

Flood Mitigation Update “37 foot plan”

August 13, 2018

03/28/2009

Topics

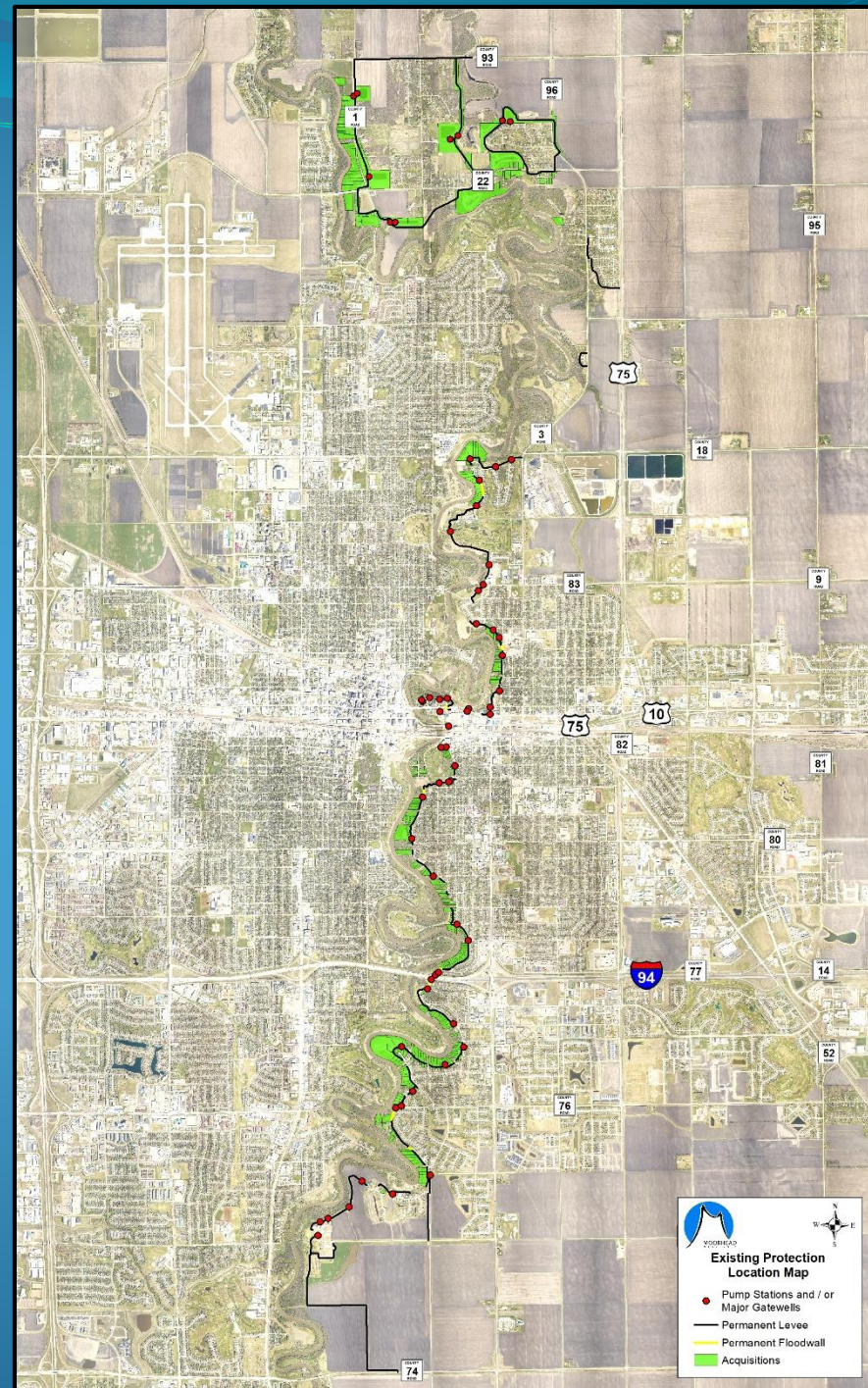
- ❑ Post-2009 flood mitigation summary
- ❑ Process to develop updated plan (“37 foot plan”)
- ❑ “37 foot plan”
 - Acquisitions
 - Projects
 - Priorities
 - Funding

Post-2009 City Project Summary

Voluntary acquisitions	251
Easements	67
Levees/floodwalls (miles)	12.1
Removable floodwall closures	5
Stormwater pump stations	19
Stormwater gates	78
Sanitary pump station upgrades	5

