



## ENGINEERING DEPARTMENT

200 3rd Street North  
Fargo, North Dakota 58102  
Phone: (701) 241-1545  
Fax: (701) 241-8101  
E-Mail: feng@cityoffargo.com

May 19, 2016

Honorable Board of City  
Commissioners  
City of Fargo  
Fargo, North Dakota

Re: Prioritized Comprehensive Flood Control Plan

Honorable Commissioners,

At your direction, staff has worked with Commissioner Piepkorn and developed the attached prioritized comprehensive flood control plan. This plan looks at the next 5 years and continues to prioritize construction of the areas that are the hardest to provide emergency protection for. The plan also seeks to avoid the implementation of areas that would require removal of affordable housing for the construction of freeboard, purely for the purpose of certification in areas where emergency measures have not been exposed to flood water in the past. Also avoided are areas where permitting of the projects could be difficult and require the implementation of mitigation through the construction of ponds, or the purchase of easements to flood property.

Among the areas that staff wishes to continue progressing toward a completed primary flood protection line are Belmont, Harwood, Hackberry, River Drive, Oakcreek, Copperfield Court, Rosewood, etc. Many of these locations have had substantial amounts of work done and are lacking just a few properties to complete the primary line of protection. All of these areas have been the subject of voluntary buyouts and all but Belmont have been authorized for the completion of appraisals and negotiation for the property based on the appraisals.

The implementation of this portion of the plan would result in certification against the current 39.3' floodplain for 21 homes in the Mickelson area and 7 homes in the El Zagal area, as well as potentially removing the City Hall area from the floodplain.

### **Recommended Motion:**

Move to approve the implementation of the 5 year prioritized comprehensive plan and direct staff to continue to pursue all necessary property through appraisals and negotiations.

Thank you for your consideration of this topic and I look forward to being a part of your discussion.

Respectfully,

April E. Walker, P.E., C.F.M.  
City Engineer

### Attachments

C: Jody Bertrand  
Nathan Boerboom  
Nancy Morris  
Bruce Grubb  
Shawn Bullinger

Street Lighting  
Sidewalks

Design & Construction  
Traffic Engineering

Truck Regulatory  
Flood Plain Mgmt.

Mapping & GIS  
Utility Locations

# CITY OF FARGO COMPREHENSIVE FLOOD MITIGATION PLAN PHASING

MAY 23, 2016



## PHASING PLAN 2016-2020

- TOTAL PHASED PLAN CONTAINS \$104M
- FOCUS IS ON HARD TO PROTECT AREAS
- AVOIDS REMOVAL OF HOMES TO PROVIDE FREEBOARD FOR CERTIFICATION
- AVOIDS PROJECTS THAT MIGHT BE DIFFICULT TO PERMIT

### Legend

- Lift Stations**
- L.S. 2016 (1)
  - L.S. 2017 (2)
  - L.S. 2018 (4)
  - L.S. 2019 (3)
  - L.S. 2020 (3)
- 2016 Levee/Floodwall
- 2017 Levee/Floodwall
- 2018 Levee/Floodwall
- Constructed (20.87 miles)
- Diversion Authority Lead (0.87 miles)
- FEMA 1% Annual Chance Floodplain (Adoption in January 2015)
- Fargo Municipal Boundary
- Fargo ET Boundary
- Misc. Municipalities



