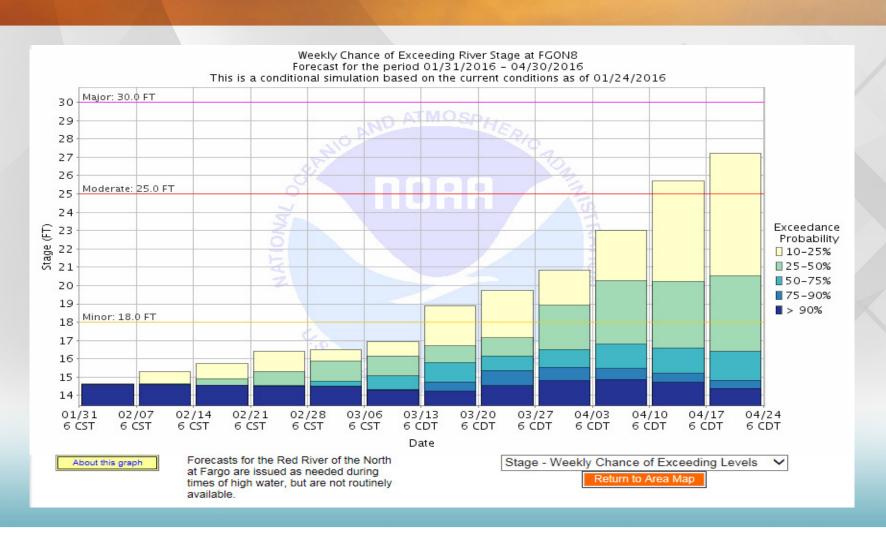
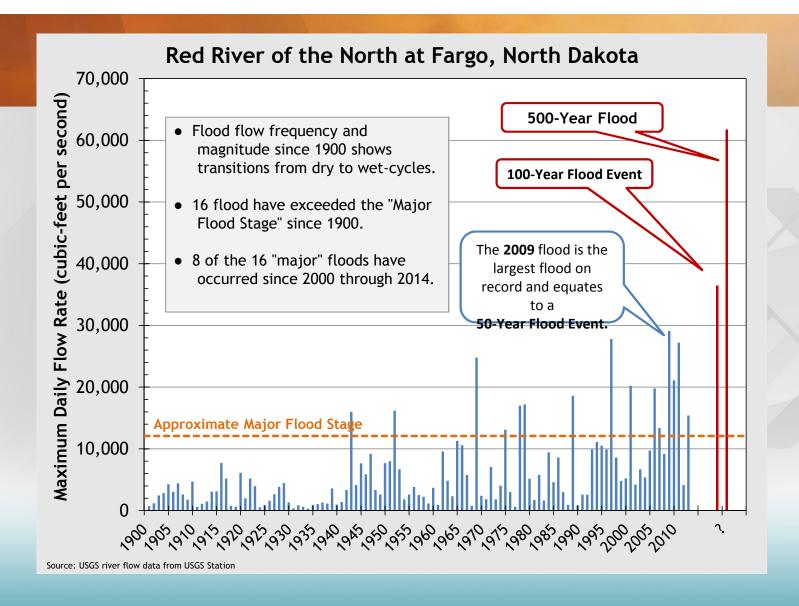