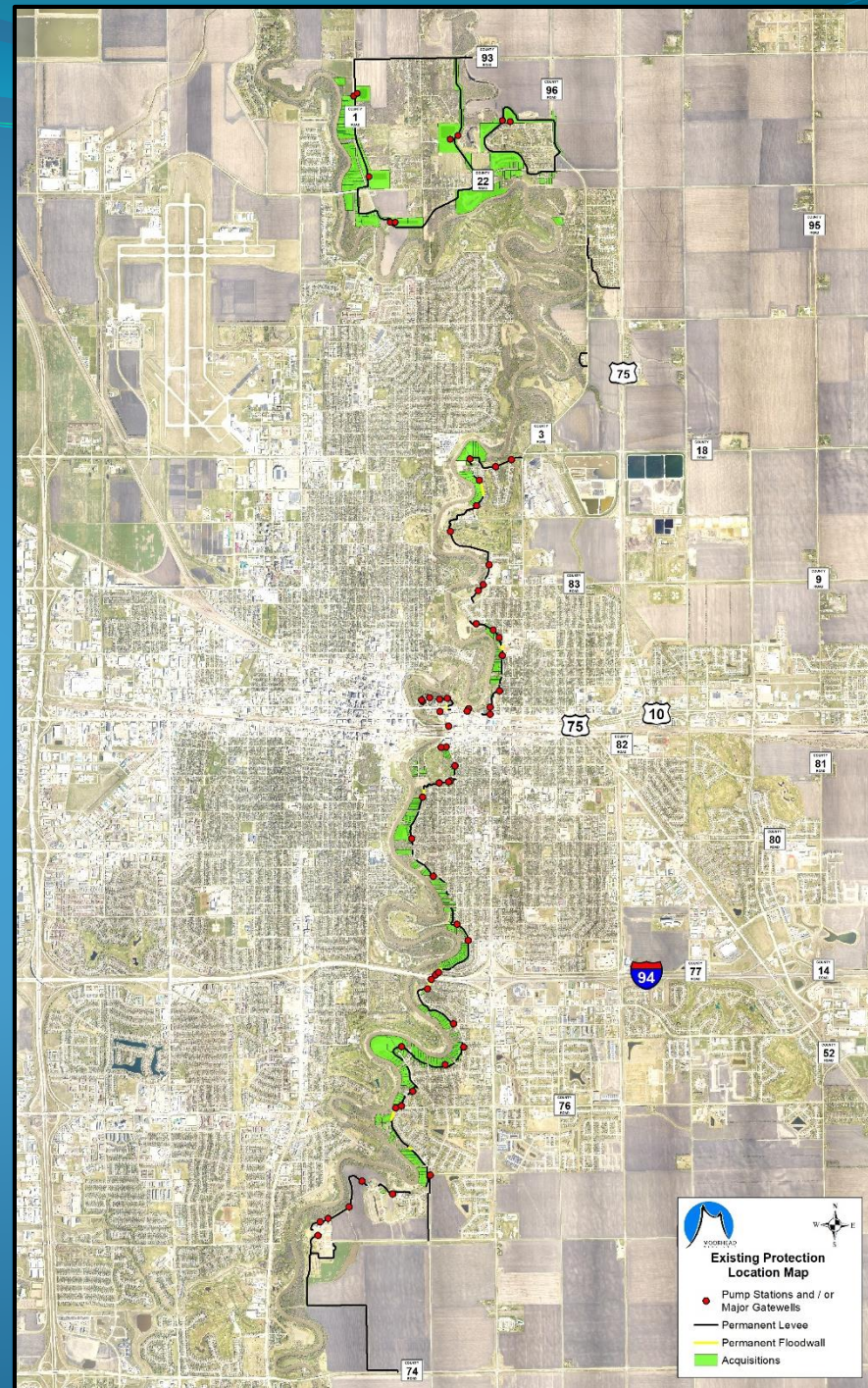
Projects constrained by:

- ❑ Declined voluntary acquisitions
- ❑ FEMA deed restricted properties
- ❑ Riverbank (geotechnical) stability



BRRWD Oakport Project Summary

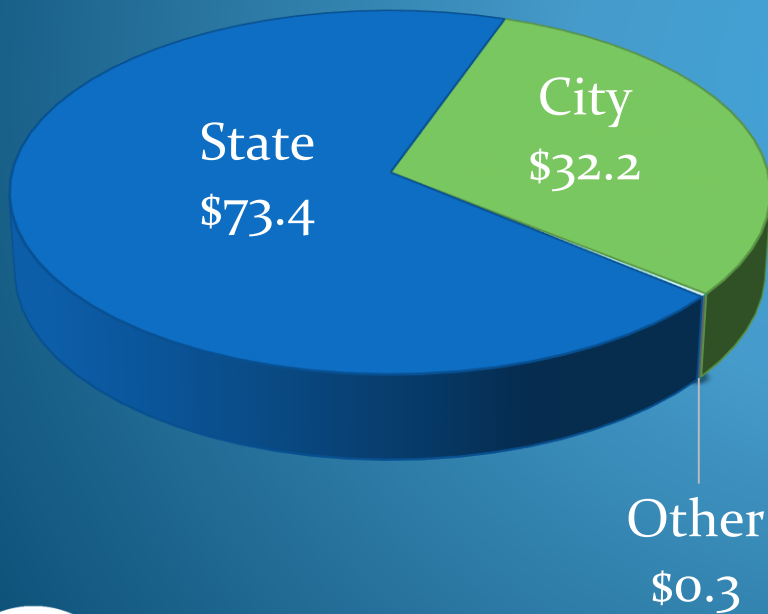
Property acquisitions	95
Easements	24
Levees/floodwalls (miles)	6.1
Road closures	1
Stormwater pump stations	5
Stormwater gates	4
Sanitary pump station upgrades	1



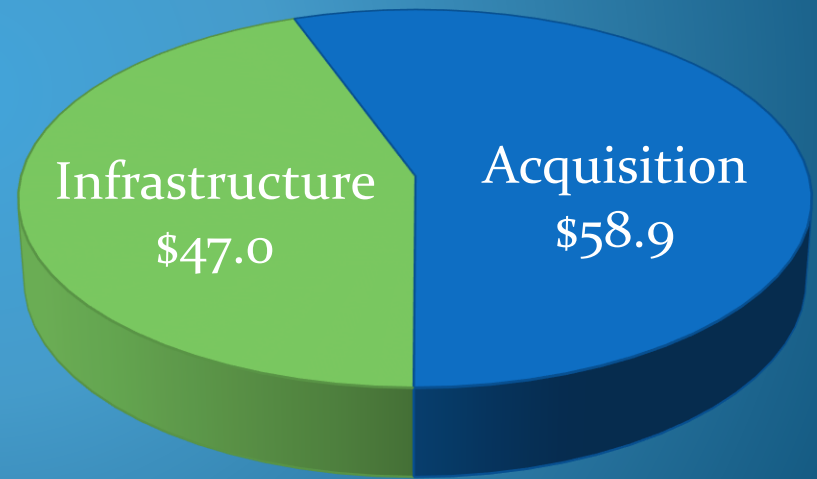
Total: \$105.9M

(City Projects)

Funding Sources (\$M)