**CITY OF FARGO - COMPREHENSIVE FLOOD MITIGATION PLAN PHASING TIER 1 & 2**  
**UPDATED 4/7/2016**

2016

Reach		Location	Project Description	Construction Cost Estimate	10% Contingency	ROW Cost Estimate	Utilities	Agreement %	Consultant Cost (15% of Const Cost)	E&A (16% of Construction Cost)	Project Cost Estimate
21	FM-15-81	Stone Creek Golf Course Ph 3	Levee, Golf Course Remediation	\$2,478,127	\$247,813	\$0	\$520,000	\$487,000	\$371,719	\$396,511	\$4,741,488
xx	FM-15-83	Southwood Ph 2 w/ Demol	Levee	\$237,000	\$23,700	\$381,000	\$450,000	\$0	\$0	\$37,120	\$1,284,820
xx	FM-16-43	Northside Protection	Levee Ph 1 (Levee)	\$4,100,000	\$410,000	\$750,000	\$400,000	\$0	\$615,000	\$656,000	\$6,981,000
14	FM-12-11	Baymont Addition - Ph 3	LPI Station	\$1,307,000	\$130,700	\$0	\$200,000	\$0	\$195,750	\$209,120	\$1,833,570
18	N/A	Baymont Addition (12 Homes)	Home Acquisition	\$0	\$0	\$4,000,000	\$0	\$0	\$0	\$0	\$4,000,000
18 & 19	N/A	Harwood, Hackberry, River Drives (12 Homes)	Home Acquisition	\$0	\$0	\$14,448,000	\$0	\$0	\$0	\$0	\$14,448,000
21	N/A	Kinder (1 Home)	Home Acquisition	\$0	\$0	\$888,000	\$0	\$0	\$0	\$0	\$888,000
21	N/A	Quince & Copperfield	Home Acquisition	\$0	\$0	\$4,476,000	\$0	\$0	\$0	\$0	\$4,476,000
25 & 26	N/A	Private Row Area & McDonald Phase 3 (Remaining Areas)	Home Acquisition	\$0	\$0	\$4,750,000	\$0	\$0	\$0	\$0	\$4,750,000
20	N/A	Baymont Addition (Remaining Areas)	Home Acquisition	\$0	\$0	\$1,930,000	\$0	\$0	\$0	\$0	\$1,930,000
21	MD-14-13	Quince & Copperfield (5 Homes)	Demolition	\$300,000	\$30,000	\$0	\$0	\$0	\$0	\$48,000	\$378,000
25 & 26	MD-14-13	Private Row Addition (4 Homes)	Demolition	\$200,000	\$20,000	\$0	\$0	\$0	\$0	\$32,000	\$252,000
31	MD-14-14	Circle (1 Home)	Demolition	\$40,000	\$4,000	\$0	\$0	\$0	\$0	\$6,400	\$46,400
xx	FM-15-42	Southwood Ph 2	Levee	\$227,000	\$22,700	\$0	\$0	\$0	\$0	\$36,320	\$263,020
20	MD-14-13	Baymont Addition (2 Homes)	Demolition	\$120,000	\$12,000	\$0	\$0	\$0	\$0	\$19,200	\$139,200
N/A		Non-Scheduled Projects	Home Acquisition	\$0	\$0	\$2,000,000	\$0	\$0	\$0	\$0	\$2,000,000
<b>2016 Project Cost Totals --</b>				<b>\$9,442,197</b>	<b>\$944,220</b>	<b>\$32,081,000</b>			<b>\$1,467,900</b>	<b>\$1,540,752</b>	<b>\$47,343,068</b>