FM-15-KO Neighborhood Meeting Rosewood Addition Flood Protection



2016 Red River Forecast



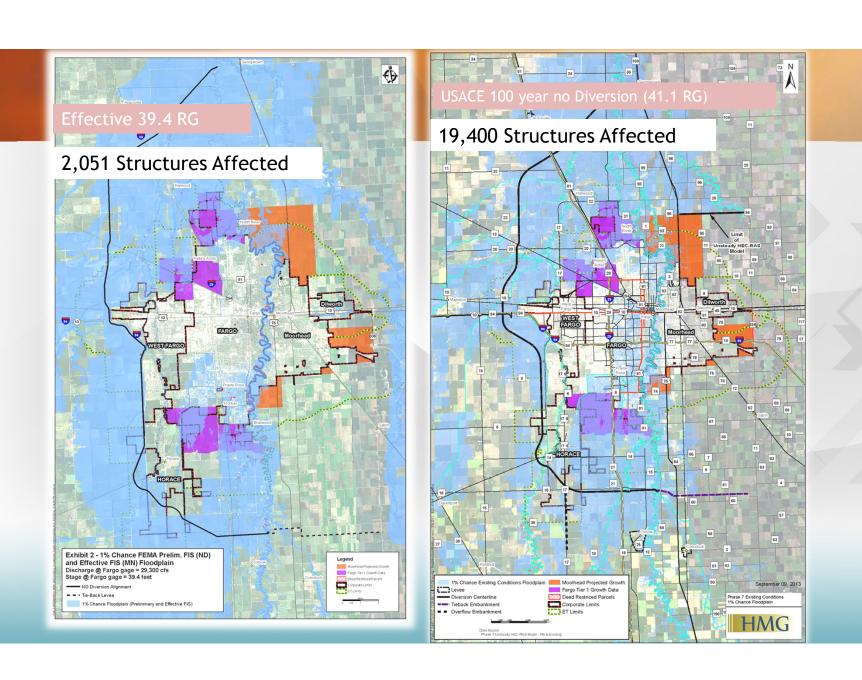


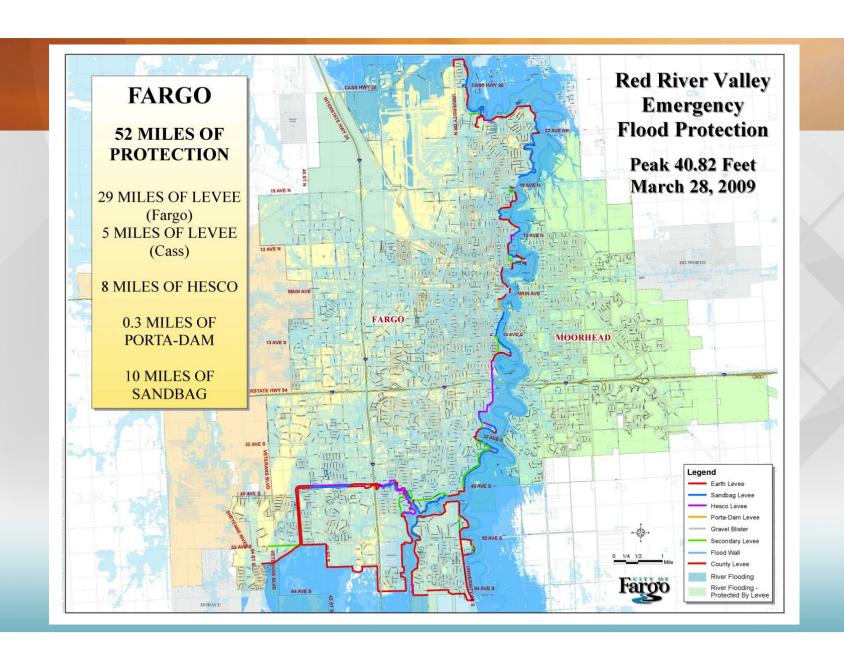
Changing Flood Risk

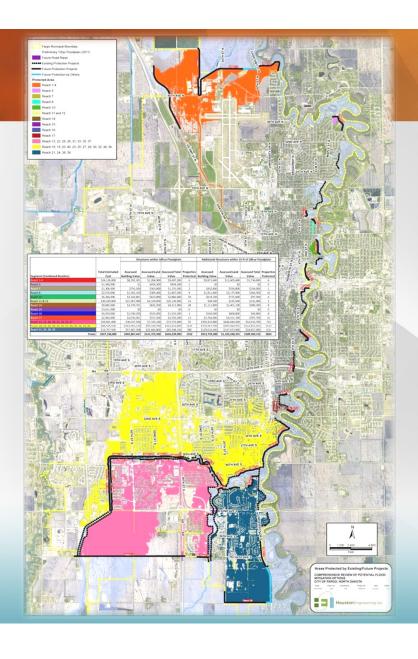
- Now Effective Floodplain
 - 39.4 Feet River Gage (29,300 cfs)
 - Approx. 2,051 Impacted Structures
 - Approx. 7,500 Impacted properties
 - 27,600 Acres Impacted
 - After Diversion This elevation will be close to 500-year flood levels
- Flood of Record
 - 40.8 Feet River Gage
 - > \$70M expended to flood fight
- Future of the Floodplain
 - USACE 41.1 River Gage (34,700 cfs)
 - Approx. 19,400 Impacted Structures
 - 36,430 Acres Impacted

