

Exhibit G Regional Coordination and Long-term Commitment

State of Iowa

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## Regional Coordination and Long-term Commitment

Iowa is on a path of discovery and forward-thinking research, programs, and actions related to flood research, mitigation, and resilience. The IWA will build on existing flood-related programs, helping to establish a new chapter in the way Iowa considers and prioritizes science-based strategies to address water-quantity and -quality issues.

Lessons Learned (Subfactor: general): The Iowa Watersheds Approach (IWA). Lawmakers recently established the Iowa Flood Center (IFC) at the University of Iowa as the nation's first center devoted solely to flood-related research and education. The state funds the IFC at \$1.5M/year. Early IFC successes include: more than doubling the number of stream-stage sensors in the state; developing an easy-to-use online visualization platform for monitoring precipitation and flooding in real time; updating floodplain maps for most of the state using high-resolution LiDAR data (complete in 2016); and developing flood inundation maps for many vulnerable river communities. IFC's success is due in large part to collaborations with the Iowa DNR, Iowa DOT, Iowa Economic Development Authority, U.S. Geological Survey, National Weather Service, U.S. Army Corps of Engineers, and many communities, counties, and NGOs.

In 2010, using \$8.8M from a HUD Disaster Recovery Enhancement Fund award, Iowa initiated the Iowa Watersheds Project (see Phase II, Capacity) under the IFC as a means of reducing flood risk, reducing soil erosion, and improving water quality. The IWA builds on the experiences and success of the Iowa Watersheds Project and will increase the number of participating watersheds from three to twelve. At the conclusion of this program, all participating watersheds will have a vision for prioritizing future projects.

Raising Standards (Subfactor: resilience actions): Watershed Management Authorities (WMA): In 2010, Iowa passed legislation authorizing the creation of WMAs as a mechanism for cities, counties, Soil and Water Conservation Districts (SWCDs), and other stakeholders to

engage in cooperative watershed planning and management, especially as related to decreasing flooding and improving water quality. The IDNR helps WMAs through formation and with other assistance. Over the past three years, the IDNR has provided \$500K in direct financial assistance to help WMAs develop comprehensive watershed management plans. IDNR staff members also help develop proposals, interpret data, give presentations, and offer GIS and mapping services.

Raising Standards (Subfactor: resilience actions): The Iowa Flood Mitigation Board. The Iowa General Assembly created the Flood Mitigation Board, and Governor Branstad signed it into law in 2012. The board is charged with creating a *Flood Mitigation Program* for Iowa. This program allows certain governmental entities to submit flood mitigation projects to the board for review and possible funding. *To date, Iowa has allocated \$660M to the Iowa Flood Mitigation Board for flood mitigation activities across Iowa.*

Lessons Learned, Subfactor: General (Improving Knowledge Base). The IFC and Iowa Department of Natural Resources (IDNR) began updating 100- and 500-year floodplain boundaries throughout Iowa in 2010. In many counties, these data are being used to create new Flood Insurance Rate Maps (FIRMs) for use with the National Flood Insurance Program (NFIP). In areas where FEMA does not have capacity to review and adopt the data, the IDNR and other stakeholders are using floodplain boundaries for management and planning. The IFC and the Iowa Natural Heritage Foundation have also used the statewide floodplain mapping data to develop a series of enhanced data products, including one-meter-resolution depth grids for the 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year floodplains and floodplain scour data. These data better demonstrate and communicate risk, helping communities and property owners make informed land-management and disaster response decisions.

Raising Standards: All Iowa communities that participate in the NFIP observe the state standard of the 100-year water surface elevation plus one foot. Several communities in the target

watersheds have adopted higher requirements. In the *Upper Wapsipinicon*, Black Hawk County adopted an additional three foot freeboard requirement; the city of Independence also has a three foot freeboard requirement. In the *Middle Cedar*, Cedar Falls requires that all development must be above, or protected to, the 500-year flood. Palo and La Porte Cities have a two foot freeboard requirement. In *Clear Creek*, Coralville has a one foot above the 500-year flood elevation.

Resilience Actions: Four of the target watersheds have new planning documents to better prepare for future flooding. The Middle Cedar, North Raccoon, and East and West Nishnabotna Watersheds all finished the drafts or final versions of their “Flood Risk Reports” in 2015. These reports provides non-regulatory information to help local or tribal officials, floodplain managers, planners, emergency managers, and others better understand their flood risk, take steps to mitigate risks, and communicate those risks.

Resilience Actions: Iowa is one of only 12 states with a FEMA-approved *Enhanced State Mitigation Plan*, demonstrating that Iowa has developed a comprehensive state-wide mitigation program and is capable of managing increased funding to achieve mitigation goals (see Consistency with other Documents, Attachment D, Consultation Summary, D-122 to D-124).

Resilience Actions Related to Financing and Economic Issues: Iowa Nutrient Research Center (INRC). Most areas in Iowa with environmental MID-URN from 2011–2013 experienced water-quality degradation. Iowa finalized its Iowa Nutrient Reduction Strategy in 2013. Iowa also passed new legislation that year forming a new Iowa Nutrient Research Center (INRC). The state funds the INRC at 1.3M/year to evaluate the performance of current and emerging nutrient management practices. In addition to applied research projects, INRC supports the operation of a real-time continuous water-quality monitoring network and online information system to distribute nutrient data to the general public, producers, and agencies. This network and information system ensures that programmatic funding invested in conservation practices in

Iowa will measurably benefit water-quality improvement. INRC research will inform IWA projects to maximize their benefits to water-quality issues, especially during storm events.