Reach		Location	Project Description	Construction Cost Estimate	10% Contingency	ROW Cost Estimate	Utilities	Agreement %	Consultant Cost (15% of Const Cost)	E&A (16% of Construction Cost)	Project Cost Estimate
<b>2017</b>											
xx	FM-16-42	Northside Protection	Levee (Levee) & L.I. PM (2 & 3)	\$4,308,000	\$430,800	\$500,000	\$300,000	\$0	\$795,000	\$688,000	\$6,844,000
25 & 26	MD-14-13	Harwood/Hackberry/River Drives (13 Homes)	Demolition	\$780,000	\$78,000	\$0	\$0	\$0	\$0	\$124,800	\$982,800
20	FM-15-43	Baymont Addition (Remaining Areas)	Levee	\$1,800,000	\$180,000	\$0	\$20,000	\$0	\$270,000	\$288,000	\$2,488,000
25 & 26	FM-14-13	Private Row Area & McDonald Phase 3 (Remaining Areas)	Levee & Floodwall	\$1,300,000	\$130,000	\$0	\$0	\$0	\$195,000	\$208,000	\$1,723,000
23	FM-14-13	Gabriel & Copperfield	Earth Levee, Gabionfill	\$1,000,000	\$100,000	\$0	\$0	\$0	\$150,000	\$160,000	\$1,440,000
21	FM-15-82	Stone Creek Golf Course/River Area Ph 3	Levee/Floodwall	\$1,200,000	\$120,000	\$20,000	\$300,000	\$0	\$180,000	\$192,000	\$1,982,000
18 & 19	FM-15-42	Harwood, Hackberry, River Drives (Remaining Areas)	Levee	\$1,800,000	\$180,000	\$0	\$0	\$0	\$270,000	\$288,000	\$2,468,000
14	MD-14-13	Baymont Area (12 Homes)	Demolition	\$1,100,000	\$110,000	\$0	\$0	\$0	\$0	\$176,000	\$1,386,000
14	FM-15-22	Baymont Addition Ph 3	Levee	\$2,700,000	\$270,000	\$0	\$300,000	\$0	\$405,000	\$432,000	\$3,777,000
<b>2017 Project Cost Totals --</b>				<b>\$24,927,000</b>	<b>\$2,492,700</b>	<b>\$1,370,000</b>			<b>\$3,306,000</b>	<b>\$3,402,320</b>	<b>\$29,843,835</b>
<b>2018</b>											
N/A	FM-14-13	Agreement - Golf Course Area	Levee & Floodwall	\$1,500,000	\$150,000	\$800,000	\$100,000	\$0	\$225,000	\$240,000	\$2,645,000
14	FM-15-22	Baymont Addition Ph 3	Levee/Flood - Interior Modifications	\$1,000,000	\$100,000	\$0	\$100,000	\$0	\$150,000	\$160,000	\$1,440,000
N/A	MD-14-13	LPI Station Improvements/Modifications	LPI Station/Levee	\$1,500,000	\$150,000	\$700,000	\$250,000	\$0	\$225,000	\$240,000	\$2,945,000
N/A	FM-14-13	LPI Station, Storm Sewer Improvements/Modifications	Water	\$1,000,000	\$100,000	\$0	\$0	\$0	\$0	\$0	\$1,100,000
<b>2018 Project Cost Totals --</b>				<b>\$5,000,000</b>	<b>\$500,000</b>	<b>\$1,500,000</b>			<b>\$600,000</b>	<b>\$640,000</b>	<b>\$7,640,000</b>
<b>2019</b>											
N/A	MD-14-13	LPI Station Improvements/Modifications	LPI Station/Levee	\$1,500,000	\$150,000	\$700,000	\$250,000	\$0	\$225,000	\$240,000	\$2,945,000
N/A	FM-14-13	Storm Sewer Improvements/Modifications/Utilities	Water	\$1,000,000	\$100,000	\$0	\$0	\$0	\$0	\$0	\$1,100,000
<b>2019 Project Cost Totals --</b>				<b>\$2,500,000</b>	<b>\$250,000</b>	<b>\$700,000</b>			<b>\$600,000</b>	<b>\$640,000</b>	<b>\$3,690,000</b>
<b>2020</b>											
N/A	MD-14-13	LPI Station Improvements/Modifications	LPI Station/Levee	\$1,500,000	\$150,000	\$700,000	\$250,000	\$0	\$225,000	\$240,000	\$3,690,000
<b>2020 Project Cost Totals --</b>				<b>\$1,500,000</b>	<b>\$150,000</b>	<b>\$700,000</b>			<b>\$600,000</b>	<b>\$640,000</b>	<b>\$3,690,000</b>



