Moines County, had their water treatment plants and lift stations inundated by floodwaters forcing the communities to install sandbags, HESCO barriers, and other flood protection measures.

Commercial transportation was interrupted for an extended period in eastern Iowa due to high floodwaters. Interstate commerce along the Mississippi River was interrupted for a period of two weeks as several lock and dam closures occurred due to flooding. The Iowa section of the Mississippi River did not open until July 14, with the Rock Island District locks fully reopening on June 16. The river between locks 11 and 22 is the busiest stretch of the Mississippi, which is the main shipping route to the Gulf Coast. With these locks closed, transportation of grain for export was halted. Multiple U.S. Highway roads and bridges were closed throughout the area, including U.S. Highway 63 in Tama County, U.S. Highway 67 in Scott County, and U.S. Highway 6 in Muscatine County. Detours throughout these communities were widespread and extensive adding up to 10 miles for some commuters.

Residential damage in the affected area included damage to structures by floodwaters, high winds, and tornadoes. Evacuations were numerous, including 15 homes in Black Hawk County, 92 homes in Johnson County, and 12 homes in Grundy County. Floodwalls were erected in Iowa City (Johnson County), to protect homes and businesses in the southern end of town. A total of 166,365 customers were without power throughout the incident period. In response to the extensive damage to residential and business properties, a Small Business Administration declaration was requested and received for Linn County and the contiguous counties.

In response to the situation, Governor Branstad issued 10 State of Iowa Proclamations of Disaster Emergency. The first was issued on June 30, 2014, directing the execution of the Iowa Emergency Response Plan in Adair, Guthrie, Jones, and Linn counties. Succeeding proclamations resulted in a total of 32 counties to be in a State of Disaster Emergency. These actions were taken pursuant to Iowa Code § 29C.6 and Section 401 of the Stafford Act.

## Part II. Disaster Response Operations

The state of Iowa has experienced major flooding throughout a majority of the state during the spring and summer seasons in four of the last six years. The effects of these events range from local impacts to large-scale flooding. Communities are responsible for their own protection, and as a result, are the first line of defense when a disaster strikes. The intent of the Stafford Act is that federal assistance is to supplement state and local efforts supported by private relief organizations.

County and local officials were responsible for the protection of their citizens and major infrastructure. Emergency management agencies provided pumps and sandbags to surrounding communities. County engineers' offices barricaded roads that had been washed out, overtopped, or became impassable. Fire departments opened shelters and pumped water away from critical infrastructure.

When local resources were exhausted, non-governmental organizations were available to assist in areas beyond the capacity of local resources. The American Red Cross is an organization that frequently opens shelters in the affected areas and 2014 was no exception. Clean-up kits were also provided to residents throughout the impacted areas. Various religious-affiliated groups provided volunteers for debris removal and residential clean-up kits, providing residents with the initial tools for recovery.

Beginning with the initial storm event on June 3, local and state resources were utilized in an effort to diminish the impact of the severe weather systems. The statewide flood response effort was coordinated by the Iowa Department of Homeland Security and Emergency Management (HSEMD), including the appointment of the department's director as the governor's authorized representative. HSEMD orchestrated the deployment of state-owned equipment and the purchase of flood protection items for the impacted communities. Pumps, generators, and sandbags were distributed to communities and counties as requested, and coordination with the Iowa Department of Transportation for staging areas allowed HSEMD to pre-deploy material and equipment throughout the state. Coordination with other state agencies, including the Iowa Department of Public Defense, Iowa Department of Corrections, Iowa Department of Human Services, Iowa Department of Public Safety, and Iowa Department of Natural Resources, in addition to other agencies, both state and federal, facilitated response to requests for assistance, both material and non-material, under the guidance of HSEMD.

### A. Joint Preliminary Damage Assessments – Public Assistance (PA) Program

In response to the events of June 3, 2014, Iowa HSEMD requested the first of three joint preliminary damage assessments (PDAs) be conducted for the federal Public Assistance Program in the 10 counties affected by the flooding in southwest Iowa on June 10, 2014. On June 18, 2014, a second PDA request was submitted in response to the June 14 event that included 14 of the most severely impacted counties. An additional damage assessment was requested for 11 counties on June 24, 2014, spanning the northern portion of counties within the state. The final round of PDAs was requested on July 9, 2014, and included 23 of the most severely impacted counties in the western half of the state. In coordination with FEMA personnel, these PDAs included costs/damage associated with Public Assistance Categories A (Debris Removal) and B (Emergency Protective Measures) as well as permanent work categories C (Roads and Bridges), D (Water Control Facilities), E (Buildings and Equipment), F (Utilities), and G (Parks,

Recreational Facilities, and Other Facilities). The PDA teams coordinated with local officials and were able to identify enough costs/damage to meet the per capita threshold for each affected county. This gave the Governor the ability to request a major disaster declaration covering Public Assistance for all three incidents.

Appendix A shows the results of all four joint PDAs conducted between June 10, 2014, and July 9, 2014. The estimated requirements for Public Assistance under the Stafford Act are also found under Appendix A.

On July 14, 2014, the president signed a Presidential Disaster Declaration (DR-4181) making Public Assistance program funding available for all categories of work for Adams, Clarke, Decatur, Mills, Montgomery, Pottawattamie, Ringgold, Taylor, and Wayne counties.

On July 24, 2014, the president signed a Presidential Disaster Declaration (DR-4184) making Public Assistance program funding available for all categories of work for Allamakee, Buchanan, Buena Vista, Butler, Cherokee, Chickasaw, Clay, Dickinson, Emmet, Fayette, Franklin, Hancock, Humboldt, Ida, Kossuth, Lyon, Osceola, Palo Alto, Plymouth, Pocahontas, Sac, Sioux, Winnebago, Winneshiek, Woodbury, and Wright counties.

On Aug. 5, 2014, the president signed a Presidential Disaster Declaration (DR-4187) making Public Assistance program funding available for all categories of work for Audubon, Black Hawk, Butler, Cedar, Des Moines, Grundy, Hamilton, Hardin, Ida, Iowa, Jackson, Jasper, Johnson, Jones, Keokuk, Lee, Linn, Mahaska, Muscatine, Poweshiek, Tama, and Washington counties. The major declaration request was amended on Aug. 19, 2014, to include all categories of work for Crawford and Shelby counties.

#### B. Individual Assistance (IA) Program and Small Business Administration (SBA) Declarations

Iowa HSEMD conducted damage assessments in two major areas in order to assess the magnitude of the incidents on the residents and businesses in the affected counties. Four counties were identified for assessments. Table #1 depicts the homes assessed in the respective counties during the assessment.

Table 1: Individual Assistance Damage Assessment Counties Assessed

County Name	# of Sites	# Affected	# Minor	# Major	# Destroyed
Lyon	64	0	34	29	1
Plymouth	9	0	5	4	0
Sioux	187	1	122	38	24
Linn	88	0	47	32	9
<b>TOTAL</b>	<b>348</b>	<b>1</b>	<b>208</b>	<b>103</b>	<b>34</b>

Although damage to residences was not of such severity and magnitude as to warrant the implementation of the federal Individual Assistance Program under the declared events, Governor Branstad requested a physical disaster declaration for three Iowa counties under the provisions of 13 Code of Federal Regulations for United States Small Business Administration (SBA). The three counties were: Linn, Lyon, and Sioux.

The SBA Declaration 14045, Iowa Severe Storms, Flooding, Straight-Line Winds, and Tornadoes, was declared for Lyon and Sioux counties, with all contiguous counties eligible to apply for assistance. Homeowners could apply for up to \$200,000 to repair or replace their primary residence to its pre-disaster condition. SBA disaster loans are repayable but may be provided at a low interest rate for qualified homeowners. As of Oct. 14, 2014, SBA had issued 61 applications for potential home loans and 13 applications for potential business or economic injury disaster loans. Of the completed applications, 36 home loans and three business loans were approved providing a total of \$3,054,700 and \$129,900 in disaster assistance respectively. Table #2 identifies the type and funding for applications.

Table 2: Application and Lending Summary #14045

Applications	Applications Issued	Applications Received	Loans Approved	Dollars Approved
Home	61	50	36	\$3,054,700
Business/EIDL	13	8	3	\$129,900
TOTAL	74	58	39	\$3,184,600

The SBA Declaration 14066, Iowa Severe Storms and Flooding, was declared for Linn County, with all contiguous counties eligible to apply for assistance. As of Oct. 20, 2014, SBA had issued 40 applications for potential home loans and 10 applications for potential business or economic injury disaster loans. Of the completed applications, 18 home loans and three business loans were approved providing a total of \$819,500 and \$151,400 in disaster assistance respectively. Table #3 identifies the type and funding for applications.

Table 3: Application and Lending Summary #14066

Applications	Applications Issued	Applications Received	Loans Approved	Dollars Approved
Home	40	35	18	\$819,500
Business/EIDL	10	6	3	\$151,400
TOTAL	50	41	21	\$970,900

The State of Iowa also activated the State Individual Assistance Program. As of Jan. 20, 2015, a total of 470 applications had been received, with 270 applications paid. The State committed a total of \$1,285,610.06 in funding, with \$1,102,126.69 paid to date. A total of 145 applications were deemed ineligible and 35 were deemed to be over the income level. The applicants in these categories were not

able to obtain assistance or guidance through the Iowa Individual Assistance Grant Program. This made it very obvious that a significant percentage of individuals were not able to access guidance or assistance through disaster case management, as no funds were available to assist. Most of the applicants that were unable to obtain assistance were either low income, above 200 percent of the federal poverty level, elderly, or disabled with income. These applicants would have benefited greatly from having someone to assist with the Individual Assistance recovery process. Disaster case management would have been invaluable to assist these applicants, as well as all applicants under 200 percent of the Federal Poverty, to more effectively recover from the long-term effects of the disaster.

### C. Community Disaster Loan Program

The purpose of the Community Disaster Loan Program (CDL) is to provide funds to any eligible jurisdiction in a designated disaster that has suffered a substantial loss of tax and other revenue. The jurisdiction must demonstrate a need for financial assistance to perform its governmental functions. Loans are issued not to exceed 25 percent of the local government's annual operating budget for the fiscal year in which the major disaster occurs, up to a maximum of \$5 million. There are no cost-sharing requirements if a loan is approved. The jurisdiction is required to apply for the loan program through the Governor's authorized representative. Under disasters declared within the FEMA Region VII states (Kansas, Missouri, Nebraska, and Iowa), there have been 12 loan applications approved by FEMA since 2007. Four loans were approved within the state of Kansas in response to the 2007 Greenberg tornado event, one loan was approved within the state of Missouri for a 2011 event, and one loan was approved within the state of Nebraska for a 2014 event. The remaining seven loans were all for jurisdictions within the state of Iowa and ranged from disasters declared in 2008 to 2011.

