# Oakcreek, Copperfield Court, and Coulee's Crossing Area Flood Risk Management Project

**Landowner Information Meeting** 

February 15, 2012





#### **AGENDA**

- Status at Last Meeting
- Landowner Involvement and Comments
- Recommended Plan
- Other Alternatives Considered / Summary
- Path Forward
- Questions









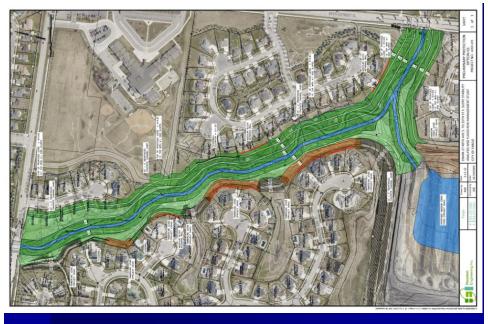
#### **Status at Last Meeting**

- Option 1 Channel Relocation with Buyouts
   Approximately \$12.75M± (including Land)
- 2. Option 2 Channel Relocation, Buried Culverts, Floodwalls and Minimized Buyouts.
  - Approximately \$15.1M± (including Land)

Goal – Minimized Home Acquisitions



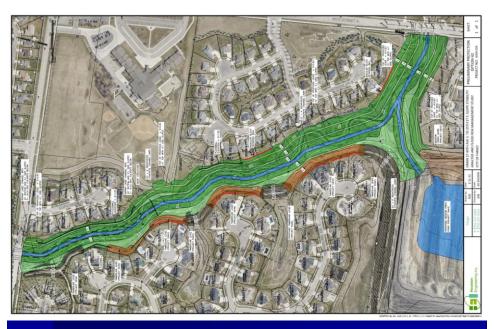






Option 1 (H1)







## Option 2 (H2)



# 2. Do you support the proposed plan to extend permanent protection along the Coulee's Crossing neighborhood (Coulee's Crossing Extension)?



## 3. Do you support the proposed options to extend permanent protection along the Copperfield Court and Oakcreek neighborhoods?



# 4. Do you have a preference between the proposed Option 1 (buyouts in Copperfield Court) or Option 2 (protection of Copperfield Court).



# Landowner Involvement and Comments

- 1. July 2011 Field Staking and Landowner Meetings
- 2. Follow-up Comments Forms







Do you support the presented plan (Option 2) to complete permanent protection along the Oakcreek, Copperfield Court, and Coulee's Crossing neighborhoods?



#### **Recommended Plan**

- 1. Review of Public/Landowner Input
- 2. Development of 13 Options and Cost Estimates

  \$6-22M / Partial to Complete / Trees
- 3. Consideration of Environmental Impacts, Permitting, Future Operation and Maintenance, and Neighborhood Impacts