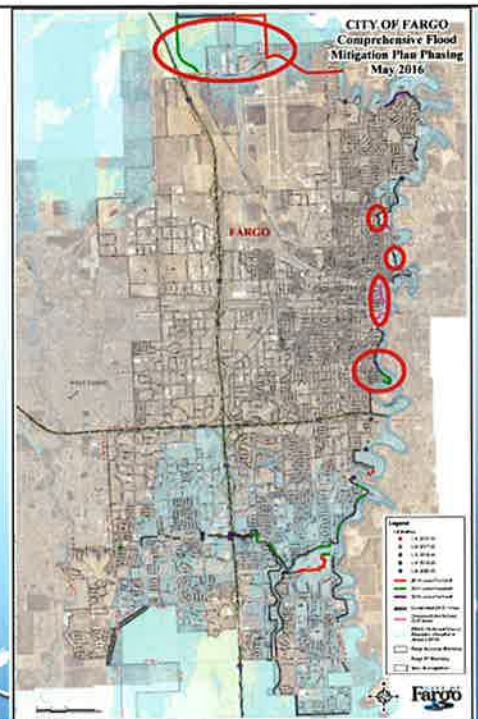
Tier 1 & 2 Needs **\$104,148,803**



## PHASING PLAN 2016-2020

**CERTIFICATION FROM 39.3' (CURRENT ADOPTED) FLOODPLAIN WITH PHASED PLAN WILL BE LIMITED TO THE FOLLOWING AREAS:**

- EL ZAGAL –SHRINERS BUILDING & 6 HOMES ALONG OAK STREET
  - PROJECT COMPLETION – 2016, LOMR IN PLACE – END OF 2017
- MICKELSON – THIS WILL BE A COMBINATION OF APARTMENTS AND SINGLE FAMILY HOMES ALONG OAK STREET AND THE CONDOS AT THE END OF ELM STREET. TOTAL PRIMARY STRUCTURE COUNT 21.
  - PROJECT COMPLETION – 2016, LOMR IN PLACE – END OF 2017
- CASS COUNTY 20 AREA –SOUTH OF WASTEWATER LAGOONS BETWEEN 25<sup>TH</sup> ST N & 129.
  - PROJECT COMPLETION – 2017, LOMR IN PLACE – END OF 2018
- DOWNTOWN AREA – POTENTIAL FOR CURRENT CITY HALL, OLD HOWARD JOHNSON SITE, MID-AMERICA, CASS PLAZA, MEPS, ETC.
  - PROJECT COMPLETION – 2016 (90%) BUT ADDITIONAL NEEDED FOR THE MAIN AVENUE CLOSURE AND LS, WHICH MAY BE 2017 & 2018, LOMR IN PLACE –2018?
- BELMONT , IN DESIGN, POTENTIAL FOR UP TO 15 PRIMARY STRUCTURES
  - UNDEFINED DUE TO UNCERTAINTY OF BUYOUTS.