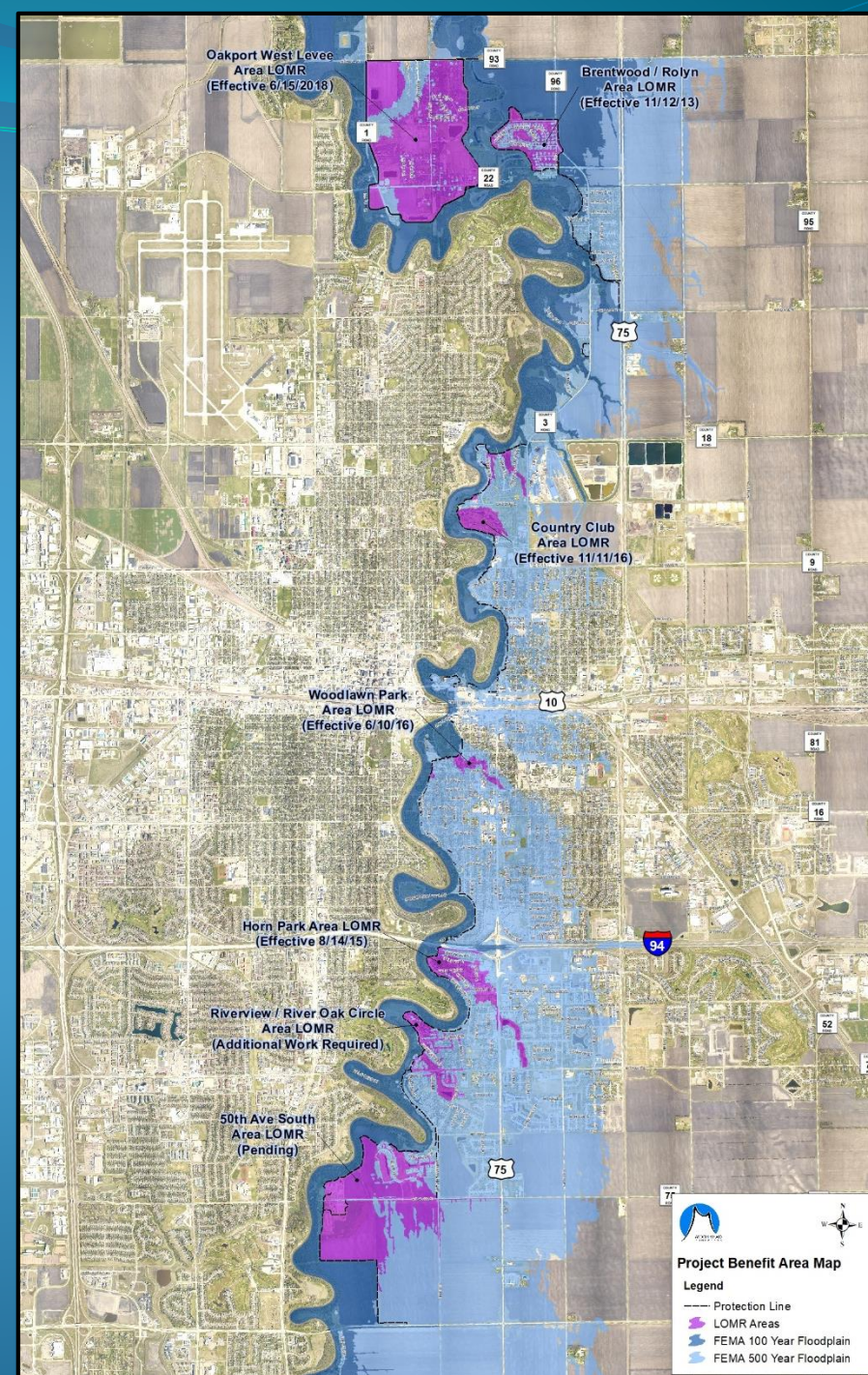
Project Costs (\$M)



FEMA Accreditation

Area	# of Parcels	# of Structures	Date
Horn Park	117	87	8-14-15
Woodlawn Park	37	35	6-10-16
Country Club	45	7	11-11-16
50 th Ave S	55	0	Pending
Riverview/ River Oaks Circle	176	17	*
Brentwood	102	36	11-12-13
Oakport West Levee Area	177	165	6-15-18
Total	533	330	

*Additional acquisition & construction
needed




Project Benefit Area Map

Legend

- Protection Line
- LOMR Areas
- FEMA 100 Year Floodplain
- FEMA 500 Year Floodplain



Developing a “37 foot plan”

- ❑ As part of the Governor’s Task Force, City was tasked with developing a plan for a 100-year flood stage of 37 feet
- ❑ Review of previous plan
 - Council update on August 28, 2017
 - Previous plan developed without specific consideration of FM Diversion project BUT
 - All previous acquisitions & projects were consistent with FM Diversion
 - Necessary for a 100-year flood with FM Diversion OR
 - Provided enhanced protection with FM Diversion (e.g. greater than 100-year) AND
 - All provided interim protection

Developing a “37 foot plan”

