Purpose of Flood Control System Committee:
To enable the City Council to discuss and evaluate in greater detail these specific issues that directly impacts the flood control system for the City of Cedar Rapids.

City Council Committee Members:
Council member, Ralph Russell
Council member, Justin Shields
Council member, Kris Gulick
  • Mayor Ron Corbett is an ex-officio member of all Council Committees per City Charter Section 2.06.

Purpose of Finance & Administrative Services Committee:
To enable the City Council to discuss and evaluate in greater detail these specific issues that directly impact the financial and organizational strength of the City of Cedar Rapids.

City Council Committee Members:
Council member Kris Gulick, Chair
Council member Justin Shields
Council member Susie Weinacht
  • Mayor Ron Corbett is an ex-officio member of all Council Committees per City Charter Section 2.06.

Agenda:

- Informational Items:
  2. Grant Submission Log update (5 mins) Rob Davis Public Works
  3. 2016 Design/Bid Activities (5 mins) Bill Bogert Anderson Bogert

Any discussion, feedback, or recommendation by Committee member(s) should not be construed or understood to be an action or decision by or for the Cedar Rapids City Council. Further, any recommendation(s) the Committee may make to the City Council is based on information possessed by the Committee at that point in time.

Anyone who requires an auxiliary aid or service for effective communication, or a modification of policies or procedures to participate in a City program, service, or activity, should contact the City Manager’s Office at (319) 286-5080 or email a.wing@cedar-rapids.org as soon as possible but no later than 48 hours before the event.
• **Presentation:**

  1. Czech Village FCS Re-alignment (15 mins) Rob Davis  
     *Public Works*
  
  2. FCS Project Plan and Schedule (15 mins) Rob Davis  
     *Public Works*

• **Recommendation Items:**

  1. Interior Drainage Pump Station Sizing Policy (15 mins) Teresa Stadelmann  
     *HR Green*

• **Public Comment**

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Growth Reinvestment Initiative (GRI)

Below is a summary of projected vs actual GRI revenue received thru March 2016.

<table>
<thead>
<tr>
<th>Increment from</th>
<th>Estimated Payments from State</th>
<th>Actual Payments Received from State</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1st Qtr</td>
</tr>
<tr>
<td>2014</td>
<td>$2,499,988</td>
<td>N/A</td>
</tr>
<tr>
<td>2015</td>
<td>$10,700,000</td>
<td>$1,662,283</td>
</tr>
<tr>
<td>2016</td>
<td>$7,689,027</td>
<td>$1,752,565</td>
</tr>
<tr>
<td>2017</td>
<td>$10,381,241</td>
<td>N/A</td>
</tr>
<tr>
<td>2018</td>
<td>$13,140,760</td>
<td>N/A</td>
</tr>
<tr>
<td>2019 - 2033 per year</td>
<td>$15,000,000</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>$269,411,016</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Thru March 2016, $13M of the growth reinvestment funds are spent. Some of the larger March expenses include design/engineering, demolition services in the Sinclair Levee area, tree/vegetation removal along the A Street levee, and lot 44 repayment.

