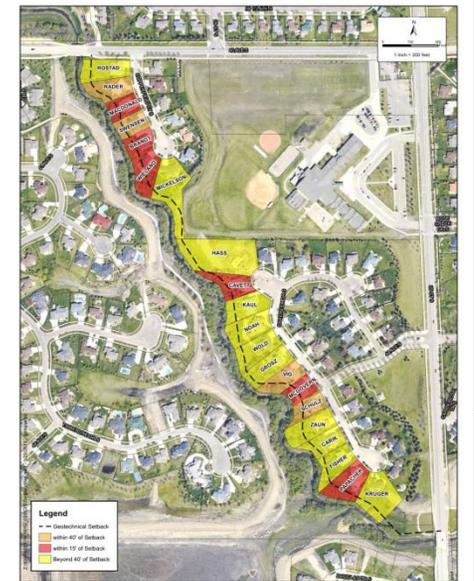


City of Fargo  
Oakcreek, Copperfield  
Court, and Coulee's  
Crossing Area Flood Risk  
Management Project

Fargo City Commission Meeting – April 1, 2013

# Geotechnical/Flood Concerns

- Geotechnical Stability – Growing Concerns



- Flood Concerns – 2009, 2010,...



# Project Development Process

- Project Petitions from Oak Creek and Copperfield Court (May 2010)

**Petition for Study of Flood Protection and Drain Repair/Restoration**

To: The City of Fargo

We, the undersigned, are residents of the Copperfield Court neighborhood and hereby petition and urge the City of Fargo and its representatives to commission and conduct a comprehensive study and analysis of the following:

- Restoration and Repair of Drain 27
- Flood Protection along Drain 27

The Copperfield neighborhood, which is located immediately west of Centennial Elementary School in South Fargo and was developed starting in 1989 and consists of 13 single family residences. Copperfield is bordered on the west and south by Drain 27. Although it is not presently in the 100-year flood plain, Copperfield is expected to be included in the next update of the 100-year flood plain map.

With respect to Drain 27, and since the neighborhood was developed, we have noticed a significant increase in the amount of water having access to the area. This is believed to be due in part to the expansion of Fargo since the expansion of Copperfield and the expansion of the areas having access to Drain 27. We are experiencing mass wasting along the drain and we believe that this will be in part the result of the drain expansion and improvements made as a result of our development.

Regarding Drain 27, we are asking the City to evaluate the geotechnical conditions along the drain and to look at any opportunity to increase our level of protection at the same time. We believe an improvement to the drain would not only help resolve stability issues, but might also improve the east side of the drain.

1

flood fighting efforts needed along the drain until permanent protection is in place. Therefore, we are asking the City to study and make recommendations for these improvements as soon as possible.

Respectfully submitted,

Printed Name	Signature	Address/Telephone	Date
Michele Bunt	<i>Michele Bunt</i>	4499 20th St SW Fargo ND 58103	
Sharon Restak	<i>Sharon Restak</i>	4405 C 20th St SW Fargo ND 58103	
Jane Schick	<i>Jane Schick</i>	4108 C 20th St SW Fargo ND 58103	
Alexa Macomber	<i>Alexa Macomber</i>	405 C 20th St SW Fargo ND 58103	
SWATI SLOAN	<i>Swati Sloan</i>	4102 C 20th St SW Fargo ND 58103	
FRANISSE SWANSON	<i>Fransse Swanson</i>	4414 C 20th St SW Fargo ND 58103	
Pauline Duvar	<i>Pauline Duvar</i>	4482 C 20th St SW Fargo ND 58103	
Karen Nieland	<i>Karen Nieland</i>	4033 C 20th St SW Fargo ND 58103	
Mary Rathbun	<i>Mary Rathbun</i>	4020 C 20th St SW Fargo ND 58103	
DANISSE WICKEL	<i>Danisse Wickel</i>	4042 C 20th St SW Fargo ND 58103	
Ken Koop	<i>Ken Koop</i>	4022 C 20th St SW Fargo ND 58103	
David Miller	<i>David Miller</i>	4026 C 20th St SW Fargo ND 58103	
Tim Rader	<i>Tim Rader</i>	4009 C 20th St SW Fargo ND 58103	

