

COUNCIL COMMUNICATION

	Number:	20-196	Meeting:	May 4, 2020
	Agenda Item:	11	Roll Call:	20-736
	Submitted by:	Steven L. Naber, P.E., City Engineer Jonathan A. Gano, P.E., Public Works Director		

AGENDA HEADING:

Approving increase of the total costs for the Des Moines and Raccoon Rivers Project to develop the Des Moines – Birdland Levee Design Deficiency Report.

SYNOPSIS:

Recommend approval of increase of the total costs for the Des Moines and Raccoon Rivers Project to develop the Des Moines – Birdland Levee Design Deficiency Report. The increased City share of the project costs provides the required local contribution of 35%.

FISCAL IMPACT:

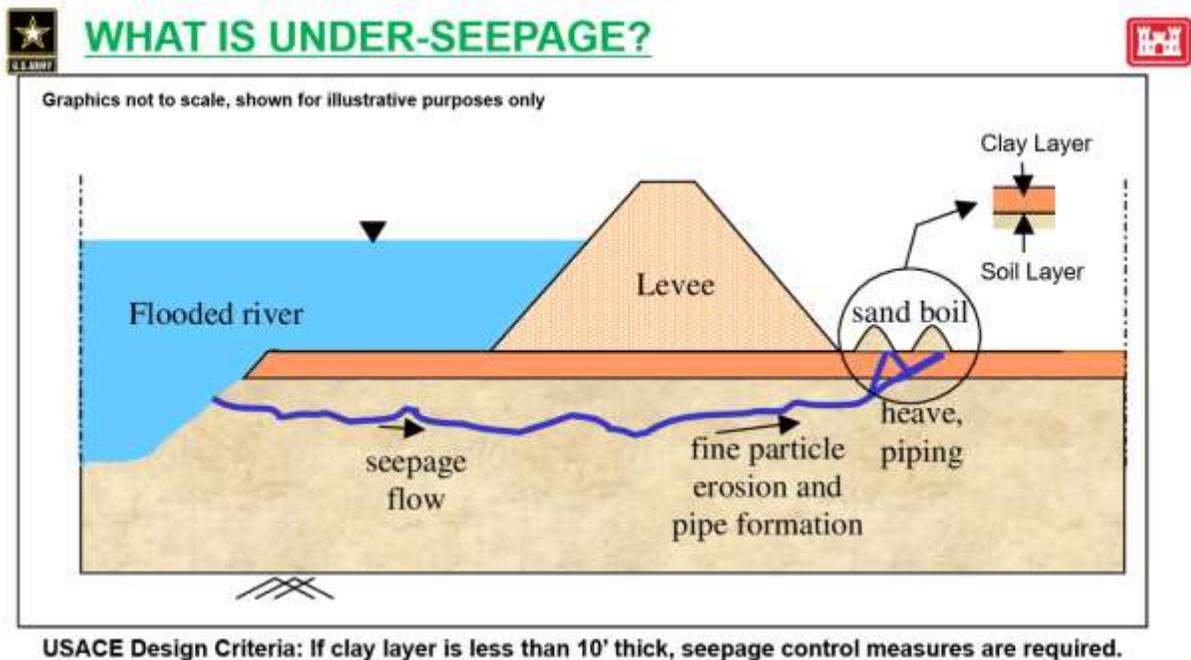
Amount: \$223,000 (City's share {35%} of \$638,000 cost increase)

Funding Source: 2019-2020 CIP, Page Storm Water Improvements – 6, Flood Mitigation Improvements, SM087

ADDITIONAL INFORMATION:

- On October 12, 2009, by Roll Call No. 09-1833, City Council approved the Project Partnership Agreement (PPA), with a U.S. Corps of Engineers (USACE) defined project totaling \$8,827,615 for the Birdland Park Levee, wetland mitigation, and downtown closure improvements. Subsequent increases to the total project approved by City Council include:
 - March 22, 2010, by Roll Call No. 10-0463, to secure stimulus funding.
 - March 28, 2011, by Roll Call No. 11-0553, for actual construction costs exceeding the estimate and the results of the Des Moines River Regulated Flow Frequency Study.
 - August 11, 2014, by Roll Call No. 14-1211, to increase total project costs for the USACE to complete the certification of the Birdland and Central Place levees and the design and construction of the downtown closures 100-year or 0.01 probability flood protection consistent with the Des Moines River Regulated Flow Frequency Study.
 - April 25, 2016, by Roll Call No. 16-656, to increase the total project costs for costs for the design and construction of the Des Moines and Raccoon Rivers Project, which provided funding for additional work on the remaining six (6) closures.