"If I am in a community that we come back five years down the road and they are still talking about a project, I am probably going to change the map then," said Federal Emergency Management Agency's (FEMA) Deputy Associate Administrator for Mitigation, Roy Wright. (April, 2015)







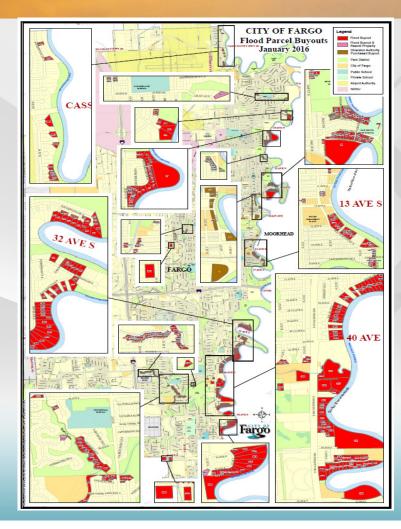


Comprehensive Plan

- Developed in Fall 2011/Winter 2012
- Certifiable Protection From the Effective Floodplain (39.4 Feet)
- Funding limitations require prioritization
- Outstanding Issues
 - With Comprehensive Plan completed would still need:
 - 7.6 miles of emergency clay levees
 - 3.2 miles of sandbag levees

Property Acquisitions (Since 2009)

- 183 Properties Purchased
 - Over 320 since 1990
- At cost of over \$60 million
- Cass County purchased 14 additional homes needed
- Diversion Authority is in process of acquiring 17 additional properties within Fargo
- Remaining Properties Under Comprehensive Plan
 - 121 properties to be acquired
 - Approximately \$36 million



So...Why implement this Comprehensive Plan?

Short Term:

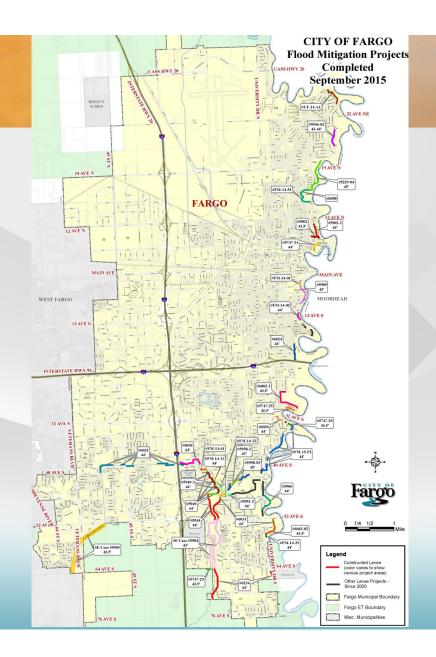
- Reduce emergency measures-immediate benefit from each project
- Provide real protection for existing homes that were built prior to the knowledge of the increased risk

Long Term:

- Upon completion of Certifiable reaches-Keep Housing Affordable for more of our population by making flood insurance available to residents at the lowest possible rates
- Combined with the FM Diversion- Provide for greater than 100 year protection for the largest population center in ND

Completed Projects (Since 2009)

- Over 19 miles constructed
 - 47 miles of emergency levees constructed by the City in 2009
- → Project Cost ≈ \$125 million
- Reduces required sandbags by approximately 4.5 million
- 50% of the Comprehensive Plan Completed