2

**Petition for Study of Flood Protection and Drain Repair/Restoration**

TO: The City of Fargo

We, the undersigned, are residents of Oakcreek Neighborhood and do hereby petition and urge the City of Fargo and its representatives to commission and conduct a comprehensive study and analysis of the following:

- Restoration and Repair of Drain 27
- Flood Protection

Background

Oakcreek Neighborhood, which is located immediately south of Centennial Elementary school in South Fargo, was developed starting in 1989 and consists of 19 single family residences. Oakcreek is bounded on the west and south by Drain 27. Although it is not presently in the 100-year flood plain, Oakcreek is expected to be included in the next update of the 100-year flood plain map.

In 2009 and 2010, Oakcreek was part of the primary southern boundary of the City of Fargo's flood protection efforts. It is estimated that 300,000 and 60,000 sandbags were used in 2009 and 2010, respectively.

With respect to Drain 27, since the neighborhood was developed, significant issues as soil stability and mass wasting have occurred. This is believed to be due in part to the expansion of Fargo and Drain 27 improvements since 1989. In its current condition, Drain 27 is unstable and can cause considerable damage and hardship on home owners. We support a study of possible solutions.

1

**Study and Analysis**

- Restoration and Repair of Drain 27.

We request that the City study the options and make recommendations for repair and restoration of Drain 27 adjacent to Oakcreek. The study should include, among other things, causation, analysis of soil conditions, drawings with plans and elevations, hydrology, costs, funding sources for payment of costs, schedule, engineering recommendations for alternatives to mitigate instability, and determination of benefits to the neighborhood and the City.

- Flood Protection.

We request that the City study the options and make recommendations for permanent flood protection of Oakcreek. The study should evaluate opportunities to provide a maximum level of flood protection. Creation of an emergency plan, above and beyond the level that can be permanently mitigated, that minimizes the number of sandbags needed to protect the city and considers less damaging alternative measures. The study should include, among other things, analysis of soil conditions, drawings with plans and elevations, hydrology, costs, funding sources for payment of costs, schedule, landscaping, and determination of benefits to the neighborhood and the City.