<table>
<thead>
<tr>
<th>Project</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>331001 Cedar River Flood Protection</td>
<td>47,992</td>
</tr>
<tr>
<td>331002 Amphitheater Demount Floodwall</td>
<td>255,557</td>
</tr>
<tr>
<td>331003 Time Check Area Prop Acq</td>
<td>5,232</td>
</tr>
<tr>
<td>331005 Czech Village Area Prop Acq</td>
<td>5,906</td>
</tr>
<tr>
<td>3311100 GRI-TC-EHP-Time Check</td>
<td>109,837</td>
</tr>
<tr>
<td>3311200 GRI-TC-ACQ-Time Check</td>
<td>247,858</td>
</tr>
<tr>
<td>3311201 GRI-TC-DEMO-Time Check</td>
<td>31,424</td>
</tr>
<tr>
<td>3311300 GRI-TC-MGMT-Time Check</td>
<td>49,319</td>
</tr>
<tr>
<td>3311400 GRI-TC-ENGR-Time Check</td>
<td>63,320</td>
</tr>
<tr>
<td>3312100 GRI-KI-EHP-Kingston</td>
<td>109,649</td>
</tr>
<tr>
<td>3312200 GRI-KI-ACQ-Kingston</td>
<td>204</td>
</tr>
<tr>
<td>3312300 GRI-KI-MGMT-Kingston</td>
<td>22,570</td>
</tr>
<tr>
<td>3312400 GRI-KI-ENGR-Kingston</td>
<td>496,748</td>
</tr>
<tr>
<td>3313100 GRI-CV-EHP-Penford Czech Vil</td>
<td>109,932</td>
</tr>
<tr>
<td>3313200 GRI-CV-ACQ-Penford Czech Vil</td>
<td>310,470</td>
</tr>
<tr>
<td>3313201 GRI-CV-DEMO-Penford Czech Vil</td>
<td>338</td>
</tr>
<tr>
<td>3313300 GRI-CV-MGMT-Penford Czech Vil</td>
<td>42,780</td>
</tr>
<tr>
<td>3313400 GRI-CV-ENGR-Penford Czech Vil</td>
<td>643,564</td>
</tr>
<tr>
<td>3313514 GRI-CV-N levee along A St</td>
<td>45,117</td>
</tr>
<tr>
<td>3314200 GRI-R1-ACQ-Quaker Cedar Lake</td>
<td>168,701</td>
</tr>
</tbody>
</table>

Projects 13,274,813
## FCS Grant Submission Log

<table>
<thead>
<tr>
<th>Submission Date</th>
<th>Agency</th>
<th>Grant</th>
<th>Location</th>
<th>Amount</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/4/2015</td>
<td>Iowa Economic Development Authority</td>
<td>CDBG Amendment</td>
<td>North Industrial (Quaker)</td>
<td>$911,562.00</td>
<td>Approved</td>
</tr>
<tr>
<td>6/30/2015</td>
<td>Iowa Homeland Security</td>
<td>GRI</td>
<td>System Wide</td>
<td>Gross-$5,637,523, Net-$3,082,413</td>
<td>Approved</td>
</tr>
<tr>
<td>9/16/2015</td>
<td>Federal Transit Administration (FTA)</td>
<td>Property Rights Donation/Grant Forgiveness</td>
<td>Lot 44 NewBo</td>
<td>$170,616.60</td>
<td>Not Approved</td>
</tr>
<tr>
<td>9/29/2015</td>
<td>Iowa Department of Transportation</td>
<td>City Bridge Program</td>
<td>NewBo/Czech Village (8th Ave Bridge)</td>
<td>$1,000,000.00</td>
<td>Pending</td>
</tr>
<tr>
<td>10/1/2015</td>
<td>Iowa Department of Transportation</td>
<td>Federal Recreation Trails Grant</td>
<td>NewBo/Sinclair</td>
<td>$235,603.00</td>
<td>Not Approved</td>
</tr>
<tr>
<td>1/15/2016</td>
<td>Vision Iowa</td>
<td>Community Attraction &amp; Tourism (CAT) Program</td>
<td>Tree of 5 Seasons Park and Trail</td>
<td>$384,500</td>
<td>Not Approved</td>
</tr>
</tbody>
</table>
Flood Control System
History & Recap
Flood Control History at a Glance

• **2008**: Interim flood control plan and concept for permanent protection
• **2009 – 2014**: Acquisition program, flood recovery, GRI funding
• **December 2014**: Logo and branding finalized
• **December 2014 – July 2015**: Public outreach
• **June 2015**: Cedar River Flood Control System Master Plan adopted
• **July 2015**: Public unveiling and celebration
• **October 2015**: Aesthetic Guidelines adopted
• **Next 15 – 20 years**: Design and Construction
Adoption of New Flood Insurance Rate Maps (2010)
Updating Floodplain Management Ordinance (2010)
Structural Evaluations
Critical Levee Repairs
Sanitary Sewer Improvements (ongoing)
Waste Pollution Control Plant Upgrades / Levee System
Water System Improvements / Well Raised
Interim Flood Protection Plan
Watershed Management (ongoing)
Voluntary Property Acquisition Program (1300+)
Flood Risk Reduction
Progression of Protection
FCS NewBo / Czech Village
FCS 5 – 20 years
Remaining Risk
Today’s Flood Control System