Recommended Plan From Technical Committee

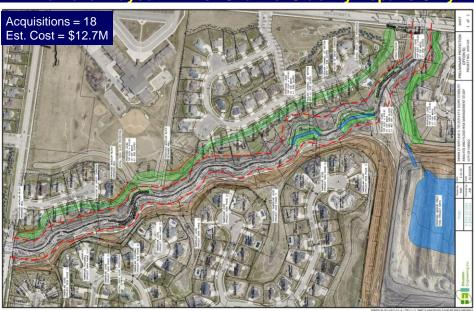
OPTION B1





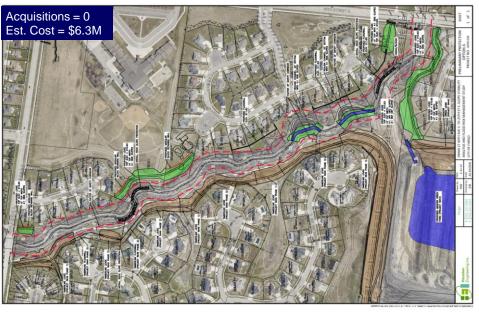
#### **Recommended Plan – Option B1**

- Mid Level Buyout - Minor Channel Stability Repairs Only

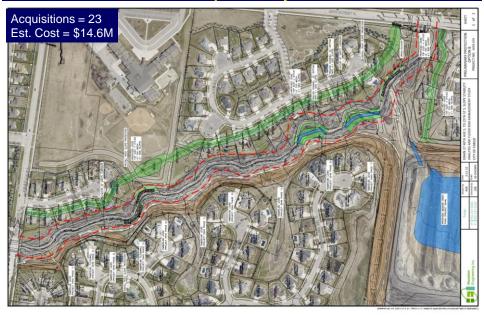


# Other Alternatives Considered 70.1237.5005 HoustonEngineering Inc. MOI 21st Avenue North Farge NO 58002

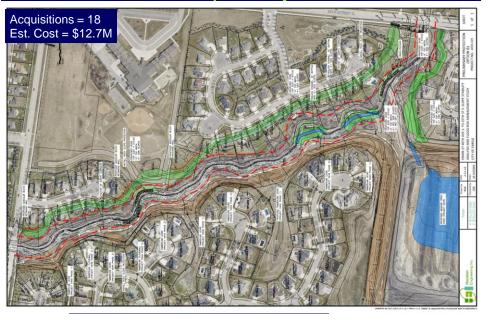
# Option A - Partial Protection - Minor Channel Stability Repairs Only



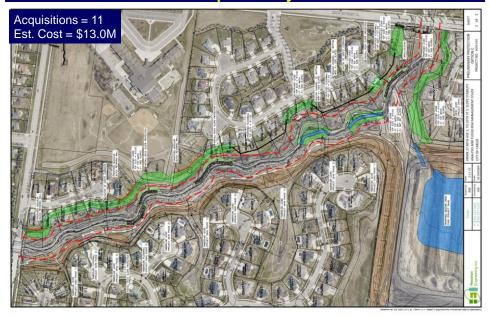
# Option B - Full Buyout - Minor Channel Stability Repairs Only



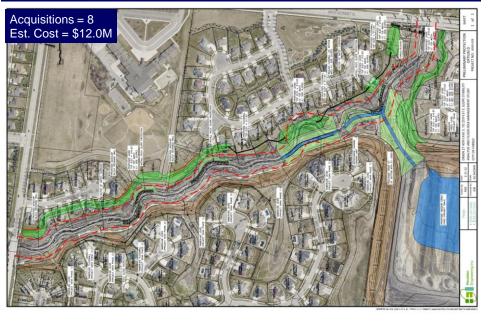
# Option B1 - Mid Level Buyout - Minor Channel Stability Repairs Only



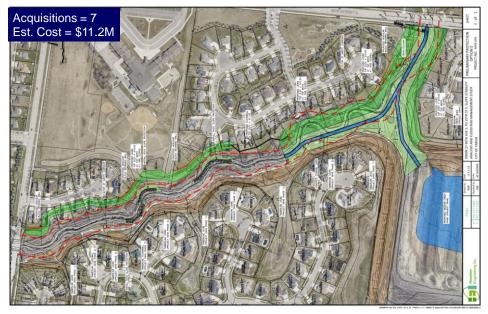
# Option C - Minimized Buyout - Minor Channel Stability Repairs Only



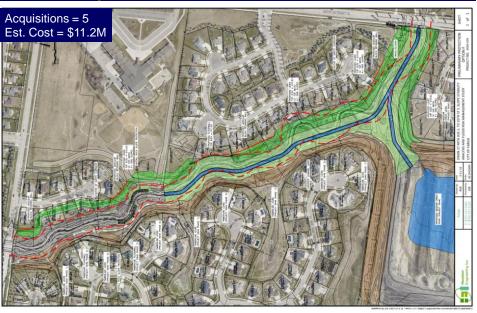
# Option D- Same as C - Except Channel Improvements Oakcreek Center Area



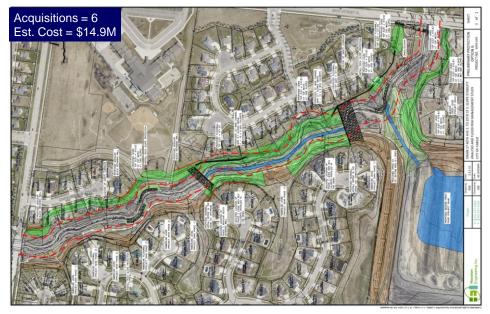
# Option E - Same as D - Except Increased Channel Improvements in Southern Area