In response to the flood event in northwest Iowa, two communities determined there was a viable financial need for additional funding and pursued funds through the CDL program. The city of Rock Valley in Sioux County, experienced high economic losses due to the closure of campgrounds during the flood period. These campgrounds are city owned and generate a large portion of the city's revenue during the camping season. The city of Rock Rapids in Lyon County, sustained damage to approximately 60 homes in the impacted area which impacted current and future revenues for the city in various forms. During the application phase FEMA CPAs analyzed two forms of data: historical, or pre-disaster, and future, or post-disaster, revenues. With five years of historical data of revenue from these sources, FEMA calculated the revenue loss for each community based on the impact and location of the event. In addition to historical information, estimated future revenues based on the physical damage to the homes and business in the communities was also reviewed and used to analyze how quickly the revenues from these sources would return to the communities, primarily through property tax, other tax collection, and fees for city services. Upon completion of the review of the data FEMA determined both communities met the requirement for revenue loss and were each approved for funding. The City of Rock Valley received \$939,094 and the City of Rock Rapids received \$513,220 under the loan program.

### D. Federal Highway Administration

The Iowa Department of Transportation administers the Federal Highway Emergency Relief (ER) Program during eligible disasters in Iowa. This includes monitoring projects for Iowa's federally-funded

transportation systems submitted to the Federal Highway Administration (FHWA) during disasters. Projects are broken down by estimated emergency work or estimated permanent work, plus there are several differences in emergency work versus permanent work. Emergency work is defined as work that must be completed to restore essential traffic, protect the remaining facility, and protect the traveling public. Permanent work is work that is a result of the event but can be completed while the roadway is open to traffic.

During a disaster FHWA requires that eligible counties receive a Governor’s Proclamation and estimated damage costs (all counties combined) must be greater than \$700,000 federal share. In the state of Iowa all roadways maintained by the Iowa DOT are considered eligible for FHWA emergency relief. All county and DNR routes are classified as major collector or above, as well as city routes classified as collector or above, are considered FHWA ER eligible. Railroad crossings on FHWA ER routes, damaged during eligible disasters, are also eligible for FHWA ER funds. Table #4 identifies the ER funding source by type.

Table 4: 2014 Iowa Flood FHWA Projects

	# of Projects	Emergency Work	Permanent Work	Estimated Total
Iowa DOT	30	\$3,818,733	\$772,702	\$4,591,435
County/City	62	\$1,562,567	\$756,332	\$2,318,899
DNR	0	\$0.00	\$0.00	\$0.00
TOTAL	92	\$5,381,300	\$1,529,034	\$6,910,334

E. Iowa Department of Agriculture and Land Stewardship

The Iowa Department of Agriculture and Land Stewardship (IDALS) has an interest in the protection of environmentally-sensitive lands as well as ensuring that productive crop land is not lost. From an agency standpoint, however, there are no regulatory areas or programs which directly focus on flood mitigation recovery.

The impact the 2014 flooding events had on agricultural land was minimal when compared to previous years. Most of the damage sustained to cropland was due to flash flooding in already flood-prone areas. These areas did experience crop loss and soil loss, but nowhere near the levels the state saw a few years prior in 2011. Also, the long term effects on yield potential from these flood events is minimal, mainly due to the relatively short flood interval.

In short, other than some modest coordination and advisory capacities, the IDALS role was limited in direct recovery operations. Again, this is due to the lack of regulatory areas/programs which directly focus on flood mitigation and recovery.

## F. Iowa Voluntary Organizations Active in Disasters (VOAD)

The Iowa Disaster Human Resource Council, also known as the Iowa Voluntary Organizations Active in Disasters (VOAD), activated resources in response to the devastating effects of the flooding in northwest and eastern Iowa, specifically in Lyon, Sioux, Plymouth, and Linn counties. The voluntary agency support determined the damage was severe enough that the establishment of Community Organizations Active in Disasters (COAD) and the identification of the unmet needs, would be crucial for the recovery of the citizens in these areas. The communities located in northwest Iowa, including Rock Rapids and Rock Valley, were not in a position to activate local entities or infrastructure in response to the event. To assist in these areas, the state coordinating officer requested the activation of the FEMA voluntary agency liaison as well as the state voluntary agency liaison to assist with the establishment of a COAD in the area. World Renew, a national VOAD partner, also deployed to northwest Iowa to assist the communities with establishing local COADs to assist individuals with unmet needs as well as assistance beyond the Iowa Unmet Needs Assistance Program. Rock Valley chose to utilize Justice for All, a local service group, to assist with the case management process. Rock Rapids decided to keep the case management process informal and utilize the Chamber of Commerce and the Community Development Corporation to manage the funds raised for disaster response and the disbursement of those funds to eligible citizens for disaster relief.

Unlike northwest Iowa, Linn County was in a better position to respond to the effects of the disaster. With an established COAD, the county was able to hire the local community action program to conduct case management for impacted residents with unmet needs as well as needs beyond the capabilities of the State Unmet Needs Assistance Program. This process was consistent with the county's response to previous events and the unmet needs of the communities.

## Part III. Long-Term Recovery Task Force

In a series of disasters, the catalyst event has the highest impact on any population. In the 2014 flood season, the impact of flooding from the Rock River and Big Sioux River was detrimental to a number of communities in far northwest Iowa, including Rock Valley, Rock Rapids, and Akron, in Lyon, Sioux, and Plymouth counties. The northwest quadrant of Iowa does not typically receive a large amount of rain and therefore is rarely impacted by flood events. In Lyon County alone, the river levels were documented to be two feet higher than previous records and six feet above flood stage at 22.59 feet. The Big Sioux River crested at 27.92 feet in Sioux County, two feet above flood stage forcing water over levees and berms throughout the area. In response to major impacts to residential units within Lyon, Sioux, and Plymouth counties, a multi-agency team was established to assist the communities in responding to the housing needs in the affected areas.

### A. Organization

Initiated by the necessity to continue the work established by the multi-agency team for housing needs in northwest Iowa, Governor Terry Branstad established the 2014 Long-Term Recovery Task Force on Aug. 20, 2014. The focus for the task force and work groups was restoring the impacted areas across

Iowa to their pre-disaster state with added resiliency through hazard mitigation implementation. The Iowa Department of Homeland Security and Emergency Management was established as the lead agency for the task force and designated Mark Schouten, director of the department, as the chair and Patrick Hall, Recovery Division administrator for the department, as the vice-chair. The mission for the task force includes coordination of the immediate and long-term recovery process by helping individuals, families, governments, and businesses to return to normal activities as soon as possible after an event. The work groups were designed to actively engage all levels of government, nongovernmental organizations, the private sector, and the communities. It also serves to integrate the recovery planning and post-disaster unified decision-making. There were four key elements identified under the task force that would include both responses and recommendations for the current year and future disaster events: housing, transportation, utilities, and flood risk management. The housing work group, led by the Iowa Finance Authority, was initially established in response to the flood event in northwest Iowa. This work group was to coordinate the recovery efforts related to housing and economic development, including local, state, and federal resources as well as optional volunteer agency incorporation. The transportation work group, with the Iowa Department of Transportation as the lead agency, was tasked with coordinating recovery efforts specifically related to city, county and state routes as well as the federal aid highway system. The Iowa Utilities Board was the lead agency for the utilities work group and identified recovery elements related to the repair and restoration of the utilities service throughout the state. The flood risk management work group, led by the Iowa Department of Natural Resources, worked on issues related to building resiliency within the communities impacted by the current year events and methods to increase resiliency for future events.

## **B. Housing Work Group Significant Activities and Recommendations**

### Background:

Iowans suffered significant damage caused by the flooding and severe weather that occurred in June and July of 2014. Three separate weather events including high winds, tornadoes, heavy rains, hail and flooding impacted communities throughout the state. As a result, 57 counties were declared state disaster areas by Governor Branstad, and the state received three Presidential Disaster Declarations.

The Housing Work Group is unique in having been mobilized prior to the first Long-Term Disaster Recovery Task Force meeting on Aug. 20, 2014. Following the initial disaster events of the past summer, HSEMD staff quickly identified that housing recovery needs may be significant, particularly in northwest Iowa, and convened a core group of housing recovery partners who began meeting on July 2, 2014, to identify unmet needs and coordinate available recovery resources. On July 8, 2014, core Housing Work Group members traveled to Rock Valley to meet with Senators Bill Anderson and Randy Feenstra, print and television media representatives and approximately 50 community leaders to provide updates and information on potential housing recovery resources.

### Work Group Objectives:

Once officially convened by the Long-Term Disaster Recovery Task Force, the Iowa Finance Authority (IFA) was designated as the Housing Work Group's lead under the following mission:

coordinate recovery efforts related to housing and economic development. Without any funding specifically allocated to IFA for housing recovery purposes, the agency's primary responsibilities were related to identification of unmet needs, referral, communication and coordination.

The Housing Work Group's activities engaged many housing recovery partners at the state, federal and local levels including: Iowa Finance Authority (lead agency), Iowa Department of Homeland Security and Emergency Management, Iowa Department of Human Services, Iowa Economic Development Authority, State Fire Marshal Division, Iowa Workforce Development, Iowa Disaster Human Resource Council, Small Business Administration, Federal Emergency Management Agency, U.S. Department of Agricultural Rural Development, U.S. Department of Housing and Urban Development, local public housing authorities, local housing trust funds, Safeguard Iowa Partnership, Iowa Legal Aid, and local officials. Housing Work Group partners worked together to evaluate current conditions, identify unmet recovery needs related to housing and economic development, and coordinate available recovery resources.