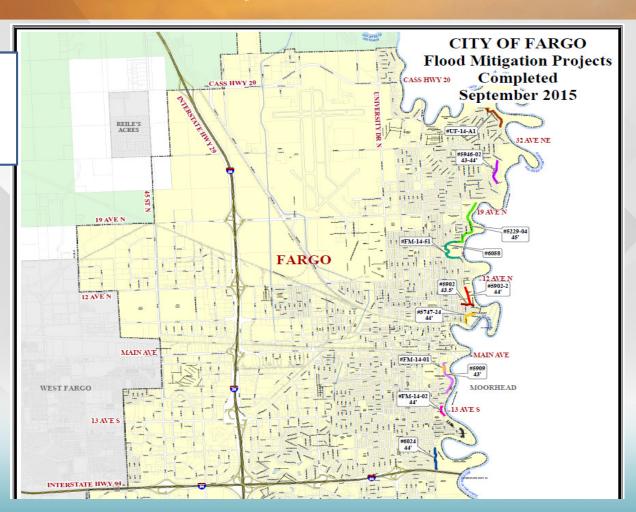


Completed Flood Projects North

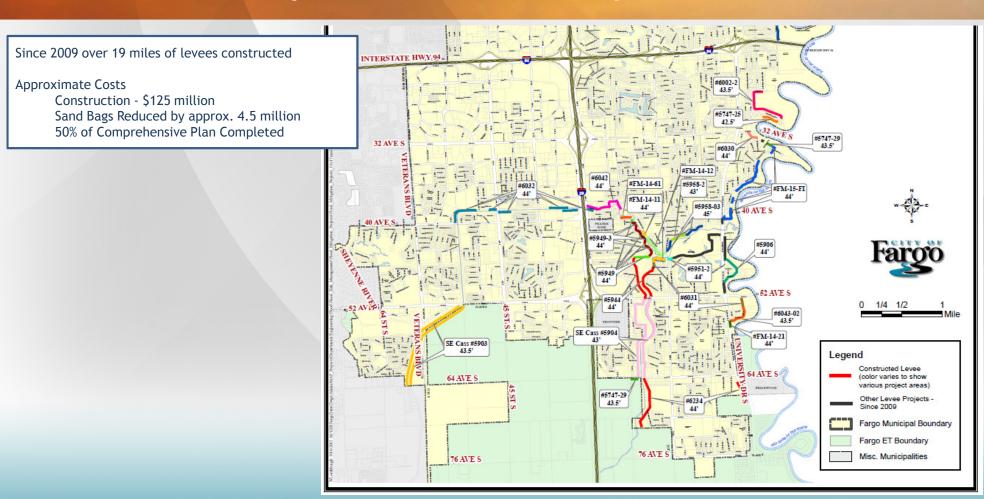
Since 2009 over 19 miles of levees constructed

Approximate Costs

Construction - \$125 million Sand Bags Reduced by approx. 4.5 million 50% of Comprehensive Plan Completed