Respectfully submitted,

SEE ATTACHED SIGNATURES

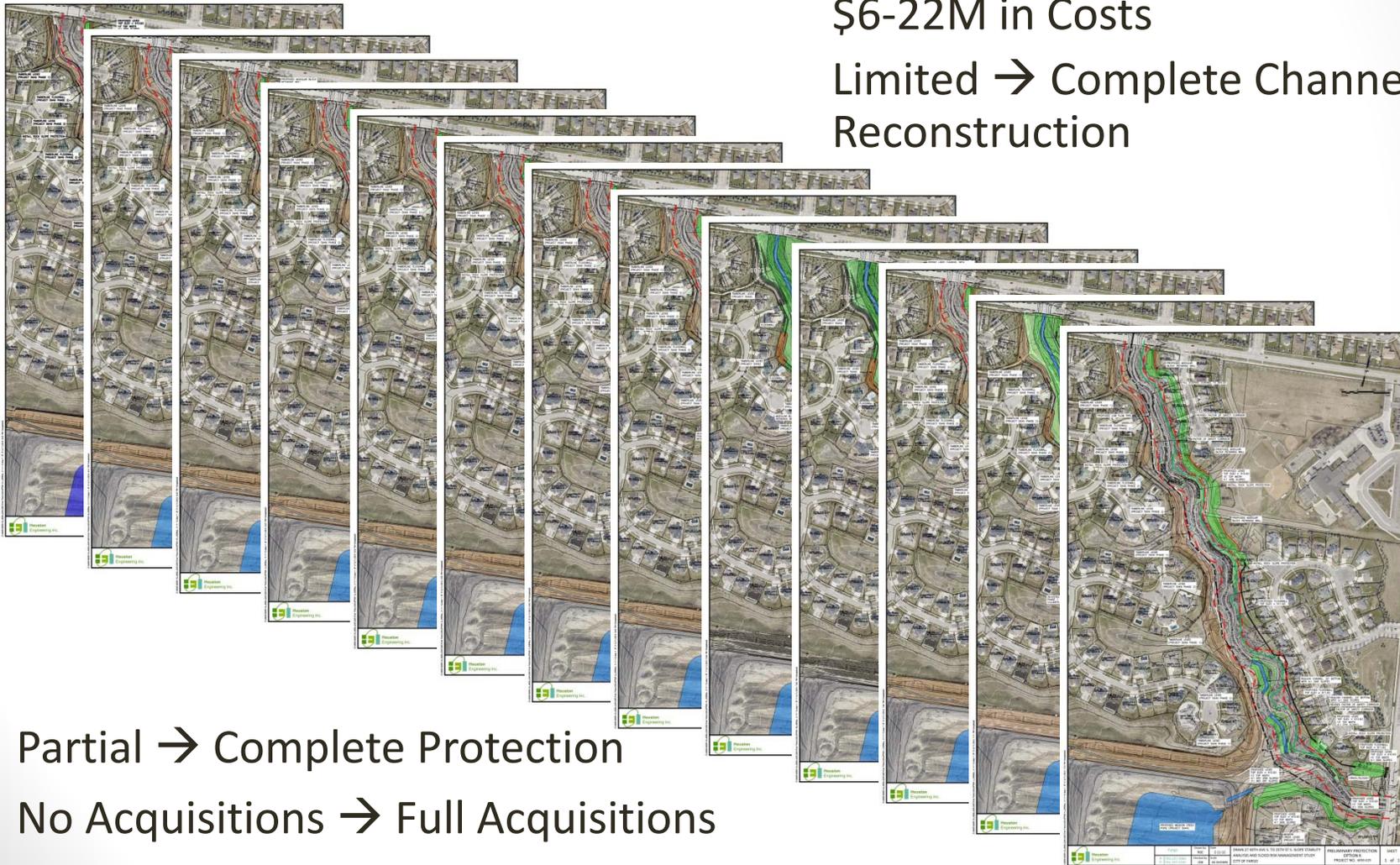
2

# Project Development Process

- Project Petitions from Oak Creek and Copperfield Court (May 2010)
- 13 Alternatives Developed

\$6-22M in Costs

Limited → Complete Channel Reconstruction



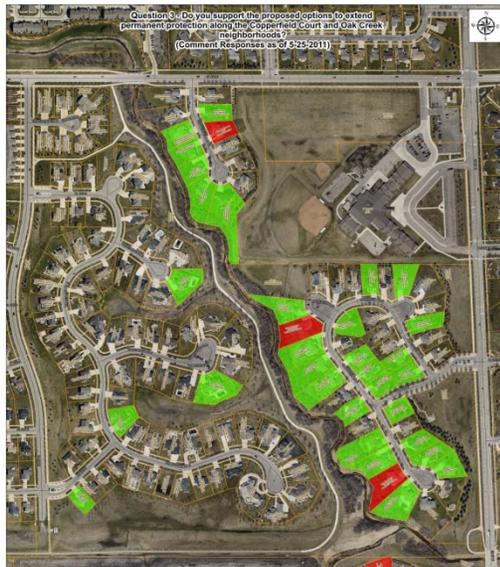
Partial → Complete Protection

No Acquisitions → Full Acquisitions

# Project Development Process

- Project Petitions from Oak Creek and Copperfield Court (May 2010)
- 13 Alternatives Developed
- Public Input Process

- Several Public Meetings (2010-12)
- Alignment Staking / Field Meetings
- Individual Meetings
- Comment Forms



# Project Development Process

- Project Petitions from Oak Creek and Copperfield Court (May 2010)
- 13 Alternatives Developed
- Public Input Process
- Evaluation Process