#### Work Group Outcomes:

- Identified that mitigation actions completed prior to 2014 resulted in an estimated \$77 million in avoided damage to housing within 20 counties (Appendix C)
- Identified and coordinated on 866 cases of housing-related needs representing potential needs of \$35 million relating to the 2014 flood events broken down as follows:
  - State Individual Assistance – 288/\$1.14 million
  - SBA loan assistance – 101/\$3.5 million
  - Community-sponsored property demolitions under the PA Program – 70/\$1 million
  - Community-sponsored property acquisitions under the Hazard Mitigation Grant Program (HMGP) total submitted - 225/\$28 million
  - IEDA committed up to \$1 million in community Development Block Grants (CDBG) monies to assist local governments to match approved federal acquisition projects under HMGP
- Participated in Housing Recovery Support Function panel presentation during annual HSEMD conference
- Developed Individual Assistance Sequence of Delivery Flowchart (Appendix D)
- Created one-page handout highlighting IFA's disaster recovery assistance resources (Appendix E)

#### Work Group Recommendations and Commitments:

- HSEMD to coordinate efforts for housing agencies to work together to develop tool for tracking disaster-related unmet housing needs to the address level (HSEMD's MB3 system has this capability)

- One-stop shop concept – users ranging from communities/counties, and local emergency managers to state and federal housing-related agencies
- HSEMD to lead state efforts to attain and administer federal FEMA funding for property acquisitions to provide for long-term mitigation and replacement housing, current total estimate \$10.36 million:
  - Rock Rapids – 62 properties for an estimated \$6.2 million
  - Olin – three properties for an estimated \$420,000
  - Rock Valley – two properties for an estimated \$265,000
  - Cedar Rapids – one property for an estimated \$246,000
  - Iowa City – nine properties for an estimated \$1.5 million
  - Des Moines – 12 properties for an estimated \$1.5 million
    - Total – 89 properties for an estimated \$10 million
    - Anticipated/estimated federal obligations – February to September 2015
    - Project completion estimate February 2016 to March 2017
- HSEMD to lead state efforts under the Public Assistance (PA) program to assist communities to demolish condemned properties and acquired properties
  - Work occurring from January 2015 to March of 2017
- IEDA to work with HSEMD and local applicant to administer \$1 million matching funds
- State Fire Marshal Division and HSEMD to continue to work together to provide needed building inspection services as a recovery resource to affected communities that do not have the necessary capacity or means to perform those services following a disaster and sharing of key inspection data (HSEMD's MB3 system has this capability)
- IFA to continue to promote the [www.IowaHousingSearch.org](http://www.IowaHousingSearch.org) online rental housing registry supported by a toll-free, bilingual call center (1-877-428-8844) as a vital component of Iowa's disaster preparedness to recovery partners, landlords and Iowans in search of rental housing options. This service provides listings of housing and resources, updated on a daily basis to ensure optimal housing preparedness for our state.
- IFA to continue to promote Iowa Mortgage Help, a state-sponsored resource offering free, confidential mortgage counseling through a hotline number (1-877-622-4866) and website at [www.IowaMortgageHelp.com](http://www.IowaMortgageHelp.com) for Iowans who fear they may not be able to make their mortgage payment.
- Housing agencies to promote locally-established disaster loan programs in times of need, such as those created by two banks in Lyon County to assist with personal and business-related clean up, repair and construction expenses. Loan amounts ranged from, \$2,500 at zero percent for 18 months up to \$25,000 at zero percent for the first 12 months. Beyond the low initial rates, longer-

term loans were available at favorable rates for flood-impacted homes and businesses. One banker commented, “I don’t think we turned anyone down for a request.” The success of these programs can be attributed to local bankers who worked one-on-one with borrowers to help them quantify necessary repair costs and budget accordingly.

- Continue to emphasize the importance of purchasing flood insurance (National Flood Insurance Program) to Iowans, perhaps through creation of a state direct subsidy or tax credit program to encourage purchase.
- Advocate for a dedicated funding source for disaster case management services to ensure equitable access to such services for all Iowans recovering from the impact of a disaster.
- Iowa lawmakers should consider codifying the “Iowans Helping Iowans Housing Assistance Program” or a similar program as a standing, permanent assistance program for homeowners impacted by a disaster. A standing program to be administered by IFA would allow the state to quickly act once funding was allocated to fill unmet housing recovery needs beyond the scope of other state or federal resources. A standing program would also ensure a consistent state response to housing recovery across multiple disasters rather than developing a new approach following each disaster. IFA should be directed to draft legislation to implement this recommendation.
- Since much of the Housing Work Group’s efforts began prior to initiation of the full Long-Term Recovery Task Force, no subgroups were formed, but in future recovery efforts, consideration should be given to creating two or more subcommittees, perhaps focused on emergency/temporary shelter and permanent housing.

Appendix C:

Property Acquisition Benefits and Losses Avoided

Appendix D:

Individual Assistance Sequence of Delivery Flowchart

Appendix E:

Iowa Finance Authority – Disaster Recovery Assistance Resources

## **C. Transportation Work Group Significant Activities and Recommendations**

Background:

As a work group of the Governor’s Long-Term Recovery Task Force, state agencies with vested interest in response and recovery activities related to Iowa’s transportation systems congregated to identify best practices and unmet needs.

The Transportation Work Group was established to deal with the consequences associated with the severe weather and flooding that occurred during the summer months of 2014. Fifty-seven Iowa counties were declared disaster counties by Governor Branstad and the state received three Presidential Disaster Declarations. The Transportation Work Group established the following four sub-groups:

- Work group 1 - Event Initiation Coordination
- Work group 2 - Rail, Public Transit, River (Barge) Traffic, and Aviation Needs
- Work group 3 - Debris Removal
- Work group 4 - Eligibility, Codes and Standards

The Transportation Work Group's activities engaged many partners at the state, federal and local levels including: Department of Transportation (lead agency), Iowa Department of Homeland Security and Emergency Management, Iowa Department of Human Services, Iowa Department of Natural Resources, Iowa Department of Cultural Affairs, Iowa Department of Corrections, Iowa Emergency Management Association, Iowa State Association of Counties, Federal Highway Administration, and Federal Emergency Management Agency.

### Transportation Work Group 1 - Event Initiation Coordination

#### Work Group Objectives

- Gather and evaluate current response and recovery policies, procedures, and processes of state agencies to identify areas requiring improvement
- Determine how to best utilize the preliminary damage assessment tool (EMGrants Pro) to assist in transportation-related damage
- Develop communications protocol to assist state, county and municipalities to properly secure FHWA – ER and FEMA funding
- Provide local governments with eligibility guidance to secure FHWA – ER and FEMA funding

#### Work Group Recommendations and Commitments:

- Revise HSEMD preliminary damage SOP to include contact and inclusion of the DOT and FHWA to support their damage assessment needs in conjunction with HSEMD mission.
- Create a disaster communications SOP
  - Based on group member collaboration, a SOP outlining the communications process between multiple agencies will be created. The SOP will serve as a reference for agencies involved in activities associated with initial disaster response actions. The disaster communications SOP will improve on communication and the process of HSEMD's disaster applicant briefing process.
- Improve the applicant briefing materials and process
  - Revise Iowa HSEMD applicant briefing slides to provide information on the FHWA – ER program and appropriate contact information.
  - Include other state agencies' information (debris reduction, FHWA – ER eligibility) within the Iowa HSEMD applicant briefing packets.
- Expand multi-agency use of MB3 emergency management software

- Multi-agency accessibility to the MB3 program will improve communication efforts between agencies at the beginning and throughout a disaster event.
- MB3 software demonstration was presented to the work group by HSEMD.
- Training to Iowa Department of Natural Resources on MB3 software was conducted in December 2014.
- Iowa HSEMD continues to offer training on EMGrants Pro to state and local governments.
- EMGrants Pro was evaluated for use to gather FHWA – ER information.

### Transportation Work Group 2 - Rail, Public Transit, River (Barge) Traffic, and Aviation Needs

#### Work Group Objectives:

- Develop a white paper for rail needs to identify funding shortfalls
- Determine the Iowa DOT governor’s proclamation communication process in order to expedite communication within the DOT organization. This will ensure that any request for resources to respond and information sharing is completed in a timely manner.

#### Work Group Recommendations and Commitments:

- Resources and publications from the Iowa Department of Transportation Office of Rail Transportation were used to create a white paper summarizing the Iowa rail system network on a local and national level. The white paper included examples of past flood-related disruptions to the rail system caused by flooding and emphasized the current lack of disaster-related rail funding at the state and federal level.
- Iowa DOT created a communication process flowchart for internal and HSEMD use in the event that a disaster-related event may require the need for a specific governor’s proclamation requiring immediate action (e.g., oversize and/or overweight permit waivers required to expedite the shipment of rail repair materials).

### Transportation Work Group 3 – Debris Removal

#### Work Group Objectives:

- Develop a checklist for local governments to reference for debris removal activities based on agency-specific needs (HSEMD and Iowa Departments of Transportation, Natural Resources, and Corrections)

#### Work Group Recommendations and Commitments:

- Based on multi-agency feedback, a debris removal checklist was created for county emergency managers to follow when responding to large-scale debris removal efforts requiring multi state-agency coordination and response. The debris checklist will allow local emergency management personnel to effectively communicate with external agencies when coordinating large-scale debris removal events.

## Transportation Work Group 4 – Eligibility, Codes, and Standards

### Work Group Objectives:

- Obtain feedback on long-term recovery in the area of eligibility and codes and standards and the use of proper terminology to gain FEMA approval and compliance.

### Work Group Recommendations and Commitments:

- A terminology document was created for use by state agencies responsible for the administration of grant funds and federal funding agencies to identify terms that carry different meanings depending on the agency and context. This document can be used to eliminate confusion that may arise when determining the appropriate funding agency.
- Continue to conduct ongoing work group discussions focused on the development of guidance to local agencies establishing good documentation practices and meeting FEMA eligibility criteria.
  - Review current level of obligation of counties and cities to follow Iowa DOT codes and standards;
  - Better identify the appropriate method(s) of adoption of codes and standards;
  - Review current Iowa DOT tools to determine if an existing method/document can be adapted for adoption and by whom;
  - Determine level of documentation required to properly demonstrate pre-disaster condition of facilities; and
  - Determine scheme for disseminating guidance/information gathered about current codes and standards.
- HSEMD should continue to work with Iowa DOT, to directly assist local governments in adopting codes and standards for the transportation systems and infrastructure programs so that FEMA will fund the upgrade at a time of disaster.
- HSEMD should consider legislative changes that would promote the adoption of the new codes and standards.

### Outcomes:

- HSEMD's Public Assistance officer continued the Transportation Work Group's efforts in developing guidance for local agencies establishing good documentation practices and meeting FEMA eligibility criteria. The Iowa County Engineer's Association (ICEA) provided the Public Assistance officer the platform to address Iowa's county engineers on documentation best practices and to initiate the development of a template ordinance to be used by counties and cities for the adoption and implementation of their codes and standards for roads and bridges.
- As a result of this platform, Winneshiek County provided a draft ordinance to be used as a template. This ordinance was submitted to FEMA for review and approval. FEMA's Public Assistance Program staff and Office of General Council performed a review of the ordinance and provided edits. Once FEMA's review was complete the ordinance was submitted to the Iowa Department of Transportation and to Winneshiek County for review. FEMA's suggested edits were accepted without concerns by IDOT and Winneshiek County and the ordinance was distributed to county engineers by the ICEA and to the county emergency management coordinators by HSEMD.

## **D. Flood Risk Management Work Group**

### **Background**

The effort to formally coordinate flood risk management efforts in Iowa was initiated during the flood of 1993 and has grown since that time due to the increasing impact of flooding in Iowa and the need for interagency, intergovernmental and non-governmental (NGO) coordination. Several of the issues addressed by the Flood Risk Management Work group (FRMWG) were first identified more than 20 years ago and are ongoing concerns. Others are new and reflect technological, scientific, and policy changes.

Five teams were established to address specific issues related to the subject of flood risk management: River Gauges, IFC Sensors and Flood Forecasting; Floodplain Mapping; Transportation Mitigation Opportunities; Outreach and Education; and Hazard Mitigation Planning. Members on the FRMWG with expertise in those areas were selected to meet and make recommendations based on their charge.