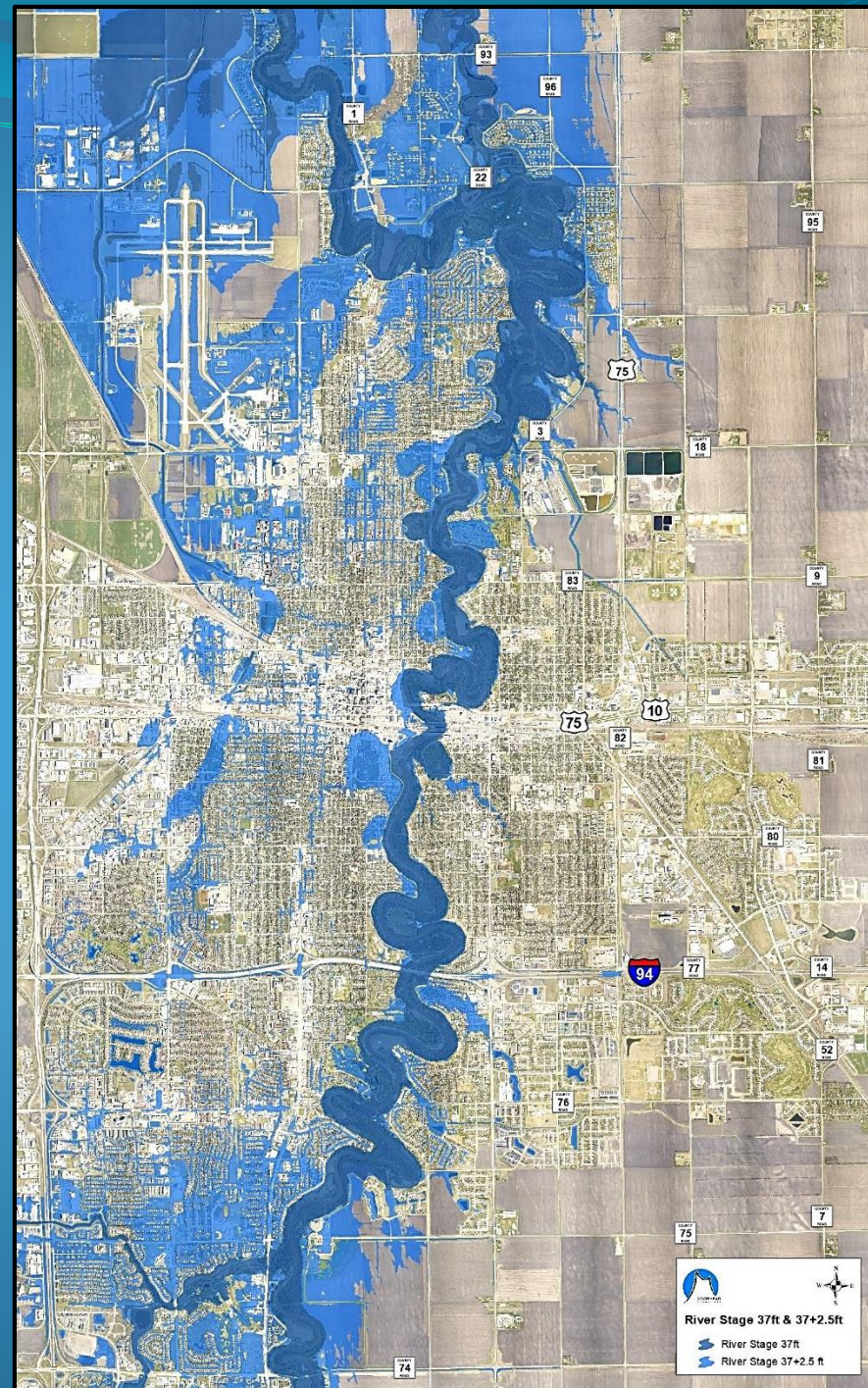
- ❑ Conceptual “37 foot plan” developed in late 2017
- ❑ Conceptual “37 foot plan” has been refined & revised to produce the currently proposed plan
 - Assumes FM Diversion proceeds
 - All levees and/or floodwalls will be constructed to top elevation of 44 feet river stage
 - Consistent with previous projects
 - Provides interim protection until FM Diversion complete
 - Provides greater than 100-year protection after FM Diversion complete

Developing a “37 foot plan”

- ❑ “37 foot plan” included in the FM Diversion Project Plan B documents:
 - USACE Supplemental EA
 - DNR Supplemental EIS
- ❑ Changes from previous (August 2017) plan
 - Removed 1 project (Tessa Terrace levee)
 - Removed proposed acquisition of 23 properties with higher ground elevations

Developing a “37 foot plan”

- Key parameters:
 - 100-year stage: 37 feet
 - Required freeboard: 2.5 feet
 - Less than typical 3-4 feet normally required by FEMA
- Consideration for acquisitions & projects necessary for 37 + 2.5 feet