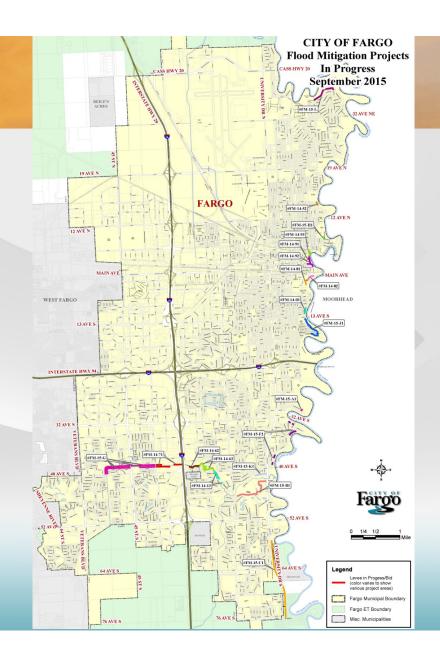


Completed Flood Projects South



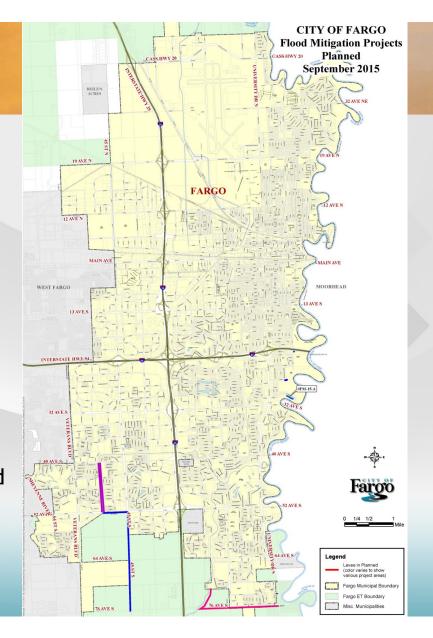
In Progress Projects

- Combination of projects under construction or under design for 2016/2017 construction
 - 12 City of Fargo Led
 - 7 Diversion Authority Led
- Over 3.5 miles in progress
- City Project Cost ≈ \$68.5 million
 - ♦ Construction Cost ≈ \$37million
- 65% of the Comprehensive Plan completed once these projects are done



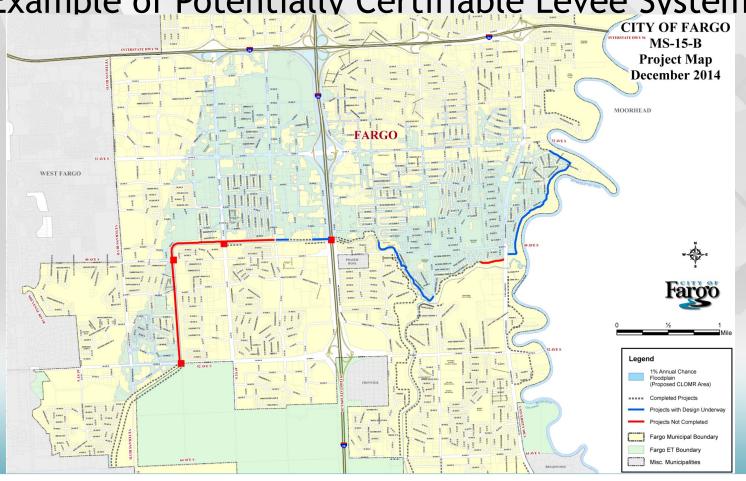
Remaining Projects

- Approx. 10 miles remaining
 - *excludes Cass County 20 Area
- ▶ Project Cost ≈ \$130 million
 - # Does not include south side line of protection
 - # Does not include 2016 planned projects
 - # Does not included Diversion Authority More Flow Through Town Projects
- Type of Projects:
 - Levees along River & Legal Drains
 - Road Raises
 - Includes Interstate 29 at Drain 27
- 92% of the Comprehensive Plan would be completed



Comprehensive Plan

Example of Potentially Certifiable Levee System



Frequently Asked Questions

- Why build levee if Diversion Project is constructed?
 - Levee will provide real/interim flood protection
 - Levee will be compatible with the Diversion Project by providing protection on the greater than 100 year flood events
 - Levee + Diversion = Increased level of flood protection
- Will I be assessed for this levee project?
 - No levee is being designed and constructed with Fargo Infrastructure Sales Tax Dollars, as well as dollars from the State

Rose Creek Flood Risk Reduction Projects

Rose Creek - Phase 2 (2013/14)

Total Project - \$5.2 million

Rose Creek - Phase 3 (Rosewood)



Acquisition Overview

- General R/W Acquisition Information
 - 2 Residential Homes
 - 1 Vacant Lot
 - 4 Residential Easements

Need for Project

- Protection from 100-Year Flood
- Designed to FEMA
 Accreditation Standards



Design Considerations

- Flood Protection Elevations
 - Base Flood Elevation = 905.7, 39.4' Flood Stage
 - Levee Protection = 911.0, ±44.5' Flood Stage
 - Lift Station/Gate Well = 913.0, ±46.5' Flood Stage
 - Floodwall = 912.0, ±45.5' Flood Stage
 - Accommodations for 1' future raise