Raising Standards (Subfactor: resilience actions): The Iowa Nutrient Reduction Strategy. The Iowa Nutrient Reduction Strategy (INRS), developed in 2013 as a science-based approach to nutrient management, further demonstrates Iowa's commitment to the improvement of water quality, especially in response to the Gulf Hypoxia Action Plan's goal of 45% reduction in riverine N and P load. State- and federally-funded projects are underway in nine priority watersheds. In 2015, the state allocated \$9.6M to the Iowa Department of Agriculture and Land Stewardship for its Water Quality Initiative (WQI). This program offers cost-sharing to farmers trying new water-quality practices, continues work in priority watersheds to achieve water-quality improvements, and expands urban conservation efforts.

Resilience Actions Related to Plan Updates or Alignment (Federal Highway Administration's Climate Change Vulnerability Assessment Program). The Iowa DOT participates in the FHWA's pilot program to assess and evaluate the vulnerability of six highway/bridge locations in central Iowa using 19 global climate change models. Iowa State University (ISU) led the research in partnership with the IFC. The models were used to simulate peak discharges using a hydrologic model that creates future flowrates for consideration of design guidelines or methodologies. Researchers conducted a detailed hydraulic analysis for the replacement of I-35 South Skunk River bridges and associated roadway to improve the interstate's resiliency to overtopping. Bridge updates to be constructed in 2016 will feature a design that increases resiliency to increasing patterns of extreme weather events. Other states recently expressed interest in working with the IDOT, ISU, and IFC to apply this methodology.

Resilience Actions: Iowa is a leader in the production of renewable energy—both wind energy and biofuels—and the state has a long history of supporting innovation in clean energy

through a suite of state policies. For example, tax credits are available for eligible facilities that produce and/or sell wind energy. Iowa ranks 3<sup>rd</sup> in the U.S. in wind production; over 28% of the energy produced in Iowa comes from wind turbines. Iowa is also the nation's leading biofuels producer. In 2013 Dubuque adopted its 50% by 2030 *Community Climate Action Plan*, a strategic plan to reduce greenhouse gas emissions 50% from 2003 levels by 2030. In August 2015, the City Council adopted the creation of a citizen Resiliency Commission to provide oversight and guidance regarding resiliency planning as a top priority. Dubuque will also develop and begin implementation of a climate adaptation strategy by 2018.

Lessons Learned (Subfactor: general): City of Dubuque. Dubuque is committed to a more resilient future and is putting in place infrastructure, policies, and funding mechanisms to meet these goals. This combination of policy and investment, informed by the development of the city's Drainage Basin Master Plan, disaster experiences, and data from the IFC, form the basis of Dubuque's watershed approach to flood management. Dubuque received \$98M from the Iowa Flood Mitigation Board. This is part of the \$200M committed to the Bee Branch Creek flood mitigation project, which will protect nearly 1,400 homes and businesses. It will prevent an estimated \$582M in damage over its 100-year design life. Dubuque adopted policies and created funding streams to ensure that the project continues to protect homes and businesses. For example, a storm water detention policy prevents developments from creating new flooding problems. Property owners pay fees based on their property's impervious ground coverage area; these fees finance storm water management investments. Property owners who implement storm water best management practices are eligible for credits and incentives.

Dubuque is part of the Catfish Creek WMA. The board adopted its Watershed Management Plan in 2014, a 20+ year commitment focused on flood control structures, managing habitat, preserving and creating wetlands within the floodplain, managing natural green infrastructure,

and encouraging best agriculture practices. With \$1.4M from the State Revolving Fund, the WMA will implement streambank and riparian restoration on the South Fork of Catfish Creek to reduce total suspended solids by 2,186 tons/year, total phosphorous by 1,858 lbs/year, and total nitrogen by 3,716 lbs/year. The CCWMA also created a cost-share program for property owners to develop practices that focus on water quality/flood reduction on their land.

Watershed planning is part of the Dubuque County Regional Comprehensive Plan, adopted in 2013 as a policy document. Additional support through countywide storm water ordinances, developed in partnership with the Dubuque SWCD, further their work.

Raising Standards: City of Dubuque. Dubuque has implemented improved and consistent design standards and specifications for infrastructure, including storm drainage and sanitary sewer systems. The Statewide Urban Design and Specification Standards (SUDAS), as adopted in 2014, provide engineers, developers, and contractors with tools to increase sustainability and strengthen infrastructure. The standards are subject to annual review and amended to reflect increased understanding of storm events and best practices.

Raising Standards: City of Dubuque. In 2014, The Community Foundation of Greater Dubuque (CFGD) joined The Funders' Network Philanthropic Preparedness, Resiliency, & Emergency Partnership (PPREP). The group's purpose is to build community foundation leadership and capacity to create more resilient communities. The CFGD already prepared five disaster preparedness workbooks for Dubuque County and four affiliate counties. CFGD staff attended multiple events and learned alongside peer organizations about disaster preparedness and response. As a result of this work, CFGD's understanding, skill, and capacity have helped to position them to assist local communities as they prepare for, respond to, and recover from potential natural disasters.