The FRMWG membership consisted heavily of state and federal agency representatives from the well-established Iowa Silver Jackets Flood Risk Management Team (SJ). Additional members were recruited in this effort. All of the members are interested in institutionalizing this effort, and implementing these recommendations through SJ or another entity as decided by the task force. The Flood Risk Management Work Group established the following five sub-work groups:

- Sub-Work Group 1 - River Gauges, IFC Sensor and Flood Forecasting
- Sub-Work Group 2 - Floodplain Mapping
- Sub-Work Group 3 - Transportation Mitigation Opportunities
- Sub-Work Group 4 - Outreach and Education
- Sub-Work Group 5 - Hazard Mitigation Planning

The Flood Risk Management Work Group's activities engaged many partners at the state, federal and local levels including: Iowa Department of Natural Resources (lead agency), Iowa Department of Homeland Security and Emergency Management, Iowa Department of Transportation, Iowa Department of Agriculture and Land Stewardship, Iowa Economic Development Authority, U.S. Army Corp of Engineers, Federal Highway Administration, National Weather Service, Federal Emergency Management Agency, U.S. Department of Housing and Urban Development, U.S. Geological Survey, Natural Resources Conservation Service, Iowa Flood Center, Iowa Emergency Management Association, Iowa Floodplain and Stormwater Management Association, and Iowa State University.

### **Flood Risk Management Work Group 1 - River Gauges, IFC Sensors and Flood Forecasting**

#### **Work Group Objectives:**

Accurate and timely flood forecasting – and the infrastructure network required to provide it – are important to communities' efforts to minimize damage that might be caused by a flood event. A number of state and federal partners (e.g., U.S. Geological Survey, National Weather Service, Iowa Flood Center, and U.S. Army Corps of Engineers) are responsible for the infrastructure networks that collect the data used in flood forecasting.

- The U.S. Geological Survey (USGS) operates/maintains a network of 256 stream gauges on Iowa streams, 152 of which provide real-time stage and discharge information (37 others

provide real-time stage only information). The operation of many of those gauges is co-funded by other federal, state or local agencies.

- The Iowa Flood Center (IFC) operates/maintains a network of 244 stream sensors on Iowa streams. While not as accurate as the USGS stream gauges, these sensors provide real-time river stage information that is valuable during a flood event. The sensors currently only provide stream stage information (i.e., no discharge values).

The goal of this team is to increase coordination between the partner agencies in an effort to identify outstanding needs for improvements to the data collection network, develop plans for addressing those needs, ensure the best use of available resources, optimize the use of the existing data collection infrastructure and develop plans for dealing with budget shortfalls that might affect the existing data collection network.

#### Work Group Recommendations and Commitments:

The timeliness and accuracy of flood forecasts increase with the availability of real-time stream flow data. However, there are currently a number of gaps in the state's existing real-time stream data collection network.

The USGS National Streamflow Information Program (NSIP) lists 118 stream gauge sites considered critical to meeting the state's streamflow information needs. Of those, 26 are currently not funded; and, many of the others are co-funded by other partners. The current annual cost to operate/maintain a USGS stream gauge is \$14,940. Full implementation of the NSIP would not only result in funding for those 26 identified gauges sites that are currently unfunded, but would also make available funding currently provided by cosponsors that might potentially be used to fund additional stream gauges.

The IFC flood sensors were not intended to provide either the accuracy or extended features provided by a USGS stream gauge. But, at approximately \$3,500 per installation, the 244 existing stream sensors provide valuable, real-time stream stage information during a flood event. The value of the sensors would be enhanced if they could also provide stream discharge information (i.e., in cubic feet per second). In order for them to do this, rating curves would need to be developed for each stream sensor site. A rating curve is a stage-discharge relationship that provides the stream flow (in cubic feet per second) at each river stage. Development of a rating curve requires the collection of survey data to define the geometry of the stream channel at that location. That survey data can be supplemented with the state's 2-foot LiDAR to create a full valley cross-section at that location. That cross-section is then used to perform the hydraulic analysis necessary to develop the rating curve.

Developing rating curves for the entire stream sensor network could be accomplished with a budget of approximately \$500,000. The time to complete such a project would be 12-18 months. The Rock Island District Corps was recently awarded \$45,000 to conduct a pilot project that consists of developing rating curves for four to six stream sensors co-located near existing USGS stream gauges. The purpose of the pilot project is to establish standard procedures for rating curve data collection and to compare and assess the accuracy of the stream flow values obtained from the stream sensor rating curves. If the pilot project determines that the accuracy of the stream flow values provided by those stream sensor rating curves is acceptable, the team recommends that rating curves be developed for the rest of the network.

The work group recommends the following items:

- The State of Iowa should advocate full implementation of the NSIP

- If the pilot project conducted by the Rock Island District Corps determines that the accuracy of the stream flow values provided by the stream sensor rating curves is acceptable, funding should be sought to develop rating curves for the rest of IFC stream sensor network

## Flood Risk Management Work Group 2 - Floodplain Mapping

### Work Group Objectives:

Accurate floodplain mapping is important for purposes such as informed development design, mitigation planning, and emergency preparation and response. Using \$15 million in supplemental Community Development Block Grant funds resulting from the 2008 federal disaster declaration, the state of Iowa (through the Iowa DNR and IFC) is currently working to produce improved, digital floodplain mapping products using the state's 2-foot LiDAR for those 85 counties that were included in that disaster declaration. The resulting map products will include flood inundation layers and depth grids for eight different flood frequencies (i.e., the 2, 5, 10, 25, 50, 100, 200 and 500-year frequency events).

Floodplain maps for the 14 counties not included in the 2008 disaster declaration are being produced by the USACE using Program Assistance to States (PAS) funding.

In addition, the IFC is currently developing updated floodplain map products for two of the communities most severely affected by flooding in 2014: Rock Rapids and Rock Valley. Those floodplain map products will be used by the USACE to perform Flood Risk Adaptive Measures (FRAM) studies for those communities.

The goals of this team are to ensure that resulting products include the best available data and to provide information that can be used for multiple purposes and is easily accessible and useable for the determination of flood risk by, not only land use and mitigation professionals, but also the general public (including the agricultural community).

### Work Group Recommendations and Commitments:

The digital floodplain map products being produced by the state of Iowa and USACE are intended to:

- Replace outdated paper maps
- Replace earlier, less accurate digital floodplain map products produced by FEMA using less suitable elevation products (e.g., 10- and 20-foot interval contours), and
- Provide maps for areas that currently do not have a floodplain map.

When the state's mapping project was initiated, Region VII FEMA was able to use the "draft" map products produced by the State of Iowa as a cost-match against its own mapping budget. This allowed Region VII to incorporate the State's map products into published FEMA Flood Insurance Rate Maps (FIRMs). As a result of this State/FEMA partnership, there are currently seven county floodplain map products in the process of becoming effective FEMA FIRMS. However, FEMA's mapping priorities have since changed. Also as a result, large portions of Iowa are now considered by FEMA as having a low priority for receiving new FEMA mapping projects.

In reaction to this change at FEMA, the state is using \$1.4 million of its remaining mapping funds to pay the cost of publishing floodplain maps for 21 additional counties as FEMA FIRMs (at a cost of

approximately \$67,000 per county). However, funding needed to publish maps for the remaining 57 counties as FIRMs has not been identified. The State is scheduled to complete production of draft map products for the 85 counties included in its mapping project by the end of 2016. There is a risk that, if those products are not quickly (less than two years) incorporated into a published FEMA FIRM, the data used to produce them, particularly the hydrology, might be considered to be outdated.

The USACE is using PAS funding to produce floodplain maps for the 14 counties that were not included in the 2008 disaster declaration. While progress has been made, the annual funding stream for the PAS program has been small. At the current rate of funding, it will be several years before draft map products are completed for those counties, after which, there is currently no identified funding available for those products to be published as FEMA FIRMs.

The map products being produced by the State's mapping efforts include digital layers showing the flood inundation areas and depth grids for all eight flood frequency events. In order to utilize this data, a person typically needs to use a GIS software package. Most GIS software is complicated to use and often prohibitively expensive for individuals and small government organizations to own. A better option is to provide the information as part of a web-based GIS map service. Iowa DNR and IFC staffs have developed methods to efficiently serve the large datasets associated with these products for delivery through Web-based services.

The recommendations of the work group are as follows:

- Funding should be sought for the completion of the floodplain mapping products for the 14 counties not included in the 2008 disaster declaration.
- Funding should be sought for the publication of all draft floodplain mapping products produced by the State and USACE as official FEMA FIRMs.
- Iowa DNR and IFC staffs should continue with efforts to make all products resulting from the State's floodplain mapping project available through a web-based GIS service.

#### Flood Risk Management Work Group 3 - Transportation Mitigation Opportunities

##### Work Group Objectives:

In discussions with county engineers, it was discovered that, when making application for FEMA Public Assistance Program funding to repair flood-related damage to transportation infrastructure, few included measures intended to mitigate against future flood damage. The reason appears to be that they are unaware of the circumstances where such measures can be funded.

The goal of this team is to provide local city and county engineers with information that will help them to determine when they can include mitigation/resilience measures as part of their applications for FEMA Public Assistance Program funding for flood-damage repair.

##### Work Group Recommendations and Commitments:

Presentations will be made at conferences of the Iowa chapters for both the American Public Works Association (APWA) and Iowa County Engineers Association (ICAE). The presentations will provide information including the circumstances where FEMA might consider funding flood mitigation/resilience measures related to flood damage repair projects and the constraints associated with the availability of such funding.

## Flood Risk Management Work Group 4 - Outreach and Education

### Work Group Objectives:

Many attempts have been made over the years to inform and educate communities, businesses and other institutions about the tools and approaches that can be used to assess and reduce their risks caused by flooding. However, most of these attempts have had limited success.

The goals of this team are to determine the educational needs for communities, businesses and other institutions susceptible to damage by flooding, develop training and other informational products that address those needs, and deliver that training and information products in a form and manner that meets the needs of the target audiences.

### Work Group Recommendations and Commitments:

The northwest Iowa communities of Rock Rapids and Rock Valley were severely affected by flooding in 2014. Both communities have indicated an eagerness to participate in programs and activities that would help them to reduce their future flood risks. The team believes these two communities, having been so recently affected by flooding, could provide an opportunity for it to assess what information and assistance might be of benefit to such communities. The team will develop a needs assessment intended to determine the types of information and training those communities believe would have been beneficial to them both pre- and post-flood. Based on the needs identified, a pilot educational and training program will be developed and delivered to the communities of Rock Rapids and Rock Valley. Additional partners that could assist with the development of this training program are the Environmental Protection Agency and Northwest Iowa Planning and Development Commission. The hope is that this pilot program will result in the development of training programs covering subjects such as flood preparedness and response, risk analysis, mitigation and resilience that can be delivered to other communities and organizations statewide.

The recommendations of the work group are as follows:

- Continue with development of a pilot education and training program for the communities of Rock Rapids and Rock Valley, with the goal of creating additional educational opportunities that can be delivered to other communities and organizations.