Design Elements

- Earthen Levee
 - > 10' wide top, 4:1 side slopes
 - 7' average height
 - Approximately 1,000' long
- Floodwall
 - Reinforced Concrete
 - 7' average height
 - → 300' long



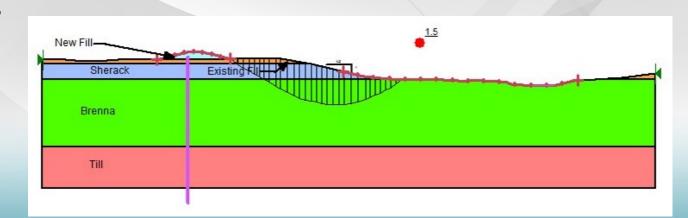
Design Elements

- Realign Milwaukee Bike Trail
- Hydraulics
 - Combine existing pump stations
 - Accommodate 2011 rain event
 - No structure inundation



Design Elements

- Geotechnical Analysis
 - Braun Intertec
 - Levee Alignment Setback
 - Slope Stability
 - > Floodwall Extents
 - Slope Regrading



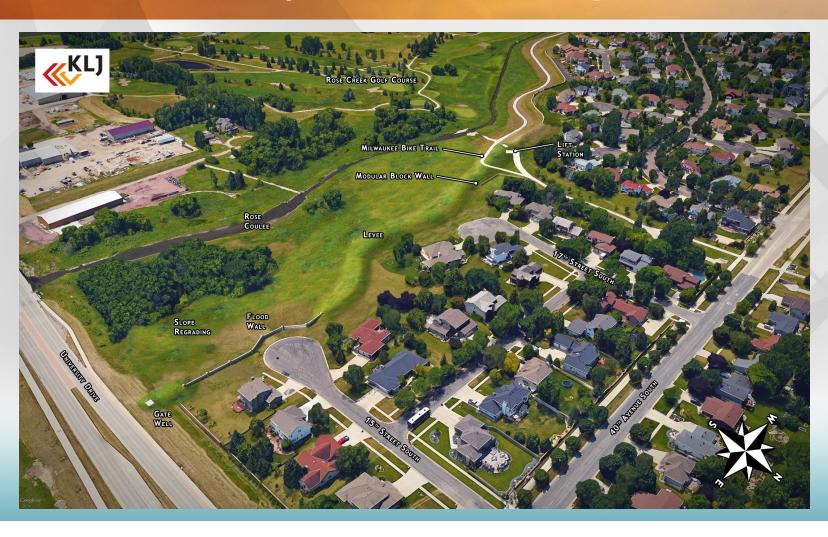
Project Overview



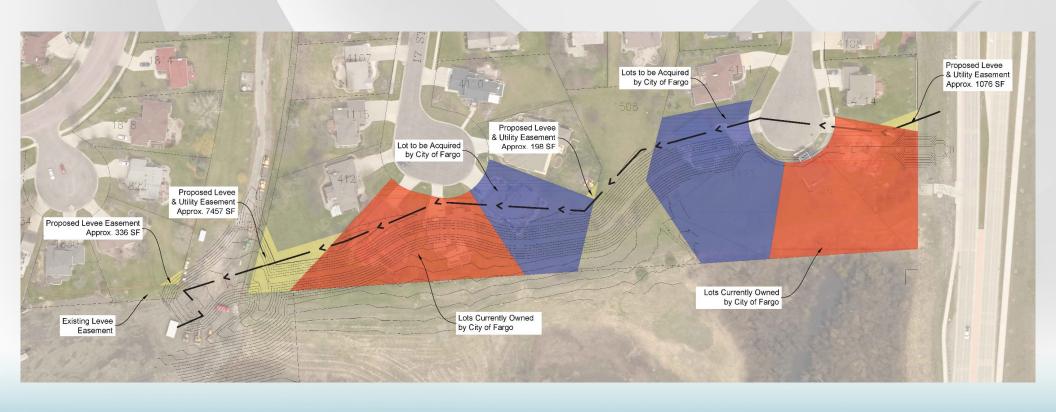
Existing Conditions



Proposed Rendering



Easements



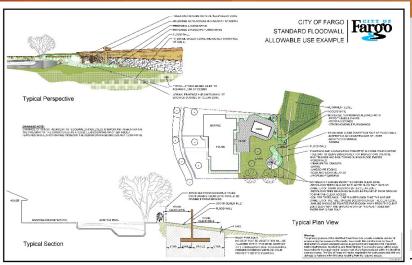
Easements

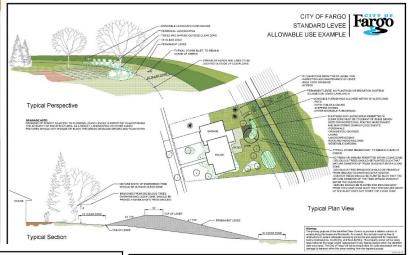
- Permanent/Temporary Easement Process
 - Prepare Exhibit
 - Negotiations
 - Donate