The FCS Master Plan:
- Adopted by City Council on June 23, 2015
- Provides direction for implementation and construction
- Protection to 2008 flood volume on both sides of Cedar River

System Components:
- Floodwalls, levees and gates
- Raised approaches to Edgewood Road Bridge over Cedar River
- Replaced 8th Avenue Bridge over Cedar River
- Aesthetic elements that reflect our community’s culture, history and vision
Current Endeavors
Reducing Flood Vulnerability

• Pre-FCS risk reduction, assets moved out of harm’s way
• Water supply and sewer treatment protected
• Hone “routine” response to high water: High water event in 2015 = business as usual for NewBo
• Solid interim plan
  – Hesco Barriers
  – Tiger Dams
  – Temporary Pumps
• First Affected, First Protected
Successfully Executing Interim Protection

- **Sinclair/NewBo Area**
  - Current flood fighting elevation: 711.5
  - Interim protection elevation: 721.5 or 40-year storm

- **Czech Village Area**
  - Current flood fighting elevation: 711.5
  - Interim protection elevation: 720.0 or a 30-year storm
Strategy on Future Protection

• Priority on construction to protect low lying areas until funding is complete
• Continue to pursue additional funding
• Retain position in USACE authorization and GRI agreement
• Construct least expensive sections first to maximize interim protection
  – Levees
• Continue to improve plan
  – More automatic protection, not relying on labor intensive human installation
Pace & Schedule
Financials & Federal Timelines

- Short term schedule does not currently hinge on accelerating GRI
- Project on pace with all federal timelines and current funding stream
- Project development factors with fixed duration:
  - Property Acquisition private and commercial
  - Permitting IDNR, USACE, FHWA
  - RR coordination
  - Environmental processes
  - Archaeological Recovery

State GRI Funding
- Represents approximately 50% of project costs
- Spread out until year 2033
- Balance currently unfunded.

Schedule can be accelerated once balance of funding is secured.
Funding

Cost Opinion
- Current (2016)..........................................................$425 million
- Total cost with inflation (estimated over 20 yrs)..............$625 million

Current Resources
- CDBG Grant @ Sinclair...............................................$9.99 million
  - Expires No 2017
- State Sales Tax Increment.............................................$267 million
  - Annual allotments through 2033
- Local Match bonds FY 17...............................................$1 million
  - $109 million additional local match required through 2033
Acceleration & Financial Considerations

• Short term construction schedule (0-5 years) does not accelerate with additional funds. Bid schedule not impacted for:
  – South Time Check levee and utility relocation
  – Quaker flood wall
  – NewBo pump station
  – Sinclair levee
  – Czech Village levee and utility relocation

• Pay-as-you-go vs. Bonding against GRI and adding interest
<table>
<thead>
<tr>
<th>Description</th>
<th>Cedar Rapids, Iowa</th>
<th>Grand Forks, North Dakota</th>
<th>Truckee River, Nevada</th>
<th>Fargo-Moorhead, ND-MN</th>
<th>New Orleans, Louisiana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of System (miles)</td>
<td>6.47 miles</td>
<td>11.46 miles</td>
<td></td>
<td>63 miles</td>
<td>400 miles</td>
</tr>
<tr>
<td>Length Levee (% of total)</td>
<td>2.64 miles (41%)</td>
<td>9.78 miles (85%)</td>
<td>5.9 miles</td>
<td>28 miles (44%)</td>
<td></td>
</tr>
<tr>
<td>Length Floodwall (% of total)</td>
<td>2.46 miles (38%)</td>
<td>1.68 miles (15%)</td>
<td>1.82 miles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length Gates</td>
<td>0.37 miles (6%)</td>
<td>7 stop log closure structures</td>
<td></td>
<td></td>
<td>Dozens of road gates that allow for evacuation.</td>
</tr>
<tr>
<td>Length Removable Walls (% of total)</td>
<td>1.0 mile (15%)</td>
<td>0.50%</td>
<td></td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Number of new Pump Stations</td>
<td>13</td>
<td>12</td>
<td>1</td>
<td>At least 6</td>
<td></td>
</tr>
<tr>
<td>Protection Level (Yr. storm)</td>
<td>500-Year +</td>
<td>500-Year</td>
<td></td>
<td>100 Year</td>
<td></td>
</tr>
<tr>
<td>Detention Storage</td>
<td></td>
<td></td>
<td></td>
<td>50,000 Acre Feet</td>
<td></td>
</tr>
<tr>
<td>Interim Protection During Construction (Y/N):</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Time from Disaster to Completion (Yrs.)</td>
<td>28 Years</td>
<td>10 Years</td>
<td>Ongoing since 1997</td>
<td>7 Years</td>
<td></td>
</tr>
<tr>
<td>Time from Design to Completion (Yrs.)</td>
<td>20 Years</td>
<td>8 Years</td>
<td>Ongoing since 1998</td>
<td>7 Years</td>
<td></td>
</tr>
<tr>
<td>Railroad Coordination (Y/N)</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Cost of System ($)</td>
<td>$625 Million</td>
<td>$409 Million</td>
<td>$321 Million</td>
<td>$2.1 Billion</td>
<td>$15.5 Billion</td>
</tr>
<tr>
<td>USACE Funded (Y/N)</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td>% Federal Funded</td>
<td>13%</td>
<td>50%</td>
<td>65%</td>
<td>21%</td>
<td>100%</td>
</tr>
<tr>
<td>% State Funded</td>
<td>42%</td>
<td>25%</td>
<td></td>
<td>57% North Dakota</td>
<td>0%</td>
</tr>
<tr>
<td>% Local Funded</td>
<td>18%</td>
<td>25%</td>
<td></td>
<td>$4,000,000/year from sales tax</td>
<td>0%</td>
</tr>
</tbody>
</table>
Upcoming Milestones
Bid Calendar 2016