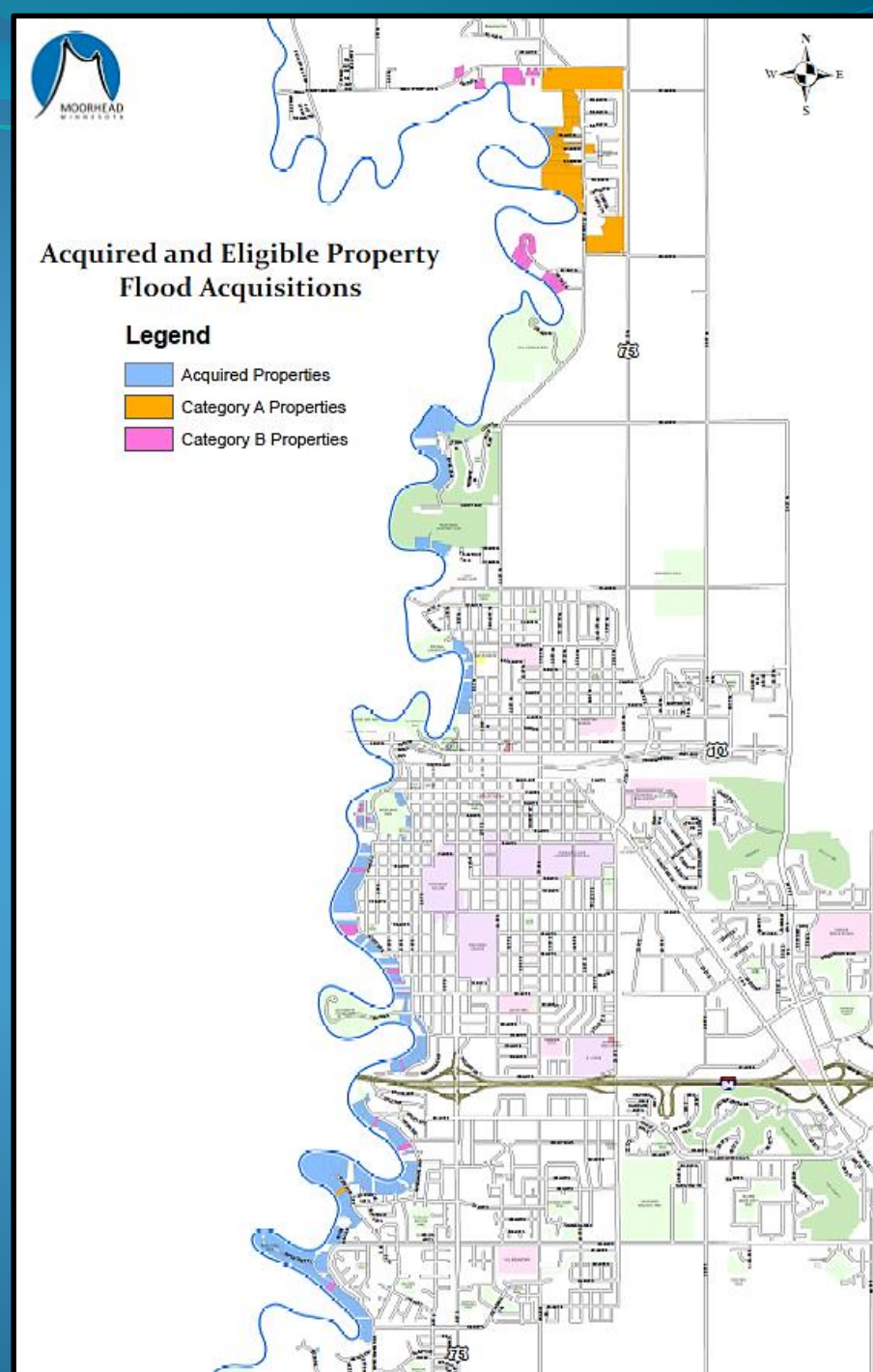
Property Acquisition Categories

- ❑ Category A for river stage 37 + 2.5 feet:
 - Provides protection to public infrastructure
 - Exception: if the only at-risk public infrastructure is the sanitary sewer system & can be mitigated with a reverse clean-out & plug
 - Provides protection to public and/or private property off riverfront
 - Maintains vehicular access to public and/or private property off riverfront
- ❑ Category B for river stage 37 + 2.5 feet:
 - Any riverfront property at risk of flooding not in Category A
- ❑ Category C for river stage 44 feet:
 - Properties not in A or B but needed to complete 44-foot line of protection
 - Removed from revised plan

Properties Eligible for Acquisition:

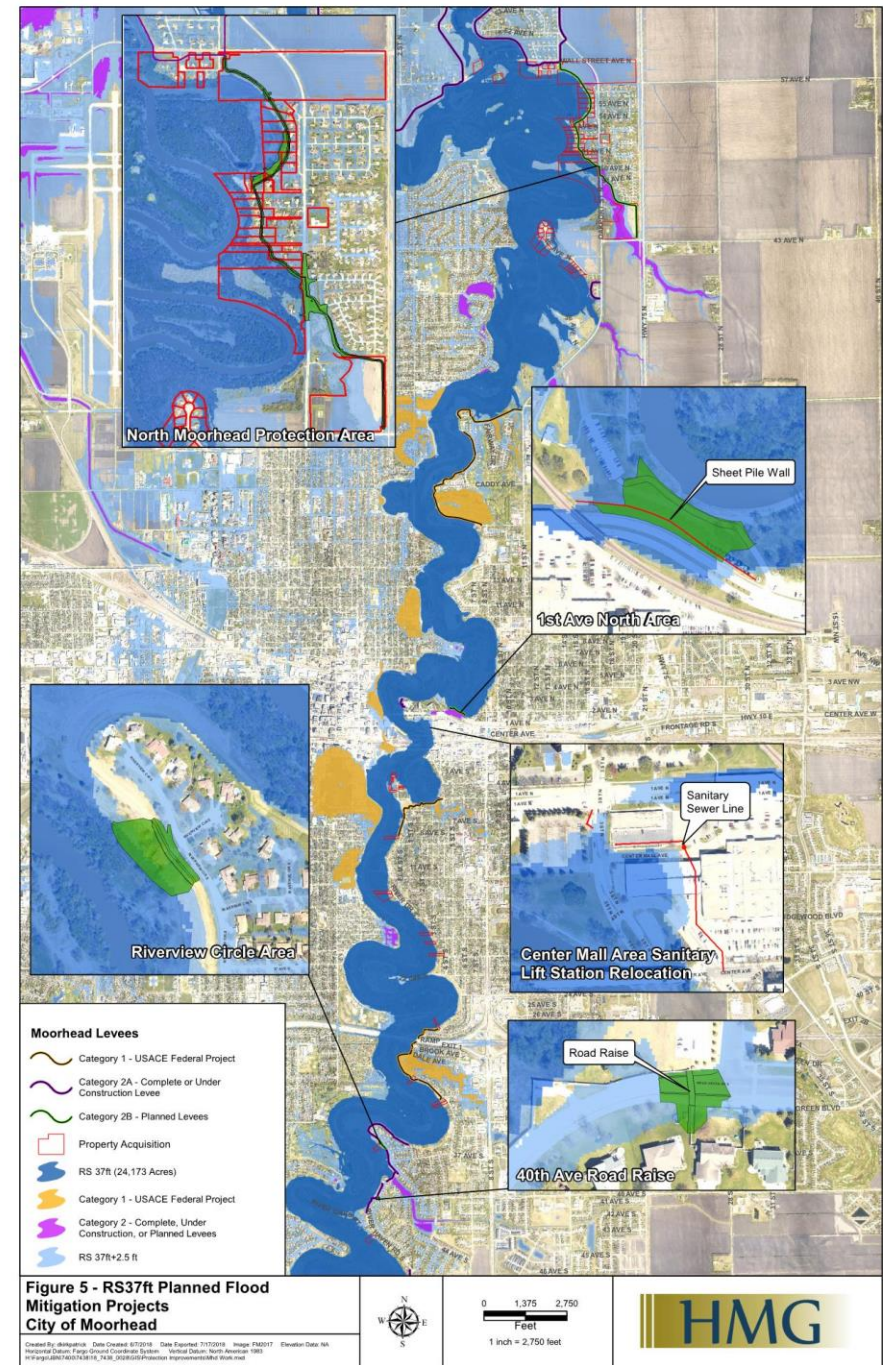
Category	#	\$
A	27	\$14,138,400
B	41	\$11,637,040
C	23	\$0
Total A & B	68	\$25,775,440