 - Minimum Payment
 - Negotiated Price
 - Appraisal
 - Offer Letter

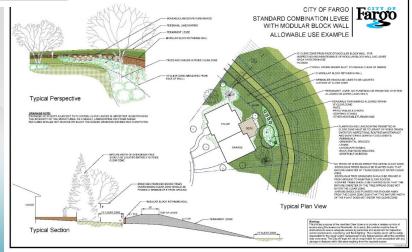
Trees

- Approximately 100 Trees Removed
- Removed for various reasons
 - Levee Construction
 - Vegetation Free Zone
 - Slope Grading
 - Storm Sewer Installation
- Replaced at a 2:1 Ratio
- Tree Planting Plan to be developed

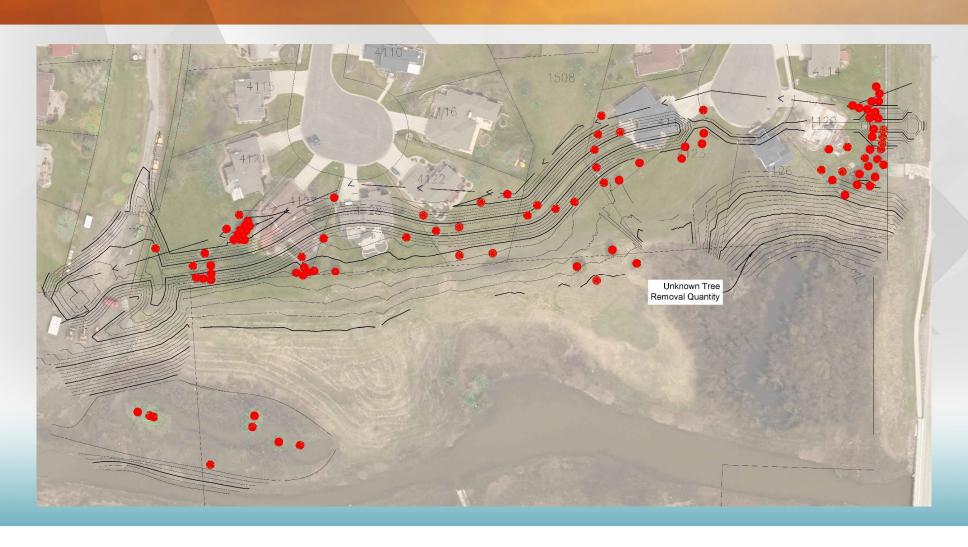
Tree Planting Requirements







Tree Removals



Project Schedule

- February 2016
 - > 50% Plans
- March 2016
 - Begin Negotiations/Appraisals
- April 2016
 - Final Plans
- Summer 2016
 - Bid Opening Pending Property Acquisitions
- Construction during summer/fall of 2016
 - Substantially complete by spring 2017

Questions/Comments?

http://www.cityoffargo.com/ - Flood Control Projects
www.fargofloodinsurance.com
feng@cityoffargo.com

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