## Flood Risk Management Work Group 5 - Hazard Mitigation Planning

### Work Group Objectives:

The hazard mitigation planning process is intended to reduce loss of life and property by lessening the impacts of disasters. By taking action now via planning, the potential human and financial consequences are reduced. In order for mitigation planning to be effective, all participating communities must understand the local risks and work together to identify and develop measures to mitigate each of them. In the best case scenario, the community integrates the hazard mitigation plan into its existing comprehensive plan and development standards. However, there is concern that the writing of hazard mitigation plans is becoming formulaic and that, in too many cases, the local plans do not satisfactorily accomplish goals beyond that of the plan being approved by FEMA.

The goals of this team are to improve the quality of local hazard mitigation plans, thereby resulting in more effective mitigation and management of flood risk and reduction in flood losses. Additionally,

these proposed improvements will likely save both administrative time and money developing said local plans.

#### Work Group Recommendations and Commitments:

Risk analysis is by far the most time consuming part of the hazard mitigation planning process. It has been observed that local officials and stakeholders often “burn-out” before the risk analysis portion of the plan is completed, often resulting in their reduced participation during the rest of the process.

An option would be for the State to perform risk analysis statewide and provide that information to the communities’ hazard mitigation planners. Doing this would not only reduce the amount of time the community would need to spend on risk analysis (potentially providing more time to devote to implementation), but also set a minimum standard for the risk analysis for each hazard mitigation plan.

One of the methods that could be used to perform a statewide risk analysis is FEMA’s Hazus software. The greatest expense in using Hazus for such an analysis is the development of the required data layers. However, within just a few years, the State of Iowa will find itself in the unique position of having most of the data layers required to perform a Level 2 Hazus risk analysis for a large portion of the state; those layers being:

- 2-foot LiDAR
- Multi-frequency depth grids
- Parcel/structure inventory

The initial integration of the Hazus data will be more time consuming, as the data layers will have to be created in GIS. This task will most likely have to be contracted out by most communities. One potential way to circumvent a large majority of the data layer workload is to work the said data into the State’s Hazard Mitigation Plan. By doing so, most of the initial data crunching will be completed, giving local communities a much easier task when applying it to their communities. After the data set is created, local communities should require less administrative time performing risk assessments. This time savings coupled with the usage of the State’s data could potentially reduce the costs to create a local mitigation plan.

To determine the effectiveness of this approach, a pilot project could be conducted where Hazus Level 2 risk analysis data is provided to a specific county that is scheduled to begin the process of updating its hazard mitigation plan. The team would determine whether the higher-quality risk analysis data, plus the time savings resulting from the risk analysis being provided to the community, results in a better hazard mitigation plan and better implementation. The county selected for such a pilot project should be one where the data layers required for the Level 2 analysis already exist.

The recommendations of the work group are as follows:

- Continue to investigate the use of Hazus for flood risk analysis
- Conduct pilot project where a Level 2 Hazus risk analysis is conducted for a county where the necessary data exists and its hazard mitigation plan is scheduled for update. Evaluation should be conducted to determine whether providing the Hazus risk analysis data to the community resulted in an improved plan with better implementation.

- Review the feasibility of the State using the Hazus software to create a state-wide risk analysis. This data would ultimately be utilized in the Iowa Hazard Mitigation Plan.

## **E. Utilities Work Group**

### Background:

In the recovery from severe storms, tornadoes, and flooding that occurred during the summer of 2014, the governor appointed several agencies, trade groups, and service organizations to form a Long-Term Recovery Task Force. The Utilities Working Group of the Long Term Recovery Task Force focused on the unique issues of utilities operating within the state regarding natural disasters and recovery.

The Utilities Work Group's activities engaged many partners at the state, federal and local levels including: Iowa Utilities Board (Lead Agency), Iowa Department of Homeland Security and Emergency Management, Iowa Department of Natural Resources, Iowa Department of Agriculture and Land Stewardship, Iowa Emergency Management Association, Iowa Association of Municipal Utilities, Iowa Association of Electric Cooperatives, Iowa American Water, Black Hills Energy, MidAmerican Energy, and Alliant Energy.

### Work Group Objectives:

The Utilities Working Group identified several objectives:

- Greater participation by utilities in the emergency management structure through participation in multi-jurisdictional planning, training, and exercises. Utility supervisory staff should become acquainted with emergency management personnel at a minimum.
- Greater outreach to and coordination with utilities by emergency management personnel. Access to utility information in the event of a disaster and during the recovery process.
- Greater coordination with transportation as many rural water issues are tied to road issues because of the common use of rights of way for roads and utilities. Stream crossings are of particular concern as bridge scouring tends to expose utilities.
- Greater coordination with electrical and telecommunications, as many rural water issues are interdependent with (reliable) power sources and communications.
- Work with county level drainage to construct detention/retention ponds on larger tiles. This can help with flash flooding as well as non-point pollution issues (potential for funding under SRL).
- Further development of mutual aid arrangements: IOWARN (Iowa Water Agency Response Network), utility mutual aid, and EMAC (Emergency Management Assistance Compact) agreements to assist in speedy response when damage occurs.
- Greater use of after action review post-event to refine response procedures and identify needs
- Potential inclusion of utility organizations in Governor's Homeland Security Conference.
- Greater use of Safeguard Iowa liaisons and participation from utilities in Safeguard Iowa.

- American Public Power Association national response network can provide some resources for utilities in responding to emergencies and creating exercises.
- Continue implementing hazard-reducing construction and maintenance projects to gradually reduce risk over time.
- Utilize hazard-specific data products (i.e. Iowa DNR LiDAR floodplain mapping products) to accurately determine and implement mitigation of hazards.

#### Work Group Recommendations and Commitments:

- Utilize existing programs within the private and public sectors to gradually reduce risk.
- Utilize new products in the planning and implementation of hazard-reducing projects.
- Develop a GIS that catalogs utilities by township for distribution to the emergency management community.
- Explore interoperable communications strategies with first responders.
- Utilize existing funding streams for publicly-owned utilities to plan for hazard-resistant infrastructure (State Revolving Fund programs).

## Part IV. Applying Recommendations to the Future

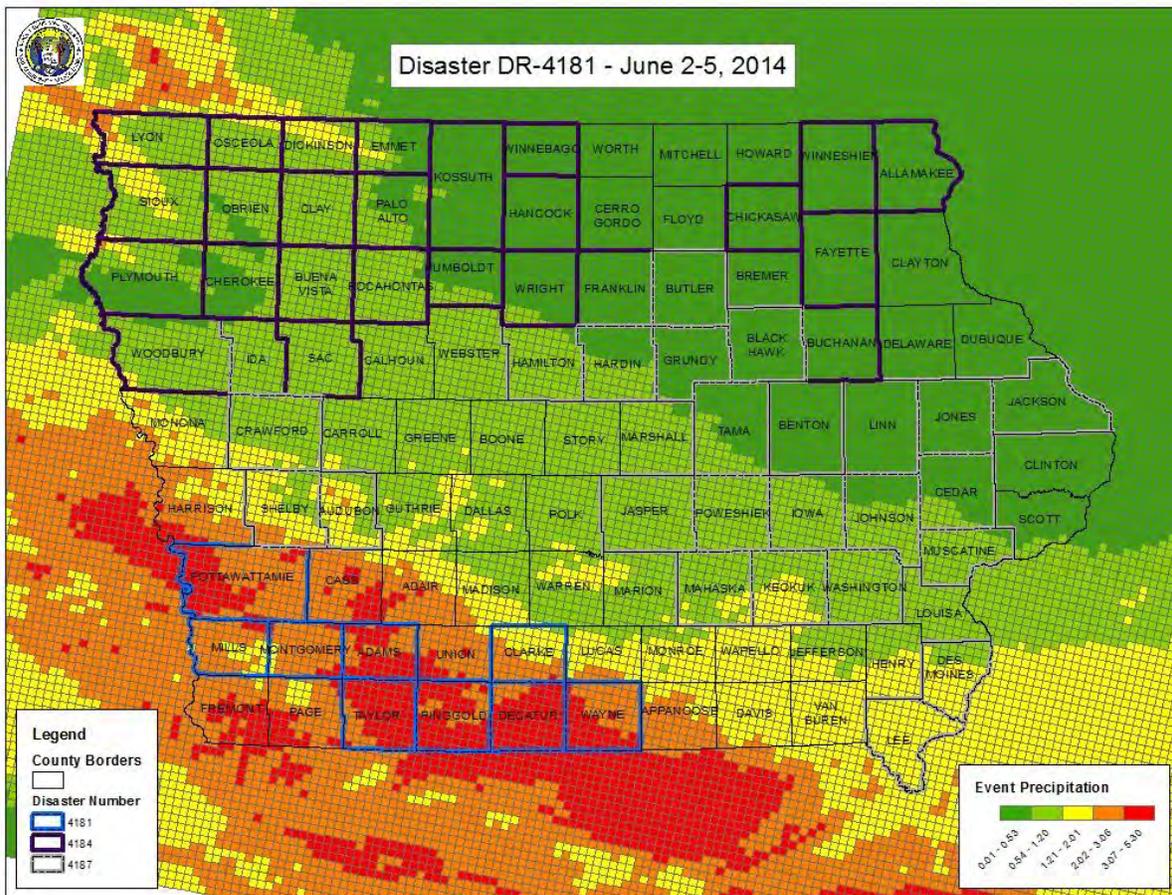
With each disaster event comes new challenges and opportunities. Modeled after the Floods of 1993 Iowa Flood Disaster Report and the 2011 Missouri River Flood Coordination Task Force Report, this report and information is provided as a guide for future activities by entities within the state of Iowa, federal, state, and local, when responding to disaster events and activities that will help prevent or alleviate the damage incurred by future disaster events. The activities and documentation of the workgroups have laid the ground work for continued action in a number of areas of concern related to the long-term recovery and resiliency of communities impacted by future disasters. The Iowa Department of Homeland Security and Emergency Management would like to acknowledge the agencies that were requested to lead the workgroups during this process and to thank the directors of the Iowa Department of Transportation, the Iowa Finance Authority, the Iowa Department of Natural Resources, and the Iowa Utilities Board, as well as all of the agencies that allowed employees to participate in the task force. Without all of the stakeholders involved the task force would not have been able to identify and accomplish the goals or continue with the implementation of the recommendations identified to create a more resilient state.

