

Executive Summary

Introduction

The City of Council Bluffs (City) is requesting \$57 million from the Iowa Flood Mitigation Program to undertake the \$114 million Council Bluffs Flood Mitigation Project, described below. This request represents 70% of the state's sales tax revenues generated within the City for the next 20-years with a projected annual growth rate of 1.6%.

Thirty percent (30%) of the total project costs will be provided locally by the City through \$27.7 million from governmental funds and \$6.5 million in local monies. The governmental and local monies represent \$2.4 million already expended on engineering and analyses and \$31.8 million committed and programmed for design and construction. Twenty percent (20%) will come from federal sources that have already been applied to the project including FY08 monies from the CDBG Disaster Recovery Program (\$2.4 million), and FY11 monies from the U.S. Army Corps of Engineers for flood rehabilitation efforts (\$20.4 million). The remaining \$57 million (50%) of the project costs represent the requested Iowa Flood Mitigation Program funding.

Background

The City is provided flood risk reduction by a Levee System approximately 28.5 miles in length adjacent to the Missouri River and tributaries (Indian Creek and Mosquito Creek). The Levee System was constructed in sections from 1946 to 1954 and provides direct flood risk reduction to approximately 64% of the incorporated limits of the City. This affected area includes public and private properties as well as critical infrastructure and facilities which, if inundated due to flooding or were no longer able to operate due to expansion of regulatory floodplain, would affect 100% of the community.

Over the course of its life, the Levee System has provided the City real flood protection from a number of significant flood events, most recently in 2011 when Missouri River water levels exceeded the 100-year flood elevation for a duration of approximately 90 days. Observations during the flood fight effort indicate that while the levees were not breached, the design safety factors were at lower than desired levels. The City received \$20.4 million in federal emergency assistance for flood fighting efforts and to rehabilitate damaged areas of the levee system after floodwaters receded.

This Levee System is currently accredited by the Federal Emergency Management Agency (FEMA) on floodplain maps for the City which prevents Special Flood Hazard Areas from being mapped landward of the levee, within the community. This benefits the residents and businesses of the community by allowing for a significant reduction in flood insurance premiums for those who choose to purchase coverage or for those whose mortgage lenders require it.

As a part of its regular remapping process, FEMA and the City have executed a Provisional Accreditation Levee (PAL) Agreement. This PAL Agreement gives the City time to document that

the levee meets accreditation criteria set forth in 44 CFR 65.10. If the City is unable to certify the levee meets criteria, areas landward of the levee will be designated as floodprone.

To document levee accreditation requirements, the City has engaged the services of JEO Consulting Group, Inc. to perform engineering analyses outlined by the criteria. The *2013 Council Bluffs Levee System: Levee Certification Feasibility Evaluation Phase 2 Report* indicates that the levee system is deficient at various locations and does not meet current federal levee design criteria. If the City does not move forward with necessary improvements it will remain in a deficient state, subject to potential future performance issues that may lead to failure. The levee system and community characteristics result in the majority of the City being at risk in the event of failure. The nature of the levee system is such that if there is a failure at one location along its 28.5 mile length, a large portion of the City would be inundated by floodwaters.

If the levee system were to fail, the City believes it would have a crippling effect on the community and would likely result in a mass exodus of residents and businesses. Such an event will be devastating to the long-term economic viability of Council Bluffs. In addition to real flood risk as described above, if the levee system is de-accredited, FEMA will revise the City's Flood Insurance Rate Maps (FIRM) showing the areas landward of the levee as being a Special Flood Hazard Area. Residents and businesses in designated Special Flood Hazard Areas are required by federal law to purchase costly flood insurance covering federally backed mortgages. Not only will this be a mandatory insurance requirement, but the insurance rates will be much greater than are currently available due to the existing levee protection shown.

Furthermore, these areas will be subject to building restrictions according to the floodplain management standards including elevation requirements for new construction and re-development. De-accreditation of the levee system will result in approximately 9,830 residential structures and 943 non-residential structures, not currently mapped in the floodplain, being mapped in the Special Flood Hazard Area.

Preliminary analysis of potential insurance costs if the levee were to be de-accredited indicates that flood insurance premiums in the affected area could range between \$14 million to \$23 million annually, which will be a new cost to residents and businesses. These new costs and development restrictions are expected to have devastating effects on economic development within the City and would likely cause abandonment of residential and commercial structures.