**CITY OF FARGO - COMPREHENSIVE FLOOD MITIGATION PLAN PHASING TIER 1 & 2**  
**UPDATED 4/7/2016**

**2016**

Reach		Location	Project Description	Construction Cost Estimate	10% Contingency	ROW Cost Estimate	Utilities	Agreement s	Consultant Cost (15% of Const Cost)	E&A (16% of Construction Cost)	Project Cost Estimate
21	FM-15-B1	Rose Creek Golf Course Ph 1	Levee, Golf Course Restoration	\$2,478,197	\$247,820	\$0	\$520,000	\$497,000	\$607,900	\$396,512	<b>\$4,747,428</b>
xx	FM-15-A1	Southwood Ph 1 w/ Demo	Levee	\$357,000	\$35,700	\$385,000	\$450,000	\$0	\$0	\$57,120	<b>\$1,284,820</b>
xx	FM-16-A1	Northside Protection	Levee Ph 1 (east)	\$4,100,000	\$410,000	\$750,000	\$400,000	\$0	\$485,000	\$656,000	<b>\$6,801,000</b>
14	FM-15-J1	Belmont Addition - Ph 1	Lift Station	\$1,500,000	\$150,000	\$0	\$100,000	\$0	\$375,000	\$270,000	<b>\$2,295,000</b>
14	N/A	Belmont Addition (12 homes)	Home Acquisition	\$0	\$0	\$6,000,000	\$0	\$0	\$0	\$0	<b>\$6,000,000</b>
18 & 19	N/A	Harwood, Hackberry, River Drives (13 homes)	Home Acquisition	\$0	\$0	\$14,446,000	\$0	\$0	\$0	\$0	<b>\$14,446,000</b>
21	N/A	Kinzler (1 Home)	Home Acquisition	\$0	\$0	\$850,000	\$0	\$0	\$0	\$0	<b>\$850,000</b>
23	N/A	Oakcreek & Copperfield	Home Acquisition	\$0	\$0	\$4,470,000	\$0	\$0	\$0	\$0	<b>\$4,470,000</b>
25 & 26	N/A	Prairie Rose Area & Mistwood Phase 3 (Remaining Areas)	Home Acquisition	\$0	\$0	\$1,250,000	\$0	\$0	\$0	\$0	<b>\$1,250,000</b>
20	N/A	Rosewood Addition (Remaining Areas)	Home Acquisition	\$0	\$0	\$1,930,000	\$0	\$0	\$0	\$0	<b>\$1,930,000</b>
23	HD-16-XX	Oakcreek & Copperfield (5 Homes)	Demolition	\$300,000	\$30,000	\$0	\$0	\$0	\$0	\$48,000	<b>\$378,000</b>
25 & 26	HD-16-XX	Prairie Rose Addition (4 Homes)	Demolition	\$200,000	\$20,000	\$0	\$0	\$0	\$0	\$32,000	<b>\$252,000</b>
21	HD-16-XX	Kinzler (1 Home)	Demolition	\$60,000	\$6,000	\$0	\$0	\$0	\$0	\$9,600	<b>\$75,600</b>
xx	FM-15-A2	Southwood Ph 2	Levee	\$327,000	\$32,700	\$0	\$0	\$0	\$0	\$52,320	<b>\$412,020</b>
20	HD-16-XX	Rosewood Addition (2 Homes)	Demolition	\$120,000	\$12,000	\$0	\$0	\$0	\$0	\$19,200	<b>\$151,200</b>
N/A		Non-Scheduled Buyouts	Home Acquisition	\$0	\$0	\$2,000,000	\$0	\$0	\$0	\$0	<b>\$2,000,000</b>
<b>2016 Project Cost Totals --</b>				<b>\$9,442,197</b>	<b>\$944,220</b>	<b>\$32,081,000</b>			<b>\$1,467,900</b>	<b>\$1,540,752</b>	<b>\$47,343,068</b>

**2017**

xx	FM-16-A2	Northside Protection	Levee (west) & L.S. PH (2 & 3)	\$4,300,000	\$430,000	\$500,000	\$200,000	\$0	\$725,000	\$688,000	<b>\$6,843,000</b>
18 & 19	HD-16-XX	Harwood/Hackberry/River Drives (13 Homes)	Demolition	\$780,000	\$78,000	\$0	\$0	\$0	\$0	\$124,800	<b>\$982,800</b>
20	FM-15-K1	Rosewood Addition (Remaining Areas)	Levee	\$3,000,000	\$300,000	\$0	\$20,000	\$0	\$366,035	\$480,000	<b>\$4,166,035</b>
25 & 26	FM-14-63	Prairie Rose Area & Mistwood Phase 3 (Remaining Areas)	Levee & Floodwall	\$1,200,000	\$120,000	\$0	\$0	\$0	\$200,000	\$192,000	<b>\$1,712,000</b>
23	FM-14-13	Oakcreek & Copperfield	Earth Levee, Gatewells	\$1,000,000	\$100,000	\$0	\$0	\$0	\$180,000	\$160,000	<b>\$1,440,000</b>
21	FM-15-B2	Rose Creek Golf Course/Kinzler Area Ph 2	Levee/gatewell	\$1,200,000	\$120,000	\$20,000	\$200,000	\$0	\$250,000	\$192,000	<b>\$1,982,000</b>
18 & 19	FM-15-F2	Harwood, Hackberry, River Drives (Remaining Areas)	Levee	\$1,500,000	\$150,000	\$0	\$0	\$0	\$285,000	\$240,000	<b>\$2,175,000</b>