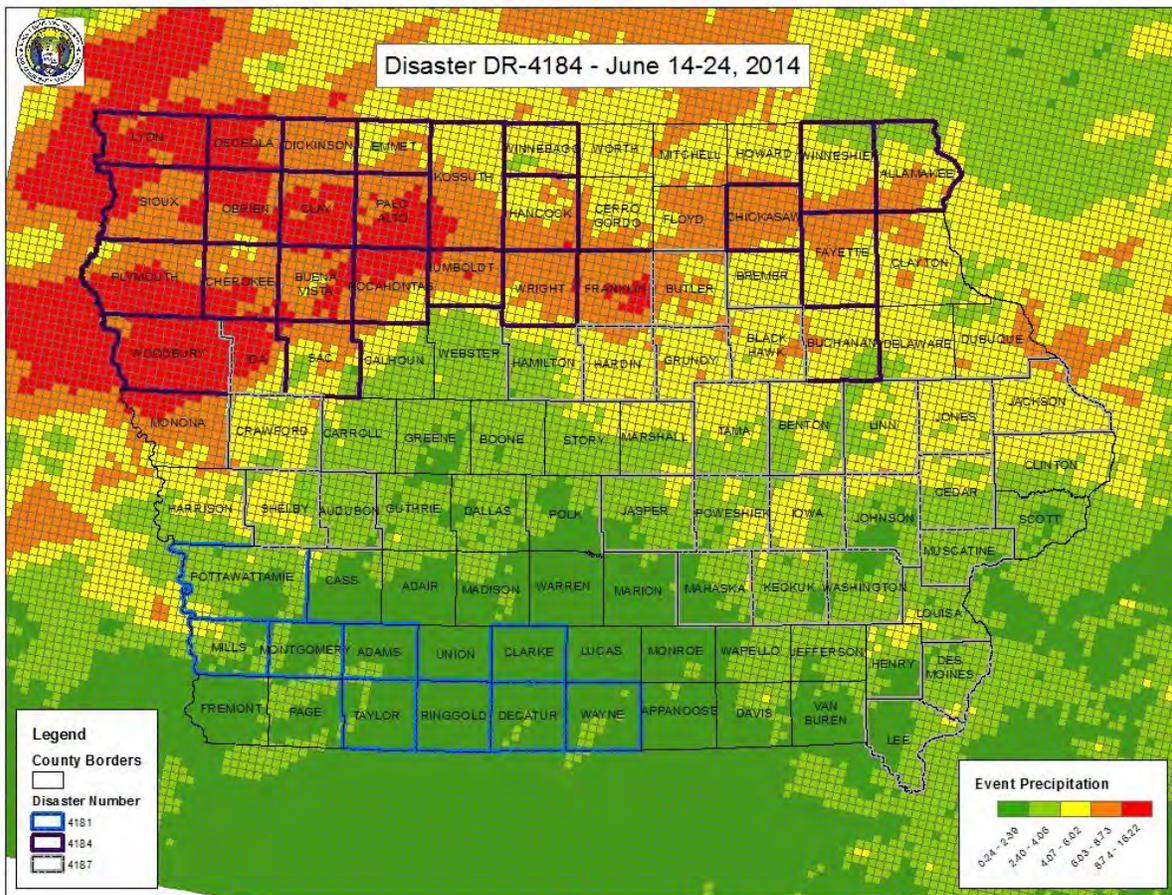
Part V: Appendixes

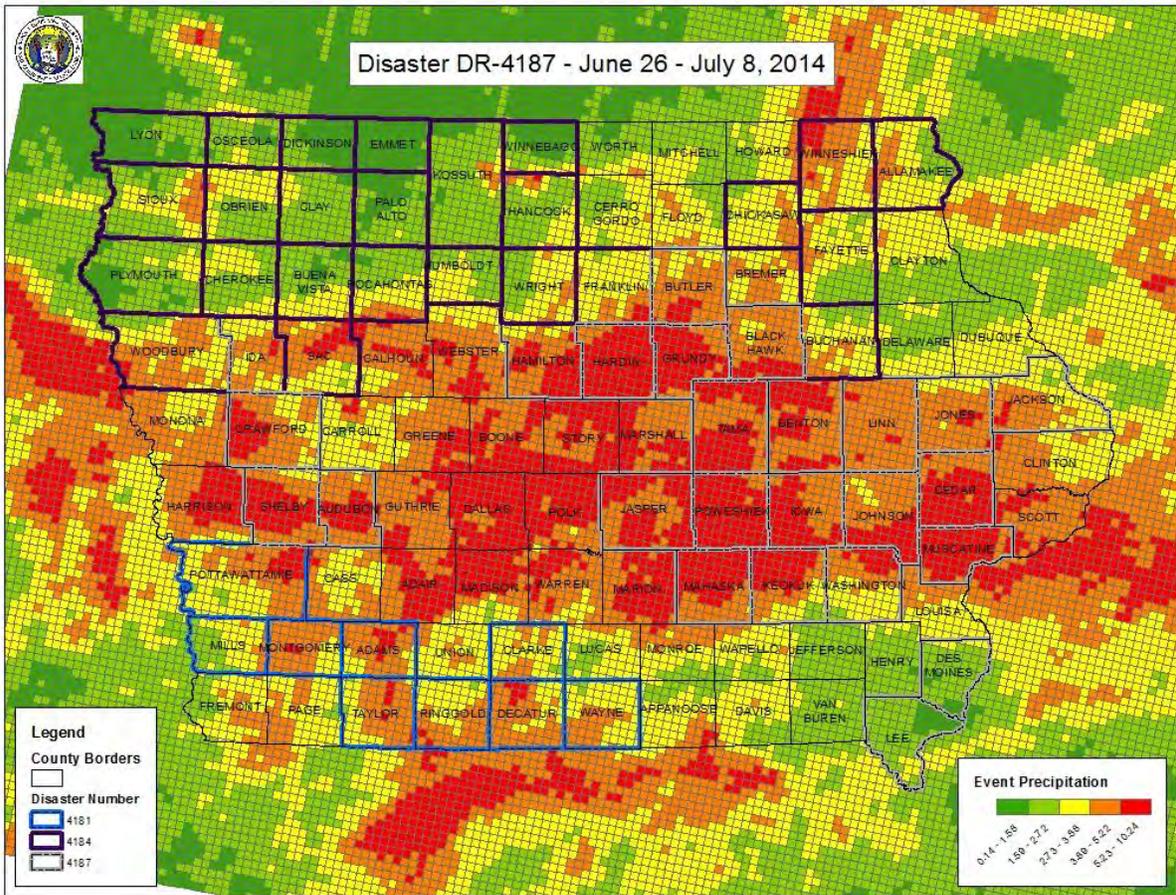
**Appendix A: 2014 Joint Preliminary Damage Assessment Public Assistance**

County	June 3 Event	June 14 Event	June 26 Event
Adams	\$112,616		
Allamakee		\$252,635	
Audubon			\$330,000
Black Hawk			\$626,403
Buchanan		\$271,436	
Buena Vista		\$378,206	
Butler		\$305,139	\$369,900
Cedar			\$398,700
Cherokee		\$328,125	
Chickasaw		\$93,887	
Clarke	\$43,000		
Clay		\$482,648	
Decatur	\$1,065,695		
Des Moines			\$994,633
Dickinson		\$92,460	
Emmet		\$41,775	
Fayette		\$384,057	
Franklin		\$265,789	
Grundy			\$150,975
Hamilton			\$149,900
Hancock		\$179,788	
Hardin			\$181,100
Humboldt		\$61,028	
Ida		\$150,000	\$32,750
Iowa			\$172,663
Jackson			\$199,083
Jasper			\$244,000
Johnson			\$2,679,617
Jones			\$1,770,875
Keokuk			\$132,169
Kossuth		\$78,951	
Lee			\$509,368
Linn			\$3,053,557
Lyon		\$4,270,047	
Mahaska			\$400,000
Mills	\$88,232		
Montgomery	\$680,037		
Muscatine			\$243,862
Osceola		\$116,958	
Palo Alto		\$249,600	
Plymouth		\$671,774	
Pocahontas		\$62,711	
Pottawattamie	\$3,183,122		
Poweshiek			\$94,000
Ringgold	\$313,905		
Sac		\$111,318	
Sioux		\$1,161,417	
Tama			\$196,400
Taylor	\$57,390		
Washington			\$87,246
Wayne	\$52,059		
Winnebago		\$52,111	
Winneshiek		\$236,325	
Woodbury		\$882,481	
Wright		\$451,313	
<b>Totals</b>	<b>\$5,596,056</b>	<b>\$11,631,979</b>	<b>\$13,017,201</b>

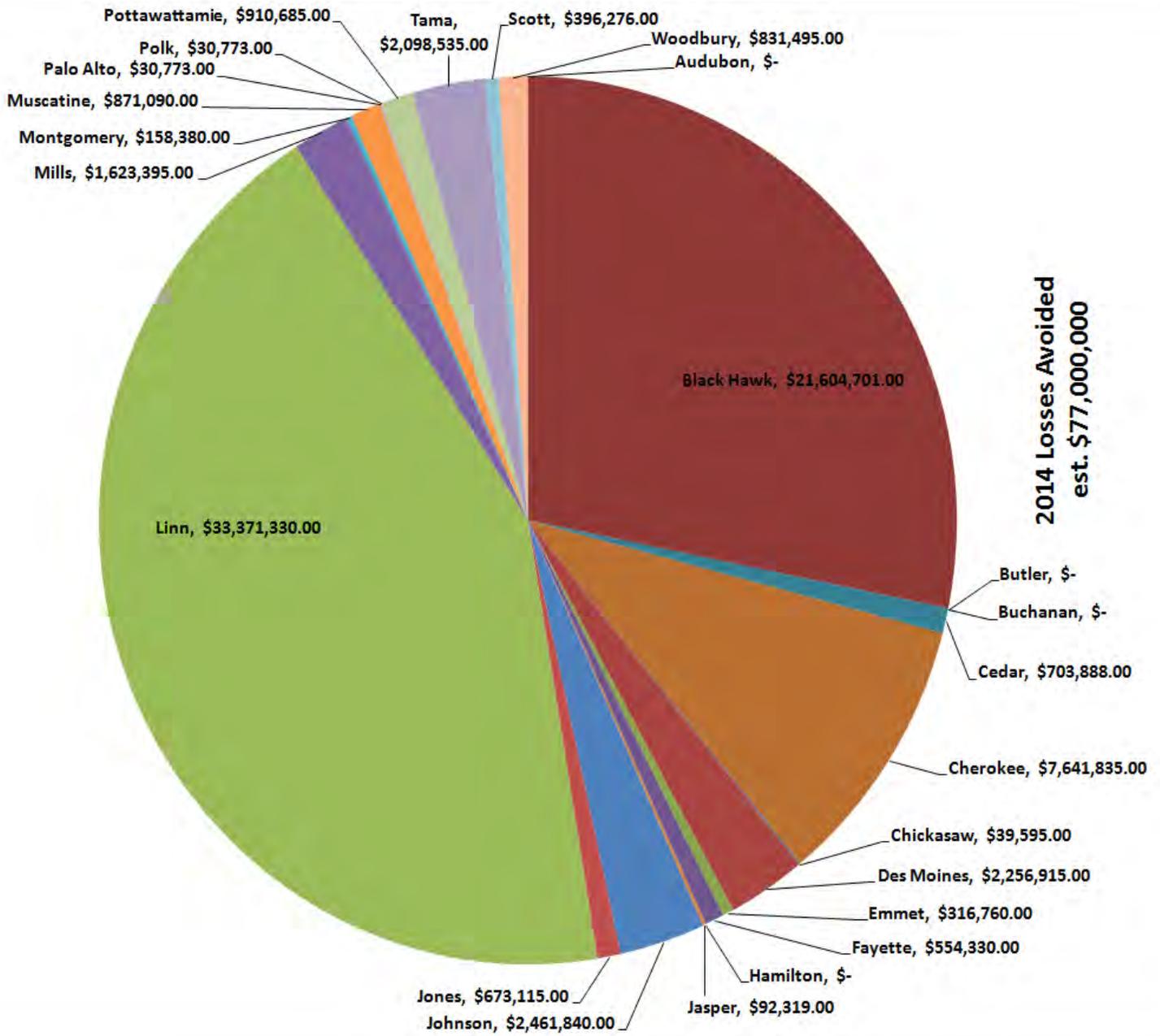
## **Appendix B: 2014 Event Precipitation Maps**