Proposed Levee System Improvements

The Levee System improvement portion of the Council Bluffs Flood Mitigation Project will consist of 22 unique improvements to eliminate known deficiencies in order to meet current levee design and accreditation standards. The improvements will increase the redundancy, resiliency, and robustness of the Levee System thereby reducing the potential for catastrophic failure. These proposed improvements are spread out to various locations of the existing Levee System:

- Cumulative improvements of levee embankment and foundation stability over approximately 14.5 miles of levee through the means of installing 46 new relief wells,

constructing 22,850 feet of seepage/stability berms, installing 2,900 feet of pervious toe trench, installing 2,900 feet of rock toe protection, and installing 9,000 feet of reverse filters in drainage ditches.

- Raise levee embankment through the addition of impervious fill over approximately 7.5 miles of levee along Indian Creek and Mosquito Creek in order to meet necessary freeboard requirements.
- Investigate additional flood control on Mosquito Creek to provide real flood risk reduction as well as synergizing the flood control and levee accreditation efforts.
- Repair and improve existing railroad emergency closure structure.
- Remove existing deficient floodwall and replace with impervious fill levee embankment.
- Improve at least 11 drainage structures including pipes, gatewells, junctions and closures (Flap Gates, Slide Gates).
- Mitigate numerous levee encroachment concerns located throughout the entire length of the levee system.

Proposed Indian Creek Channel Rehabilitation

Indian Creek is a tributary to the Missouri River that flows through the central part of Council Bluffs. Historically, Indian Creek has been known for its high risk for perennial flooding. Indian Creek's headwaters are located in the Iowa Loess Hills approximately four miles north of the City. Its watershed is just over 15 square miles and presently discharges into the Missouri River south of the City; just west of Lake Manawa.

The Indian Creek channel upstream of the leveed section is in need of major rehabilitation and improvement in order for it to safely convey its intended design capacity. For this Council Bluffs Flood Mitigation Project, rehabilitation and improvement efforts will concentrate on prioritized sections of the channel as funds allow. The existing open, concrete-lined channel is 76 years old and suffers from deteriorating concrete, separations, undercutting, and heavy vegetation growth through large cracks. In addition to the structural integrity concerns of the channel, various utility crossings are exposed and are at risk of damage from floating debris. Potential damage to public utilities poses a significant health and safety risk to City residents.

The first rehabilitation priority will concentrate on the approximately 1.56 mile northern section of open, concrete-lined channel starting south of Council Lane to the point where the open channel becomes closed west of the intersection of N. Broadway and E. Kaneshville Blvd. Rehabilitation efforts will include the removal and replacement of approximately 1.56 miles of open, concrete-lined channel, rehabilitation or replacement of existing bridge crossings, replacement of damaged sections of lateral pipes that outlet into the Creek, and relocation or protection of at risk utilities.

As funding permits, the second rehabilitation priority will concentrate on the southern section of open, concrete-lined channel starting south of Highway 6/Highway 192 to the point where the concrete lined channel becomes earthen channel south of 16th Avenue. Rehabilitation efforts

will involve similar efforts as those completed for the northern section of open, concrete-lined channel.

Project Implementation Schedule

Depending on funding and permitting constraints, the entire Council Bluffs Flood Mitigation Project could take up to 20 years to complete. The Flood Mitigation Project as a whole has been segmented into multiple unique improvement projects that, upon completion, will holistically eliminate known Levee System deficiencies, bringing the Levee System within current design and certification criteria and rehabilitate the Indian Creek channel. As funding is anticipated to be budgeted on an annual basis, improvements have been organized or phased according to project scope, cost, and priority.

Need for Iowa Flood Mitigation Program Assistance

Financial assistance through the Iowa Flood Mitigation Program is essential due to the potential impact a flood event will have on public and private investments already in place and large scale capital improvement projects currently underway. Without funding assistance from the Iowa Flood Mitigation Program, the City will likely need to delay implementation of portions of the project and/or reduce the scope of the Council Bluffs Flood Mitigation Project. The adverse effects of not receiving funding will not only result in real flood risk for the community, but will result in the City incurring a significant amount of municipal debt to pay for the improvements. Since this debt would be backed by the full faith and credit of the City (real property), Council Bluffs property-owners could see a 7% increase in their property tax burden to finance the project locally (\$57 million principal plus \$24 million in interest).