Reach		Location	Project Description	Construction Cost Estimate	10% Contingency	ROW Cost Estimate	Utilities	Agreements	Consultant Cost (15% of Const Cost)	E&A (16% of Construction Cost)	Project Cost Estimate
14	HD-16-XX	Belmont Area (12 Homes)	Demolition	\$1,200,000	\$120,000	\$0	\$0	\$0	\$0	\$192,000	\$1,512,000
14	FM-15-J2	Belmont Addition Ph 2	Levee	\$2,700,000	\$270,000	\$0	\$300,000	\$0	\$575,000	\$486,000	\$4,031,000

2017 Project Cost Totals --

\$24,927,000

\$2,092,700

\$1,370,000

\$3,306,900

\$3,402,320

\$24,843,835

2018

N/A	FM-15-L1	Edgewood – Golf Course Ave	Levee & Floodwall	\$3,500,000	\$350,000	\$650,000	\$100,000	\$0	\$481,900	\$560,000	\$5,641,900
14	FM-15-J2	Belmont Addition Ph 3	Levee/Wall - Intake Modifications	\$3,000,000	\$300,000	\$0	\$300,000	\$0	\$600,000	\$540,000	\$4,440,000
N/A	NN-18-XX	Lift Station Improvements/Modifications	Lift Station/Levee	\$3,500,000	\$350,000	\$700,000	\$250,000	\$0	\$600,000	\$560,000	\$5,960,000
N/A	FM-18-XX	Lift Stations, Storm Sewer Improvements/Modifications	Various	\$2,000,000	\$0	\$0	\$0	\$0	\$0	\$0	\$2,000,000

2018 Project Cost Totals --

\$13,250,000

\$1,125,000

\$1,350,000

\$1,966,900

\$1,860,000

\$18,041,900

2019

N/A	NN-19-XX	Lift Stations Improvements/Modifications	Lift Station/Levee	\$3,500,000	\$350,000	\$700,000	\$250,000	\$0	\$600,000	\$560,000	\$5,960,000
N/A	FM-19-XX	Storm Sewer Improvements/Modifications/Studies	Various	\$2,000,000	\$0	\$0	\$0	\$0	\$0	\$0	\$2,000,000

2019 Project Cost Totals --

\$5,500,000

\$350,000

\$700,000

\$600,000

\$560,000

\$7,960,000

2020

N/A	NN-20-XX	Lift Stations Improvements/Modifications	Lift Station/Levee	\$3,500,000	\$350,000	\$700,000	\$250,000	\$0	\$600,000	\$560,000	\$5,960,000
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2020 Project Cost Totals --