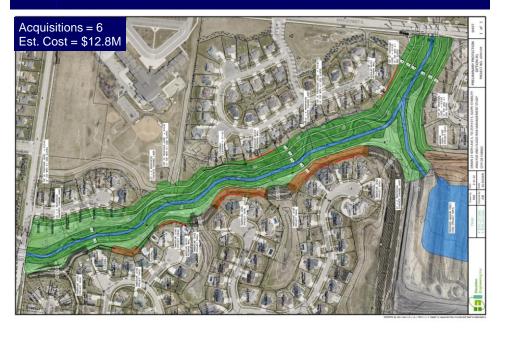
# Option F - Same as E - Except Increased Channel Improvements in Northern Oakcreek Area



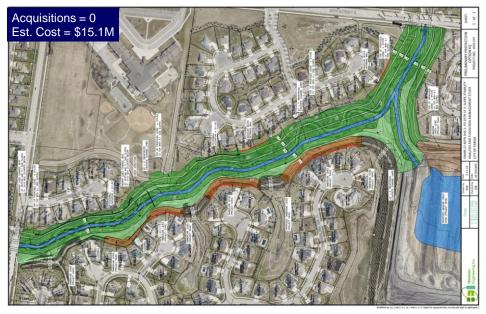
# **Option G** - Box Culvert Option - North Oakcreek - Narrowed Corridor - Reduced Coulees Crossing Impacts



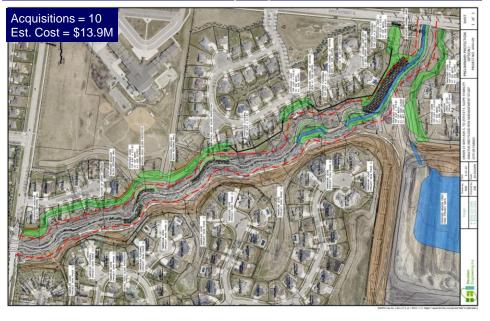
#### Option H1 - Full Liner Option - Reconstructed Channel



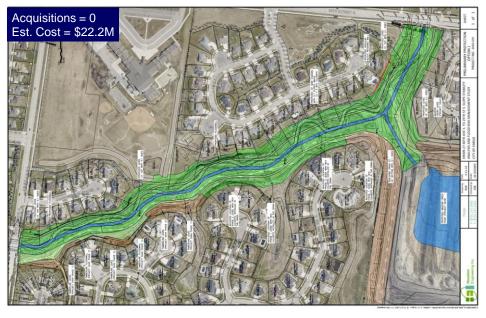
# Option H2 - Complete Protection - Complete Channel Modification - Box Culverts in Copperfield Only



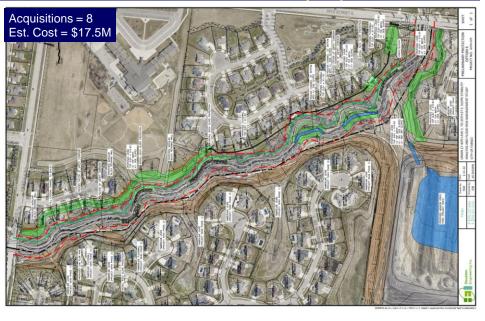
# Option - Complete Protection - Minimized Channel Stability Repairs