- October 14, 2019, by Roll Call No. 19-440, to increase the total project costs for additional work to complete the design and construction of the two (2) remaining downtown closures located at the Iowa Interstate Railroad Bridge over the Des Moines River.
- The Des Moines and Raccoon Rivers Feasibility Report, approved in 2005, recommended the reconstruction of 2.6-miles of levee systems at Birdland Park & Central Place and the improvement of nine (9) downtown closures in existing Des Moines levee systems. The project was authorized for construction in Water Resources Developmental Act (WRDA) 2007 and Energy and Water Development and Related Agencies Appropriations Act, 2010 (E&WDAA 2010). The project was reauthorized in WRRDA 2014 for \$23,245,000.
- The Des Moines and Raccoon Rivers project is currently constructing the two (2) remaining downtown closures located at the Iowa Interstate Railroad Bridge over the Des Moines River.
- The City constructed a stormwater detention basin as part of Phase 2 of the Lower Oak and Highland Park Sewer Separation project. Because the detention basin was adjacent to the Birdland Levee, the City and its Consultant performed a seepage analysis in 2017 to ensure the construction of the detention basin wouldn't negatively impact the performance of the levee. During the analysis, the City's Consultant identified a concern with the existing levee and the thickness of the existing clay layer beneath the levee, and notified the USACE.
- The USACE design standard for levees is if the clay layer beneath the levee is less than 10 feet thick, seepage control measures are required.



- In 2018 and 2019, USACE conducted dozens of additional borings and analysis on the Birdland Levee, and determined that approximately two-thirds of the 1.7-mile-long Birdland Levee did not meet the USACE Design Criteria for seepage.

- USACE has stated there is no immediate concern with levee safety, but continued high water events over an extended period of time will increase the risk associated with the under-seepage issue.
- When a river is elevated to a flood stage level, it is common for water to flow in the permeable layer between the bedrock and clay layer beneath the levee (known as under-seepage). Under-seepage is only a concern along the Birdland Levee when the Saylorville Dam Spillway is activated, which has only occurred three (3) times since placed in operation in 1977. For reference, the Saylorville Lake elevation was about one (1) foot away from the top of the spillway during the summer of 2018 flood event. If the clay layer is not thick enough, fine particles erosion can occur causing sand boils to form on the dry side of the levee, and over time, can increase the risk for a levee failure.
- The Birdland Levee will require increased monitoring by the USACE and the City during high water events. The City and USACE will mitigate the risk with flood fighting efforts (i.e. place flood protection materials around sand boils, known as ringing).
- USACE recommends improving the levee with seepage control measures to meet USACE engineering standards for under-seepage. Seepage control measures will require heavy construction on and adjacent to the Birdland Levee, such as construction of cutoff walls, installation of relief wells, and construction of toe drains, which are placed along levee toe and installed to gravity drain to a pumping station.
- The City’s highest priority is the safety of residents and visitors. The City’s request of USACE is to develop an optimized solution to provide flood protection to residents and businesses that are in areas considered protected by the levee.
- Additional federal funding of \$415,000 was authorized in the Fiscal Year (FY) 2020 Work Plan to support the Des Moines and Raccoon Rivers project and prepare a Design Deficiency Report.
- The total project costs for the Des Moines and Raccoon Rivers Project will be increased consistent with USACE and Congressional limits and available federal funding, currently at \$28,086,000.

Summary of Current Funding for
Des Moines and Raccoon Rivers Project

Estimated Total project cost	\$28,086,000
Estimated Non-federal Cost	\$9,949,000
Estimated Federal Cost	\$18,137,000
Allocations Prior to FY 2020	\$17,722,000
FY 2020 Allocations	\$415,000

- Federal requirements state that the improvements to the Birdland Levee must be a cost-shared project of 65/35% between the federal government and City; therefore, in order for the Birdland Levee improvements to occur using federal funding, the City must provide the 35% local match.
- The USACE has requested a payment of \$223,000 (City's share {35%} of \$638,000 cost for the Design Deficiency Report), based on funds provided to date, credits for costs incurred, and estimated costs to complete the project, including requested betterments.
- Upon completion of Design Deficiency Report and Congress reauthorization and appropriation of funding for the Birdland Levee Seepage Control Improvements, the City will be requested to provide additional funds to meet the non-federal cost share of 35% for construction costs. USACE has estimated that total construction costs could range between \$3 Million and \$12 Million.

PREVIOUS COUNCIL ACTION(S):

Date: October 14, 2019

Roll Call Number: [19-1576](#)

Action: [Approving](#) increase of total project costs for the design and construction of the Des Moines and Raccoon Rivers Project. ([Council Communication No. 19-440](#)) Moved by Gatto to adopt. Motion Carried 7-0.

BOARD/COMMISSION ACTION(S): NONE**ANTICIPATED ACTIONS AND FUTURE COMMITMENTS:**

- While not anticipated, during construction of the remaining two (2) closures, there is a possibility the USACE may request additional payment(s) from the City for the City's share of increased costs due to change orders during construction, such as unforeseen site conditions.
- Additional City funding will be required for construction of the Birdland Levee seepage mitigation improvements. The construction costs for the Birdland Levee seepage mitigation improvements are estimated to range between \$3 Million and \$12 Million by the USACE. The City would be requested to provide a local contribution of 35% of the construction costs once federal funds are approved and authorized for construction.

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