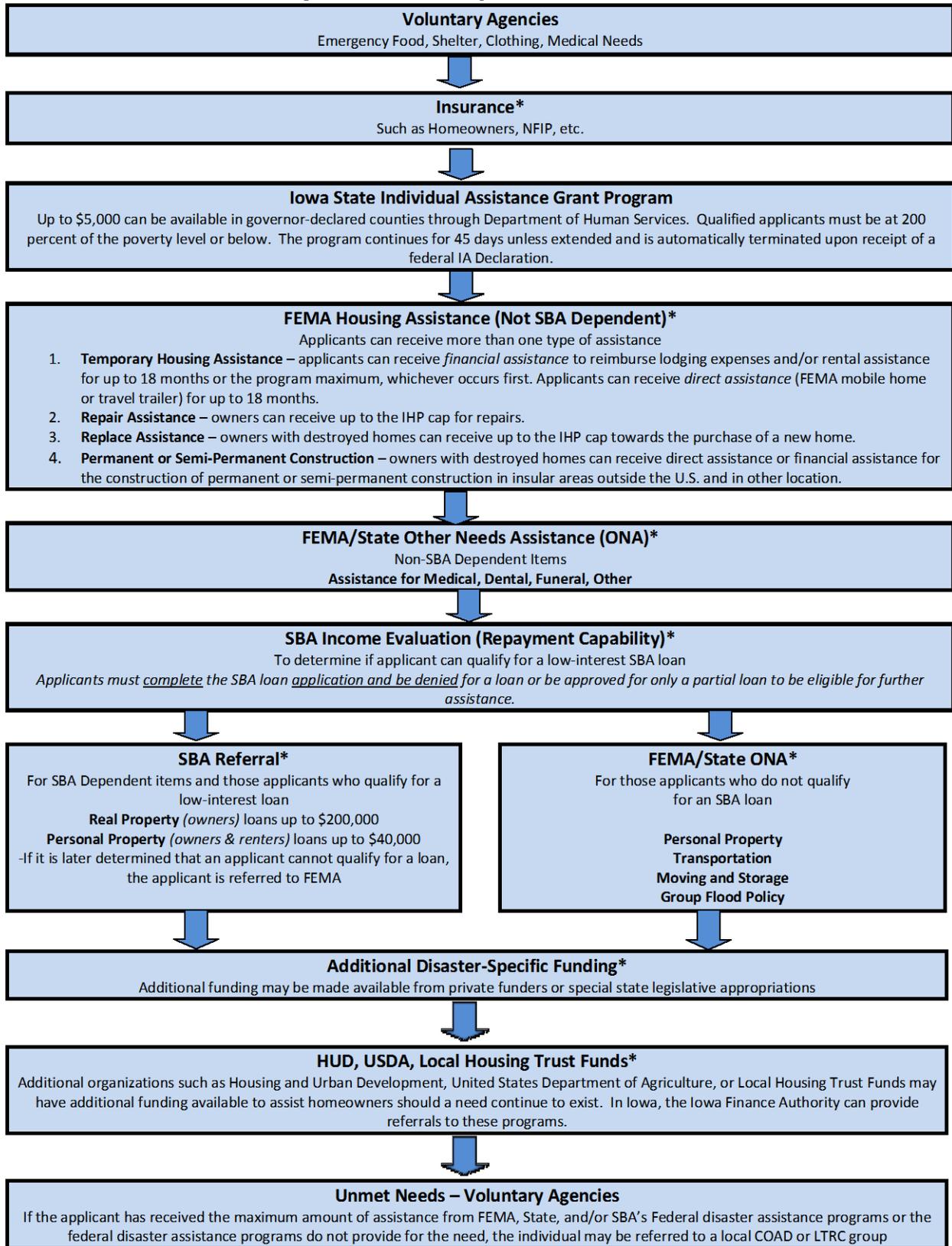


## **Appendix C: Property Acquisition Benefits and Losses Avoided**



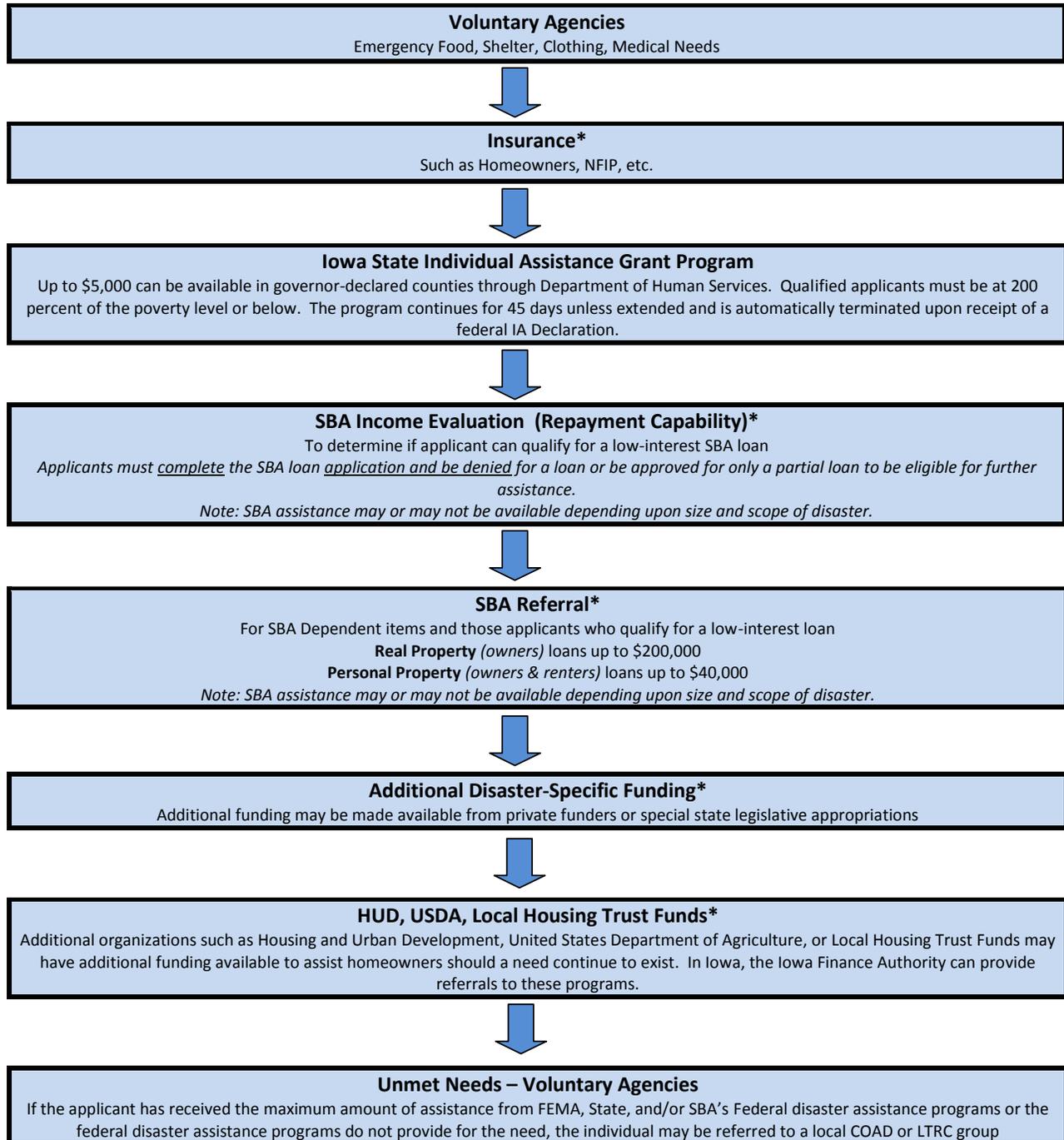
**Appendix D: Individual Assistance Sequence of Delivery Flowchart**

## Individual Assistance Sequence of Delivery with Federal IA Declaration



**\*Indicates program is most likely outside the local jurisdiction's control**

## Individual Assistance Sequence of Delivery without Federal IA Declaration



\*Indicates program is most likely outside the local jurisdiction's control

**Appendix E: Iowa Finance Authority – Disaster Recovery Assistance Resources**



## We can help disaster victims find permanent and temporary housing

### **1** Iowa Rental Units

[IowaHousingSearch.org](http://IowaHousingSearch.org) is a comprehensive, up-to-date listing of rental units in Iowa. This web site allows users to search for advanced search features, including short-term leases for flood-impacted Iowans. The service also offers a toll-free call center, staffed with housing specialists who are happy to help you find a housing solution: 877-428-8844.

### **2** Iowa Mortgage Help

If you are having trouble contacting your loan servicer and need additional assistance working with them, contact Iowa Mortgage Help. Iowa Mortgage Help can assist you in creating the best plan of action to keep your home. Trained mortgage counselors will provide free, confidential services and Iowa Mortgage Help clients may also receive free legal assistance. Regardless of who services your home loan, you can take advantage of Iowa Mortgage Help. Call 877-622-4866 or visit [IowaMortgageHelp.com](http://IowaMortgageHelp.com).

### **3** Homeownership Programs

Whether you're a first-time or repeat home buyer, IFA offers affordable mortgage financing that may assist you in finding a new home. To learn more, visit [IowaFinanceAuthority.gov](http://IowaFinanceAuthority.gov).