Option	Option Description	Total Acquisitions	Levee Protection (LF)	Floodwall Protection (LF)	Tree Loss (ac)	Permitting Concerns (0=Low - 10=High)	Future Operation and Maintenance	Total Est Cost
A	Partial Protection - Minor Channel Stability Repairs Only	0	1,938	1,075	1.8	0	Medium	\$6,283,000
B	Full Buyout - Minor Channel Stability Repairs Only	23	3,897	0	2.2	1	Low	\$14,621,000
B1	Mid Level Buyout - Minor Channel Stability Repairs Only	18	4,107	0	2.6	2	Low	\$12,761,000
C	Minimized Buyout - Minor Channel Stability Repairs Only	11	3,263	1,221	3.1	2	Medium	\$12,958,000
D	Same as C - Except Channel Improvements in Oakcreek Center Area	8	3,359	1,143	4.6	4	Medium	\$11,970,000
E	Same as D - Except Increased Channel Improvements in Southern Area	7	3,868	448	6.5	5	Medium	\$11,216,000
F	Same as E - Except Increased Channel Improvements in Northern Oakcreek	5	3,945	322	8.4	8	Medium	\$11,241,000
G	Box Culvert Option - North Oakcreek - Narrowed Corridor - Reduced Coulees Crossing Impacts	6	3,748	968	6.3	6	High	\$14,852,000
H1	Full Liner Option - Reconstructed Channel	6	4,100	320	10.9	9	Medium	\$12,758,000
H2	Complete Protection - Complete Channel Modification - Box Culverts in Copperfield Only	0	3,479	1,093	10.9	9	High	\$15,093,000
I	Complete Protection - Minimized Channel Stability Repairs	10	3,101	1,345	3.8	3	Medium	\$13,858,000
J	Complete Protection - Complete Channel Modification - Box Culverts throughout - Hydraulic Impacts	0	3,508	1,119	10.9	10	High	\$22,169,000
K	Complete Protection - Low Flow Pipe - Minimized Channel Stability Repairs	8	2,834	1,529	4.5	3	High	\$17,523,000