- 10 Category A appraisals complete



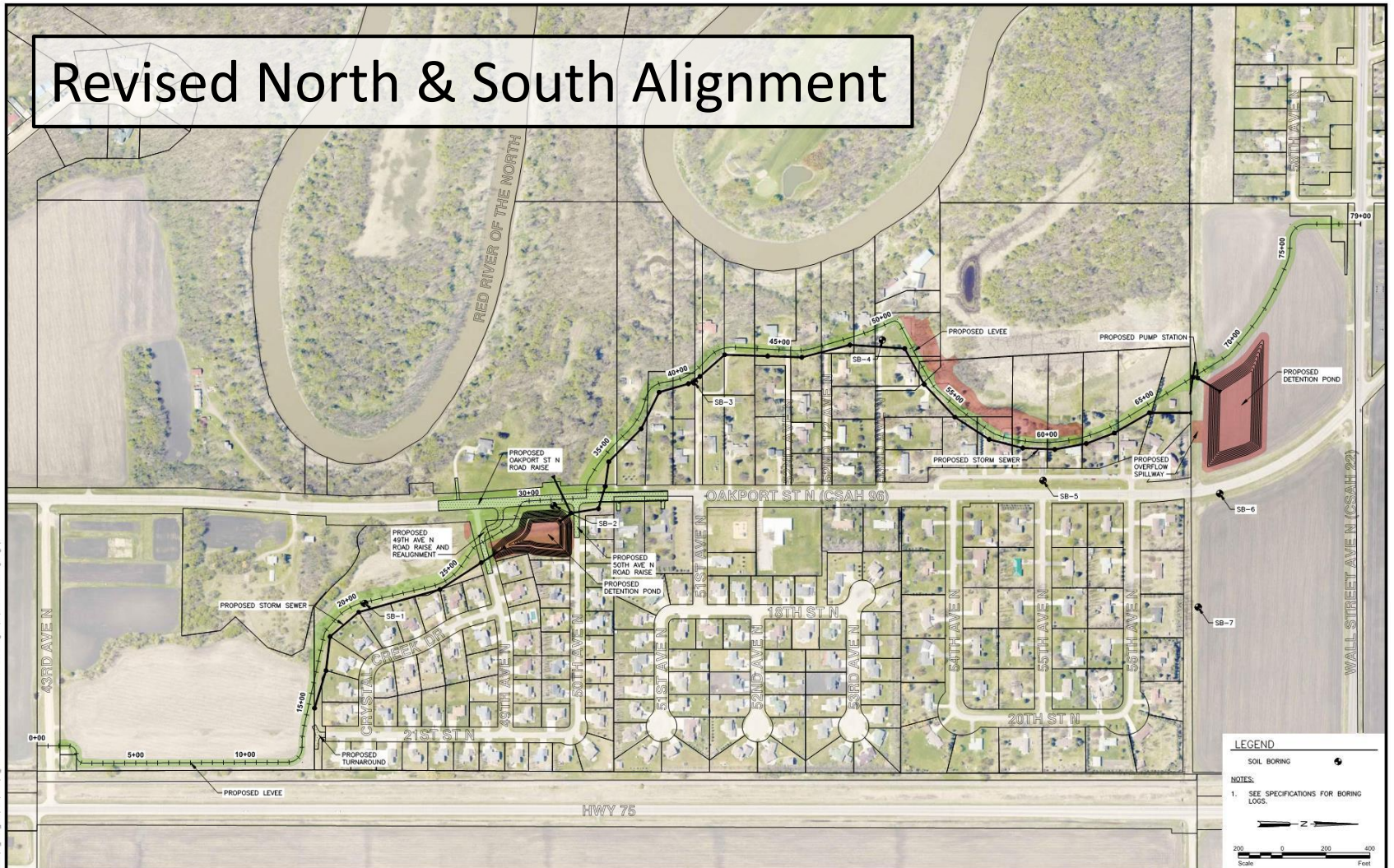
Projects:

Remaining Projects	Construction Costs
North Moorhead	\$6,000,000
Riverview Circle Levee & 40 Ave S Road Raise	\$900,000
Sanitary Lift Station #2	\$1,000,000
1 st Ave N Levee/Floodwall	\$1,020,000
Stormwater Lift Stations	\$1,700,000



North Moorhead Project

Revised North & South Alignment



LEGEND

SOIL BORING

NOTES:

1: SEE SPECIFICATIONS FOR BORING LOGS.

Scale: 0 200 400 Feet

H:\Projects\6019-077\CAD\Boring\03 OVERALL PLAN & SOIL BORING LOCATIONS.dwg, 2/17/2018, 10:08 AM (jphong)

No.	Revision	Date	By

PRELIMINARY
Not for Construction



Fargo
 Drawn by JKH Date 7-17-18
 Checked by MPL Scale AS SHOWN
 P: 701.237.5065
 F: 701.237.5101