\$3,500,000

\$350,000

\$700,000

\$600,000

\$560,000

\$5,960,000

Tier 1 &2 Needs

\$104,148,803



## May 2016

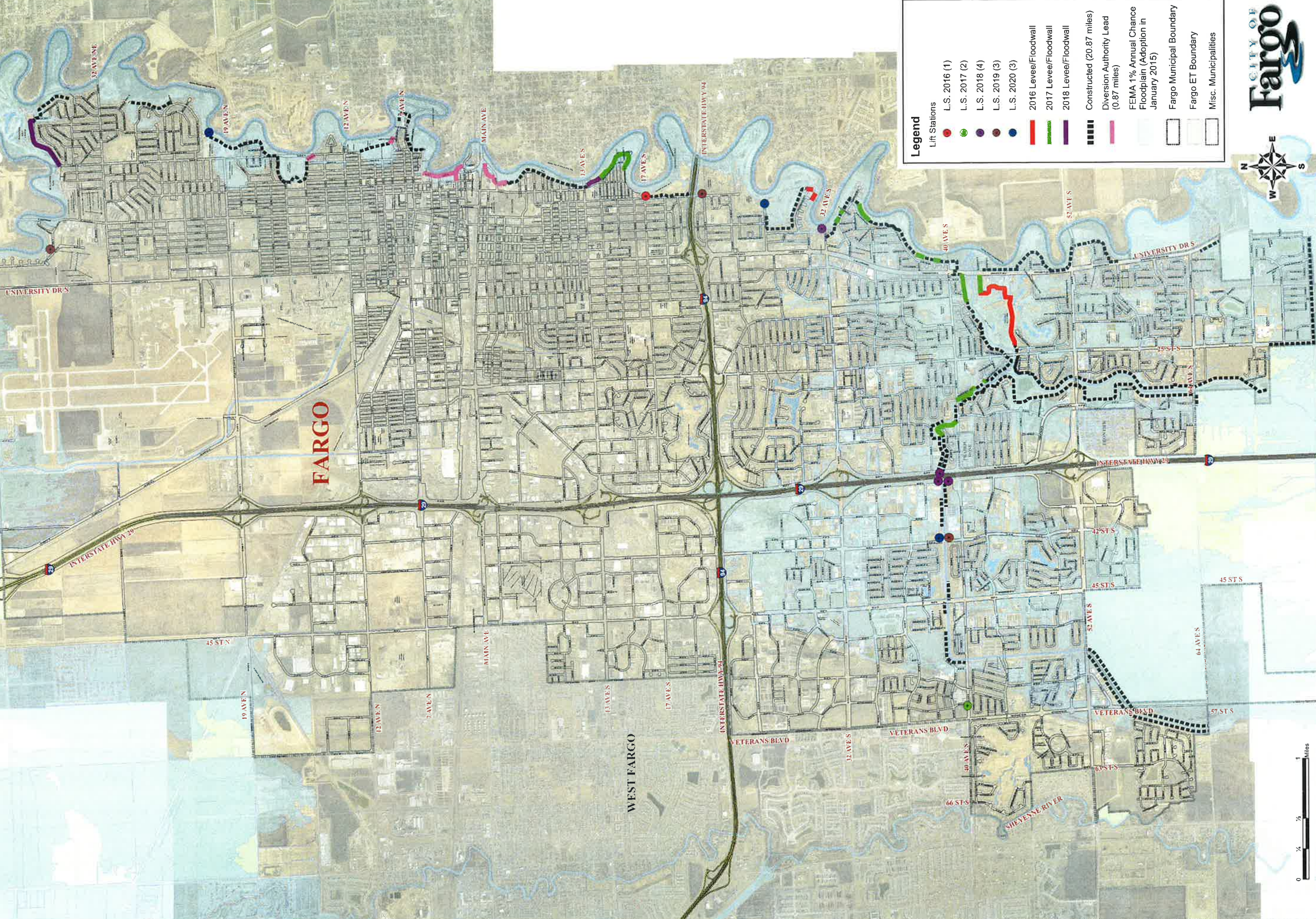




# CITY OF FARGO

## Comprehensive Flood Mitigation Plan Phasing

May 2016



**Legend**

- Lift Stations
  - L.S. 2016 (1)
  - L.S. 2017 (2)
  - L.S. 2018 (4)
  - L.S. 2019 (3)
  - L.S. 2020 (3)
- 2016 Levee/Floodwall
- 2017 Levee/Floodwall
- 2018 Levee/Floodwall
- Constructed (20.87 miles)
- Division Authority Lead (0.87 miles)
- FEMA 1% Annual Chance Floodplain (Adoption in January 2015)
- Fargo Municipal Boundary
- Fargo ET Boundary
- Misc. Municipalities



0 1/4 1/2 1 Miles