# Project Development Process

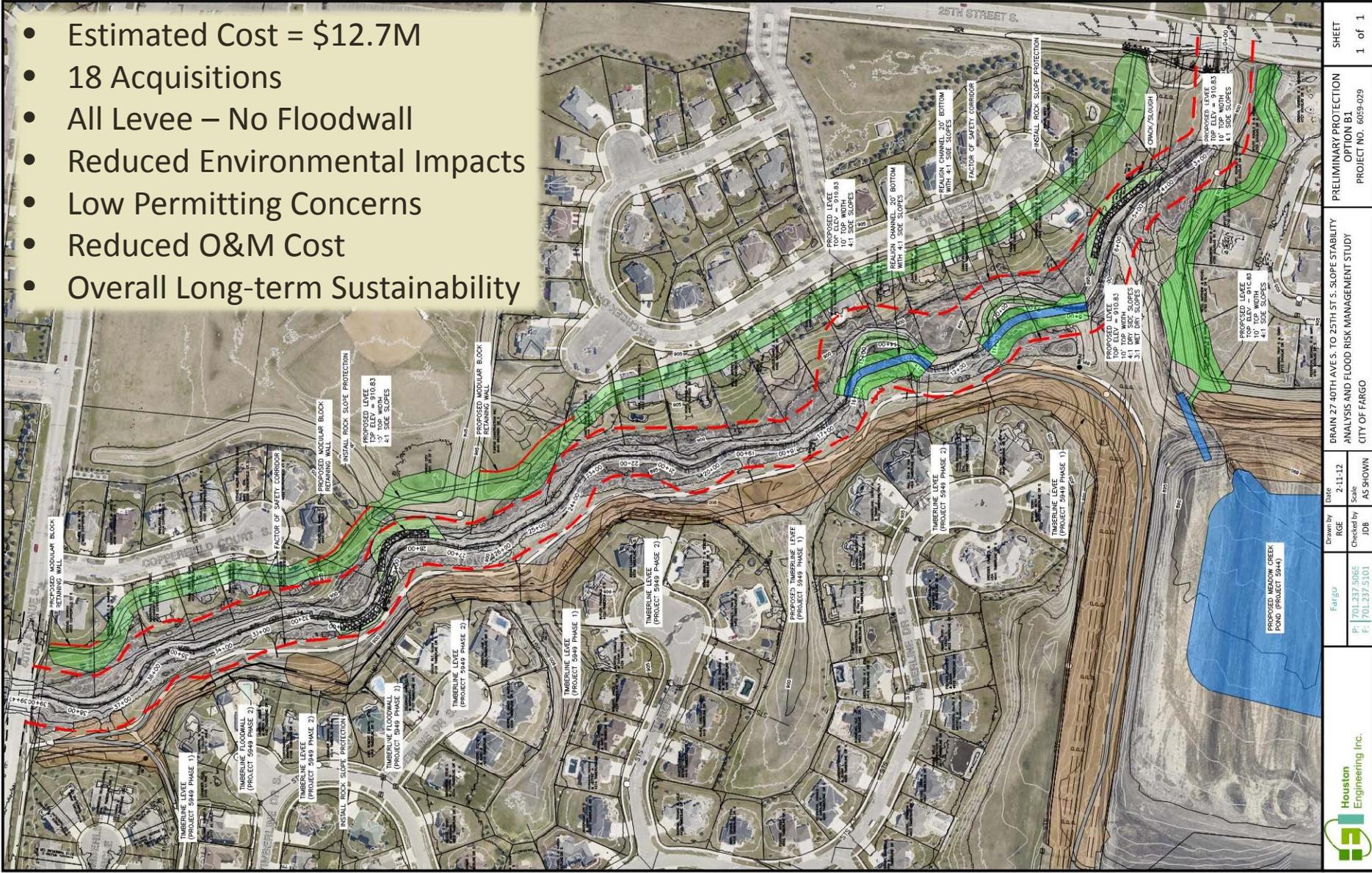
- Project Petitions from Oak Creek and Copperfield Court (May 2010)
- 13 Alternatives Developed
- Public Input Process
- Evaluation Process



Option	Option Description	Total Acquisitions	Levee Protection (LF)	Floodwall Protection (LF)	Tree Loss (ac)	Permitting Concerns (0 = Low - 10 = High)	Future Operation and Maintenance	Total Est Cost
A	Partial Protection - Minor Channel Stability Repairs Only	0	1,938	1,075	1.8	0	Medium	\$6,283,000
B	Full Buyout - Minor Channel Stability Repairs Only	23	3,897	0	2.2	1	Low	\$14,621,000
B1	Mid Level Buyout - Minor Channel Stability Repairs Only	18	4,107	0	2.6	2	Low	\$12,761,000
C	Minimized Buyout - Minor Channel Stability Repairs Only	11	3,263	1,221	3.1	2	Medium	\$12,958,000
D	Same as C - Except Channel Improvements in Oakcreek Center Area	8	3,359	1,143	4.6	4	Medium	\$11,970,000
E	Same as D - Except Increased Channel Improvements in Southern Area	7	3,868	448	6.5	5	Medium	\$11,216,000
F	Same as E - Except Increased Channel Improvements in Northern Oakcreek	5	3,945	322	8.4	8	Medium	\$11,241,000
G	Box Culvert Option - North Oakcreek - Narrowed Corridor - Reduced Coulees Crossing Impacts	6	3,748	968	6.3	6	High	\$14,852,000
H1	Full Liner Option - Reconstructed Channel	6	4,100	320	10.9	9	Medium	\$12,758,000
H2	Complete Protection - Complete Channel Modification - Box Culverts in Copperfield Only	0	3,479	1,093	10.9	9	High	\$15,093,000
I	Complete Protection - Minimized Channel Stability Repairs	10	3,101	1,345	3.8	3	Medium	\$13,858,000
J	Complete Protection - Complete Channel Modification - Box Culverts throughout - Hydraulic Impacts	0	3,508	1,119	10.9	10	High	\$22,169,000
K	Complete Protection - Low Flow Pipe - Minimized Channel Stability Repairs	8	2,834	1,529	4.5	3	High	\$17,523,000