NORTH MOORHEAD FMP
 CITY OF MOORHEAD
 MOORHEAD, MINNESOTA

OVERALL PLAN & SOIL BORING LOCATIONS
 PROJECT NO. 6019-077
 SHEET 3 of ----

Sanitary Lift Station #2



PRELIMINARY

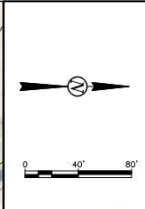
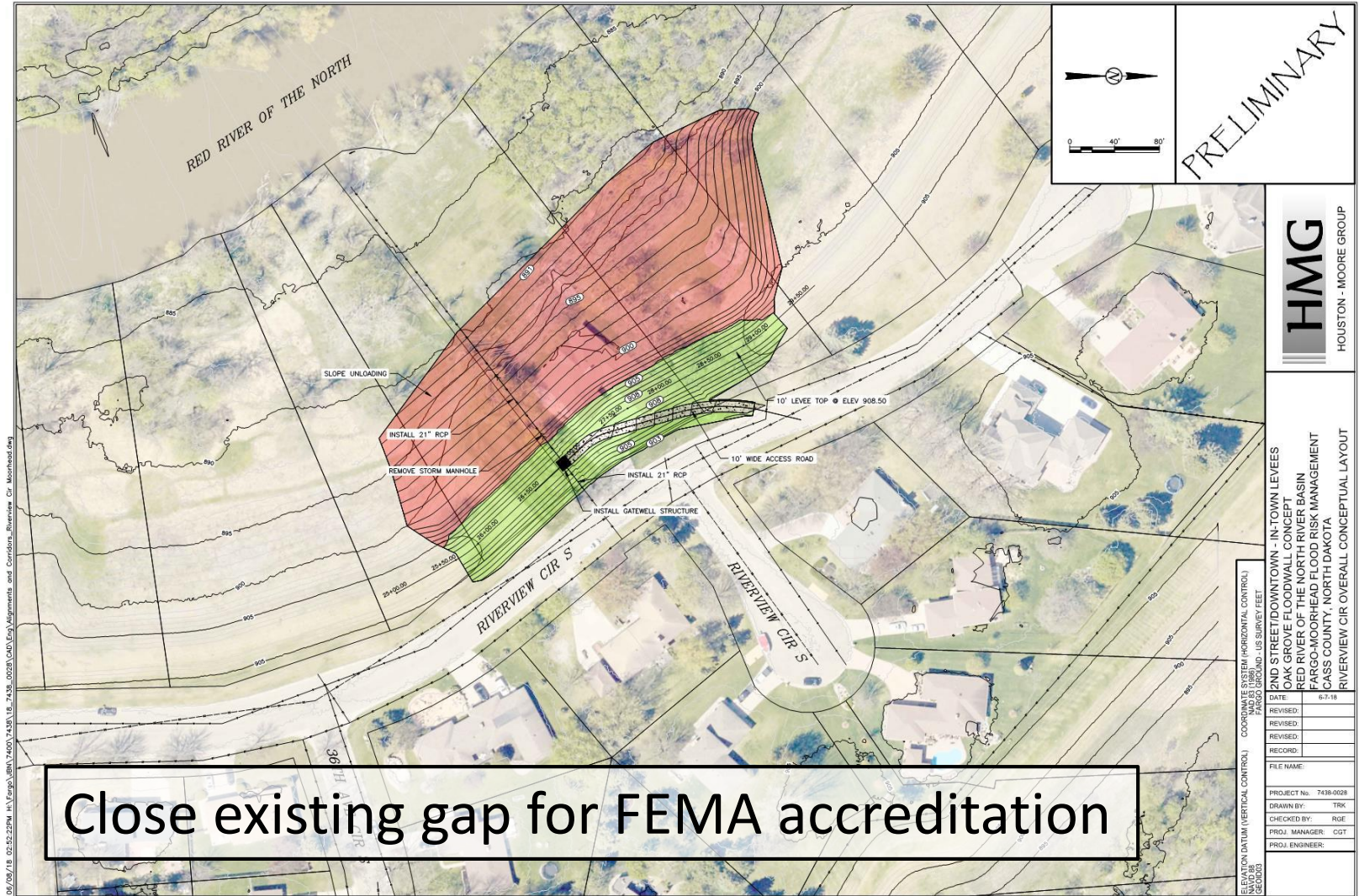
HMG
HOUSTON - MOORE GROUP

3RD STREET/DOWNTOWN - IN-TOWN LEVELS
MOORHEAD CENTER MALL LIFT STATION CONCEPT
RED RIVER OF THE NORTH RIVER BASIN
FARGO-MOORHEAD FLOOD RISK MANAGEMENT
CLAY COUNTY, MINNESOTA
LIFT STATION OVERALL CONCEPTUAL LAYOUT

ELEVATION DATUM (VERTICAL CONTROL)	CORPORATE SYSTEM (HORIZONTAL CONTROL)	
	NAD 83 (UTM) (US SURVEY FEET)	
DATE:	6-7-18	
REVISION:		
REVISION:		
REVISION:		
RECORD:		
FILE NAME:		
PROJECT No:	7438-0028	
DRAWN BY:	DEK	
CHECKED BY:	ROE	
PROJ. MANAGER:	CGT	
PROJ. ENGINEER:		

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Riverview Circle Project



PRELIMINARY

HMG
HOUSTON - MOORE GROUP

2ND STREET DOWNTOWN - IN-TOWN LEVEES
OAK GROVE FLOODWALL CONCEPT
RED RIVER OF THE NORTH RIVER BASIN
PARGO-MOORHEAD FLOOD RISK MANAGEMENT
CASS COUNTY, NORTH DAKOTA
RIVERVIEW CIR OVERALL CONCEPTUAL LAYOUT

ELEVATION DATUM (VERTICAL CONTROL): COORDINATE SYSTEM (HORIZONTAL CONTROL):
NAVD 88 US SURVEY (FEET) US SURVEY (FEET)

DATE	6-7-18
REVISED	
REVISED	
REVISED	
RECORD	

FILE NAME:
PROJECT No: 7418-0028
DRAWN BY: TRK
CHECKED BY: RGF
PROJ. MANAGER: CGT
PROJ. ENGINEER:

Close existing gap for FEMA accreditation

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Flood Control Lift Stations

- Review 9 PTO pump stations (manual operation) for conversion to electrical power (automatic operation)
- Review 2 existing gate structures to determine if automatic pumping would be appropriate