*The Iowa Finance Authority's (IFA) mission is to finance, administer, advance and preserve affordable housing and to promote community and economic development for Iowans. IFA is a self-supporting public agency.*

Iowa Finance Authority  
2015 Grand Ave.  
Des Moines, Iowa 50312  
800-432-7230 | [IowaFinanceAuthority.gov](http://IowaFinanceAuthority.gov)

## **Appendix F: Task Force Workgroup Members**

## Housing Workgroup Members

### Lead Agency: Iowa Finance Authority

Terri Rosonke	Iowa Finance Authority, Workgroup Lead
Dennis Harper	Iowa HSEMD, Workgroup Coordinator
Carolann Jensen	Iowa Finance Authority
Timothy Hauber	Iowa HSEMD
Blake DeRouchey	Iowa HSEMD
Dusty Pogones	Iowa HSEMD
Dean DeKoter	Iowa HSEMD
Terry E. Brown	Iowa HSEMD
Tim Waddell	Iowa Economic Development Authority
Peggy Russell	Iowa Economic Development Authority
Joe Bohlke	Iowa Economic Development Authority
Jeff Geerts	Iowa Economic Development Authority
Marvin Shultz	Iowa Department of Human Services
Michael Parker	Iowa Department of Human Services
Carlos Vega	Iowa Workforce Development
Brian Bishop	Iowa Department of Public Safety
Mark Stewart	Iowa Department of Public Safety
Carol Keizer	Northwest Iowa Planning & Development Commission
Sherry Zinn	Northwest Iowa Planning & Development Commission
Steve Eggleston	US Housing and Urban Development
Paul Mohr	US Housing and Urban Development
Joe Folsom	Small Business Administration
Linda Haus	Small Business Administration
Dave Lentell	Small Business Administration
Desirae Williams	US Department of Agriculture
Randy Hildreth	US Department of Agriculture
Mike Boyle	US Department of Agriculture
Richard Bradley	Federal Emergency Management Agency

## Transportation Workgroup Members

### Lead Agency: Iowa Department of Transportation

Bonnie Castillo	Iowa DOT, Workgroup Lead
Katie Waters	Iowa HSEMD, Workgroup Coordinator
Brad Fleming	Iowa DOT
John Wilson	Iowa DOT
Brian Pribyl	Iowa DOT
Diane McCauley	Iowa DOT
Michelle McEnany	Iowa DOT
Brent Paulson	Iowa DOT
James Bane	Iowa DOT
Dave Claman	Iowa DOT
Charlie Purcell	Iowa DOT
Jim Rost	Iowa DOT
Aimee Bartlett	Iowa HSEMD
Zachary Ellison	Iowa HSEMD
Timothy Kautza	Iowa HSEMD
Tom Parham	Federal Highway Administration
Gary Brown	Iowa Emergency Management Association
Adam Broughton	Iowa Department of Natural Resources
Sandra Schiess	Federal Emergency Management Agency
Mike Parker	Federal Emergency Management Agency
Marvin Shultz	Iowa Department of Human Resources
Luke Beenken	Iowa State Association of Counties
Fred Scaletta	Iowa Department of Corrections
Doug Jones	Iowa Department of Cultural Affairs

## Flood Risk Management Workgroup Members

### Lead Agency: Iowa Department of Natural Resources

Bill Cappuccio	Iowa DNR, Workgroup Lead
Tom Oswald	Iowa HSEMD , Workgroup Coordinator
Jason Conn	Iowa DNR
Chris Kahle	Iowa DNR
Scott Ralston	Iowa DNR
Tim Hall	Iowa DNR
Lori McDaniel	Iowa DNR
Allen Bonini	Iowa DNR
Ken Bouma	Iowa DNR
Tim Kautza	Iowa HSEMD
Dan Schmitz	Iowa HSEMD
Jessica Turba	Iowa HSEMD
Jon Paoli	Iowa HSEMD
BJ Covington	Iowa HSEMD
Dave Claman	Iowa DOT
Tom Parham	Iowa DOT
Maxx Grogg	Federal Highway Administration
Jerry Skalak	USACE Rock Island District
Jason Smith	USACE Rock Island District
Shirley Johnson	USACE Rock Island District
Randy Behm	USACE Omaha District
Tony Toigo	Iowa Department of Agriculture and Land Stewardship
Jake Hansen	Iowa Department of Agriculture and Land Stewardship
Jeff Geerts	Iowa Economic Development Authority
Joe Bohlke	Iowa Economic Development Authority
Jeff Zogg	National Weather Service
Greg Johnson	National Weather Service
Brad Small	National Weather Service
Joe Chandler	Federal Emergency Management Agency
Paul Mohr	Housing and Urban Development
Nate Young	Iowa Flood Center
Witold Krajewski	Iowa Flood Center
Gina Hardin	Iowa Emergency Management Association
Adrian Holmes	Iowa Floodplain and Stormwater Management Association
Marty Adkins	Natural Resources Conservation Service
Matt Helmers	Iowa State University
Gary Taylor	Iowa State University Extension
Jon Nania	US Geological Survey

## Utilities Workgroup Members

**Lead Agency: Iowa Utilities Board**

Kerri Johannsen	Iowa Utilities Board, Workgroup Lead
BJ Covington	Iowa HSEMD, Workgroup Coordinator
Adam Broughton	Iowa Department of Natural Resources
Vince Sitzmann	Iowa Department of Agriculture and Land Stewardship
Darrell Knecht	Iowa Emergency Management Association
Dave Hrara	Iowa Association of Municipal Utilities
John Dvorak	Iowa Association of Electric Cooperatives
Randy Moore	Iowa American Water
Joe White	Alliant Energy
Dave Hempen	MidAmerican Energy
Tim Tessier	MidAmerican Energy
Vern Gebhardt	Alliant Energy
Wes Ashton	Black Hills Energy

**Appendix G: FEMA approved Bridge and Road System Ordinance**

**“” COUNTY**

**ORDINANCE NO. \_\_\_\_\_**

**AN ORDINANCE TO ESTABLISH A POLICY FOR THE CONSTRUCTION AND RECONSTRUCTION OF ROADWAYS AND BRIDGES ON THE “” COUNTY SECONDARY ROAD SYSTEM.**

**BE IT ORDAINED BY THE BOARD OF SUPERVISORS “” COUNTY:**

**SECTION 1 -- PURPOSE**

The purpose of this ordinance is to establish “” County’s policy for the construction of roads, reconstruction of roads, construction of bridges, reconstruction of bridges and other roadway and drainage features associated with road and bridge construction.

**SECTION 2 -- LEVEL OF SERVICE**

The level of service shall be based on traffic counts, pavement type, roadway geometrics and other data used in accepted engineering design as established by the county engineer, Iowa Department of Transportation and the Federal Highway Administration.

**SECTION 3 – DESIGN CRITERIA**

In implementation, this policy shall set the minimum design standards that “” County will follow in the construction or reconstruction of roads and bridges. These criteria shall be based on accepted engineering practices and standards established by the Iowa Department of Transportation and the Federal Highway Administration.

The County Engineer shall assure the minimum design standards established herein are adhered to in a uniform manner unless, in his or her professional judgment, a deviation from standards is warranted. Minimum design standards are not subject to discretionary

enforcement. Any deviations must be documented as unreasonable and or impossible to implement by the county engineer and/or the county board of supervisors.

## **PAVED ROUTES**

### **A) New Pavement**

- 1) New pavement shall be constructed with a 22' wide pavement and granular shoulders. Intersections with non-paved roads shall have pavement extended back onto the intersecting road 50' beyond the end of the intersection radius.
- 2) Paved shoulders and edge line rumble stripes shall be constructed if crash data warrants based on accepted HSIP and TSIP cost/benefit analysis.
- 3) Concrete rumble strips shall be installed on all approach stop situations.
- 4) Concrete pavement will be the first choice for pavement provided clear zone and shoulder widths can be maintained by design requirements.

### **B) Reconstruction of Pavement**

1. Paved roads shall be reconstructed with a 22' wide pavement or to the previous pavement width, whichever is greater with granular shoulders.
2. Concrete rumble strips shall be installed on all approach stop situations.
3. Concrete pavement will be the first choice for pavement provided clear zone and shoulder widths can be maintained by design requirements.

## **UNPAVED ROADS**

### **A) Gravel Roads**

- 1) New construction of a gravel road shall have a 28' finished top, including shoulders.
- 2) Reconstruction of a gravel road shall be to the previous width prior to reconstruction.

### **B) Class B & C Roads**

- 1) Class B and C roads will be built to the minimums as outlined by Iowa Code.

## **BRIDGES & Drainage Structures**

A) Paved Routes

- 1) Bridges on paved routes shall be built with a minimum width of 30'. Wider structures will be installed when there are issues relating to oversized vehicles, pedestrian facilities, biking usage or other issues where the additional width is felt to be warranted.
- 2) Culverts under paved roads shall be concrete.
- 3) Pipe culverts larger than 54" in diameter may be substituted with reinforced box culverts.
- 4) Design for drainage structures will be governed by accepted hydraulic design standards. Input from IDNR, Corp of Engineers, Iowa DOT, NRCS, or USGS may impact the size and type of the structure to be placed.
- 5) Water and livestock will use separate structures whenever possible.

B) Unpaved Routes

- 1) Bridges will normally be a minimum of 24' on gravel roads. Dead end roads may be narrower at the discretion of the county engineer
- 2) Culverts may be metal or concrete. Pipe culverts larger than 54" in diameter may be substituted with reinforced box culverts.
- 3) Design for drainage structures will be governed by accepted hydraulic design standards. Input from IDNR, Corps of Engineers, Iowa DOT, NRCS, or USGS may impact the size and type of the structure to be placed.
- 4) Water and livestock will use separate structures whenever possible.

C) Class B & C Roads

Class B and C roads will be built to the minimums as outlined by Iowa Code.

D) Entrance Bridges

Any and all bridges/drainage structures that are fully or partially in the road right-of-way that serve as entrances to private property from the public roadway shall be considered the jurisdiction and responsibility of the county. If a structure does not sit fully or partially in the road right-of-way it will be considered a private structure and not under the jurisdiction of the county.

## **SECTION 4 -- REPEALER**

All ordinances and resolutions, or parts thereof, in conflict herewith are hereby repealed.

## **SECTION 5 -- SEVERABILITY CLAUSE**

If any section, provision, or part of this ordinance shall be adjudged invalid or unconstitutional, such adjudication shall not affect the validity of the ordinance as a whole or any section, provision, or part thereof not adjudged invalid or unconstitutional.

**SECTION 6 -- WHEN EFFECTIVE**

This ordinance shall be in effect immediately after its final passage and publication as provided by law. In addition, this ordinance shall remain in effect until such time the board of supervisors passes a future ordinance repealing this ordinance.

Passed and approved this \_\_\_\_\_ day of “”.

“” County Board of Supervisors

\_\_\_\_\_

“” - Chairman

\_\_\_\_\_

“” – 1<sup>st</sup> Dist.

\_\_\_\_\_

“” – 2<sup>nd</sup> Dist.

\_\_\_\_\_

“” – 3<sup>rd</sup> Dist.

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“” - 5<sup>th</sup> Dist.

ATTEST:

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“”

“” County Auditor

First Reading: \_\_\_\_\_

Second Reading: \_\_\_\_\_

Approved: \_\_\_\_\_

Published: \_\_\_\_\_