# Recommended Option B1

- Estimated Cost = \$12.7M
- 18 Acquisitions
- All Levee – No Floodwall
- Reduced Environmental Impacts
- Low Permitting Concerns
- Reduced O&M Cost
- Overall Long-term Sustainability



DATE	2-11-12	PRELIMINARY PROTECTION OPTION B1	SHEET
DESIGNED BY	RGE	PROJECT NO. 6059-029	1 of 1
CHECKED BY	AS SHOWN	ANALYSIS AND FLOOD RISK MANAGEMENT STUDY	
DATE		CITY OF FARGO	

FARGO  
 P: 701.237.5065  
 F: 701.237.5101

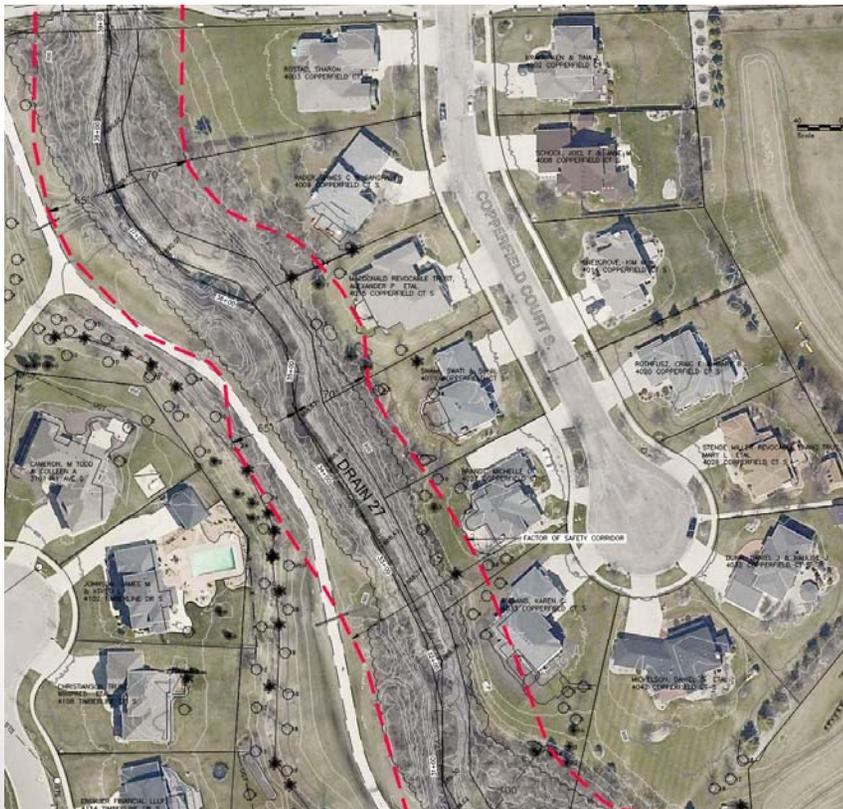
Drawn by: RGE  
 Checked by: AS SHOWN  
 Scale: AS SHOWN

Houston  
 Engineering Inc.

\\houston\eng\6059-029\6059-029-11-12.dwg 11/12/12 11:17:17 AM 11/12/12 11:17:17 AM 11/12/12 11:17:17 AM 11/12/12 11:17:17 AM

# Commission Action/Current Status

- Commission Presented Option B1
  - Staff Directed to prepare financing plan August 20, 2012
- Authorized Proceeding with Purchase of Oak Creek
  - Date: November 26, 2012
- Currently 7 Acquisitions Area



- Protection Option (H2)
- 21 Feet from Patio 8±ft high



2011 Flood – 38.8ft