• Trail from 2\textsuperscript{nd} to 3\textsuperscript{rd} Ave (CRST) \textbf{March, 2016} ✔
• Lot 44 at 10\textsuperscript{th} Ave Pump Station \textbf{April, 2016} ✔
• Sinclair Levee from African American Museum to Alliant Substation \textbf{August, 2016}
• Czech Village Utility Relocation \textbf{October, 2016}
• Sinclair Pump Station, Detention and Structural \textbf{November, 2016}
Designing for the **volume** of rainfall discharging into the river.

- 2 year storm
- 5 year storm
- 100 year storm
Designing for the **intensity**: how fast the volume of runoff discharges into the river.
West Side Interior Drainage

BACKGROUND
• USACE Feasibility Study HEC-HMS model
• 9.2 square mile watershed
• Six recommended pump stations
West Side Interior Drainage

Modeling Updates

• Urban drainage model
  • Major pipes, channels and detention
  • 2D surface flow and ponding

• Update Rainfall Data - NOAA Atlas 14 Precipitation

• Nested Atlas high peak intensity rainfall distribution
West Side Interior Drainage

• ISSUE 1: Runoff exceeding storm system capacity causes interior ponding, independent of the flood control system or river flooding

• IMPORTANCE: Safety, property damage, floodplain mapping implications

• RECOMMENDATION: Stormwater Master Plan policies to reduce runoff and peak flow rates:
  • upland detention
  • infiltration
  • green infrastructure
• ISSUE 2: Increased ponding where levee blocks overland flow

• IMPORTANCE: Safety, property damage, floodplain mapping implications

• RECOMMENDATIONS:
  1. Increase pipe capacity from levee to river
  2. Add dry side detention near pump stations
West Side Interior Drainage

• ISSUE 3: Estimated cost to pump current flows from 1% coincident probability rainfall event is $39-$47M; Total budgeted for all stations $7.4M.

• BACKGROUND:
  Previous work assumed
  • 3-month storm, average intensity
  • no pump station building

• OPTIONS:
  1. Build pump stations for current flows at additional cost
  2. Accept greater risk and build smaller pump stations
  3. Adopt aggressive stormwater runoff reduction policy to reduce flows and pump station sizes
Moving Forward

- Approve Interior Drainage Policy
- Risk and impacts to existing structures
- Coordination with Storm Water Master Plan
- Minimum building elevation for redevelopment
- Alternatives for Vinton Ditch
Policy

• Stormwater pump stations for interior drainage runoff are recommended to have a pumping capacity equal or greater than the peak runoff from the 5-year storm event
• The City should pursue upland stormwater runoff detention and infiltration in each watershed
• Policy Development Method