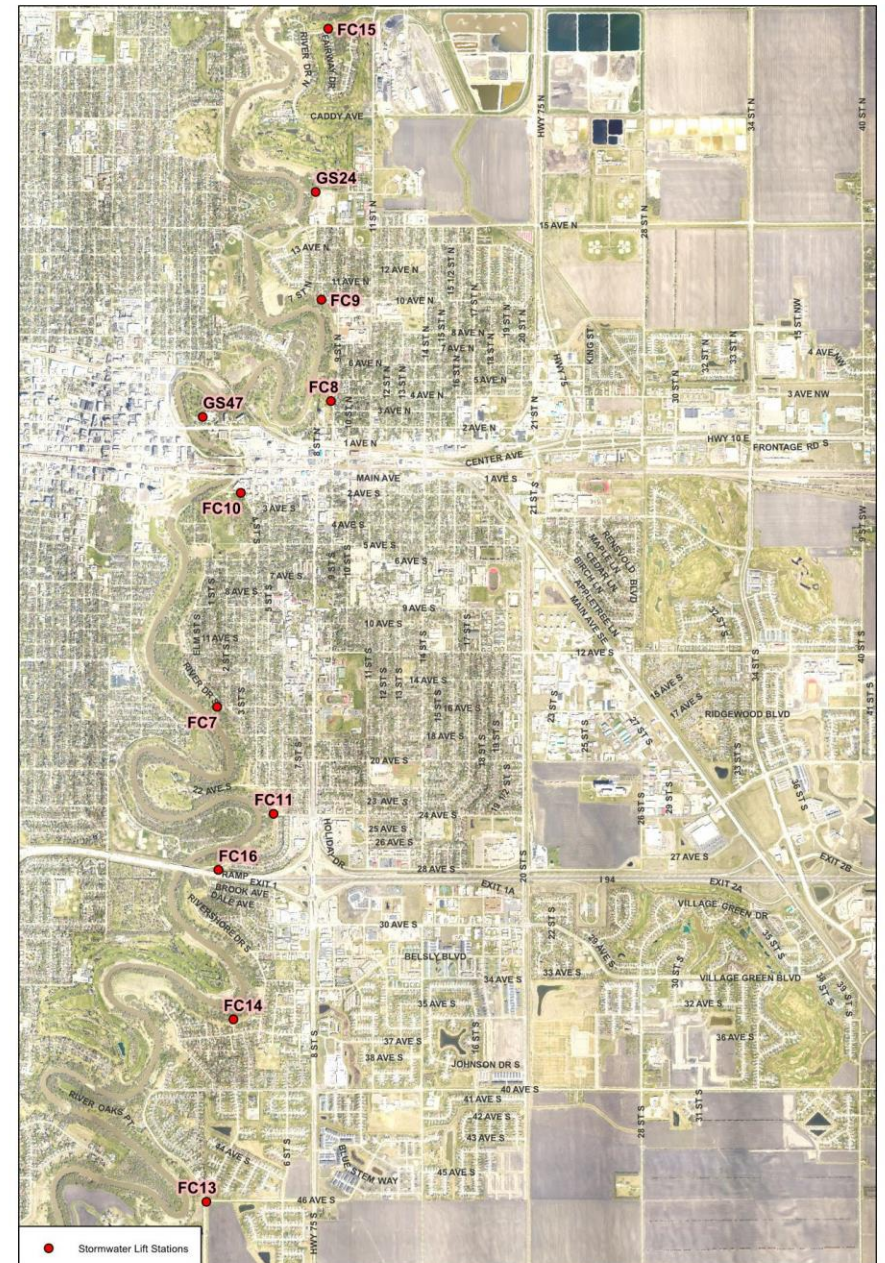


Figure 9 - RS37ft Stormwater Lift Station Improvements
City of Moorhead

Created by: Information Systems Group 1/10/18 Date: 1/10/18 Scale: 1:1000000 Image: 1/10/18 Elevation Data: NAD 83
Horizontal Datum: NAD 83 Vertical Datum: NAD 83
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0 500 1,000 2,000
Feet
1 inch = 2,000 feet



Proposed Priorities

	Acquisitions & Projects	Total Costs
1	North Moorhead Project & Category A (26)	\$19,273,800
2	Riverview Circle Levee & 40 Ave S Road Raise & Category A (1)	\$1,764,600
3	Sanitary Lift Station #2	\$1,000,000
	Category B Acquisitions	\$11,637,040
4	1 st Ave N Levee/Floodwall	\$1,020,000
	Stormwater Lift Stations	\$1,700,000
Total Estimated Acquisition and Construction Costs		\$36,395,440
Engineering and Administration Costs (10%)		\$3,639,544
Total Estimated Cost		\$40,034,984

DNR FDR Grant History

Grant #	Amend #	Effective Date	Grant Amount	Local Match
B30914/3000000599	0	07-21-09	\$8,000,000	\$8,124,146
	1	04-23-10	\$15,000,000	
	2	11-15-10	\$3,000,000	
	3	2-10-11	\$3,000,000	\$4,292,298
	4	11-02-11	\$12,000,000	
	5	01-27-12	\$4,500,000	
	6	08-16-12	\$11,500,000	
	7	09-20-13	\$7,000,000	
	8	10-03-14	\$7,200,000	
56371/3000031263	0	12-17-12	\$1,000,000	\$1,000,000
63810/3000039375	0	06-25-13	\$500,000	\$500,000
30882/3000121702	0	09-05-17	\$300,000	\$300,000
	1	04-11-18	\$383,000	\$383,000

Funding

- ❑ DNR Flood Damage Reduction Grants
 - 2018 Legislative Request: \$12,837,000
 - 2018 Grant: TBD
 - Local match requirement: TBD
- ❑ City funds
 - Approximately \$1M available, but committed
 - Optimal flexibility provided with a reserve of local funds
- ❑ City Council resolution required to request funds



Thank You