# **Option J** - Complete Protection - Complete Channel Modification - Box Culverts throughout - Hydraulic Impacts



# Option K - Complete Protection - Low Flow Pipe - Minimized Channel Stability Repairs



Option		Total	Levee	Floodwall		Permitting	Future	
		Acquistions	Protection	Protection		Concerns	Operation and	
	Option Description		(LF)	(LF)	Tree Loss (ac)	(0 = Low - 10 = High)	Maintenance	Total Est Cost
	Partial Protection - Minor Channel Stability Repairs							
Α	Only	0	1,938	1,075				\$6,283,000
В	Full Buyout - Minor Channel Stability Repairs Only	23	3,897	0				\$14,621,000
B1	Mid Level Buyout - Minor Channel Stability Repairs Only	18	4.107	0				\$12.761.000
	Minimized Buyout - Minor Channel Stability Repairs	10	4,107					\$12,701,000
С	Only	11	3,263	1,221				\$12,958,000
	Same as C - Except Channel Improvements in Oakcreek							
D	Center Area	8	3,359	1,143				\$11,970,000
	Same as D - Except Increased Channel Improvements in							
E	Southern Area	7	3,868	448				\$11,216,000
	Same as E - Except Increased Channel Improvements in							
F	Northern Oakcreek	5	3,945	322				\$11,241,000
	Box Culvert Option - North Oakcreek - Narrowed							
G	Corridor - Reduced Coulees Crossing Impacts	6	3,748	968				\$14,852,000
		_						
H1	Full Liner Option - Reconstructed Channel	6	4,100	320				\$12,758,000
	Complete Protection - Complete Channel Modification -		0.400					*** ***
H2	Box Culverts in Copperfield Only	0	3,479	1,093				\$15,093,000
	Complete Protection - Minimized Channel Stability							*** ***
	Repairs	10	3,101	1,345				\$13,858,000
	Complete Protection - Complete Channel Modification -							400 400 000
J	Box Culverts throughout - Hydraulic Impacts Complete Protection - Low Flow Pipe - Minimized	0	3,508	1,119				\$22,169,000
К	Channel Stability Repairs	8	2.834	1.529				\$17,523,000
K	Channel Stability Repairs	- 6	2,834	1,329				317,323,000





#### **Other Alternatives Considered**

#### Tree Loss Issues

- Aesthetic Impacts to Surrounding Property
- Required Replacement/Mitigation Costs
- Acceptance of Adjacent Owners





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





#### **Other Alternatives Considered**

#### Permitting Concerns

- USACE Permit Required
  - Channel Impacts
  - Wetland Impacts
  - Secondary Impacts (Trees,...)
- Low Concern (0-3)
  - Limited Mitigation Required
- Medium Concern (4-7)
  - Significant Impact (channel reconstruction, trees,...)
  - Significant Mitigation Required
- · High Concern (8-10)
  - Complete Channel Reconstruction
  - · Ability to Obtain Permit Questionable
  - Substantial Mitigation Required





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





#### **Other Alternatives Considered**

Future Operation and Maintenance

- Low
  - Levees Only Mowing/Spraying
  - Limited Inspection (5-10yr top survey, trees,..)
- Medium
  - Addition of Floodwalls
  - More Frequent Wall Inspections (joints, drains, concrete...)
  - · Annual Minor Wall Repairs Maintenance
- High
  - Levees, Floodwalls, Channel Liner/Box Culverts
  - Culvert Plugging Potential
  - Frequent Inspections of Wall and Channel





Option		Total	Levee Protection	Floodwall Protection		Permitting Concerns	Future Operation and	
	Option Description	Acquistions	(LF)	(LF)	Tree Loss (ac)	(0 = Low - 10 = High)	Maintenance	Total Est Cost
	Partial Protection - Minor Channel Stability Repairs							
A	Only	0	1,938	1,075	1.8	0	Medium	\$6,283,000
В	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
С	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
Е	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
Н2	Complete Protection - Complete Channel Modification - Box Culverts in Copperfield Only	0	3,479	1,093	10.9	9	High	\$15,093,000
1	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
К	Complete Protection - Low Flow Pipe - Minimized Channel Stability Repairs	8	2,834	1,529	4.5	3	High	\$17,523,000





#### **Path Forward?**

- Public Meeting (Tonight)
- Recommendation to Commission
  - February/March
- Develop Financing Plan
  - TBD?
- Commission Approval
  - TBD?
- Permitting
  - TBD?
- Construction/Implementation
  - TBD?





Oakcreek. Copperfield	Court, and Coulee's Crossing Neighborhoods	
	Landowner and Public Informational Meetings	
	Landowner and Public Informational Meetings	
General Project Response:		
	ommended plan from the Technical Committee to provide or the area (Option B1)?	
Additional Comments :		
-		
		Comment
		Comment
9		
		Form
-		
2	×	
8		
	*	
Please return to:		
Jerry D. Bents	Name:	
Houston Engineering, Inc.		
1401 21st Avenue North	Address:	
Fargo, ND 58102		
Phone: (701) 237-5065	1200	
Fax: (701) 237-5101	Date:	
ibents@houstoneng.com		701.237
NOTE: Please r	eturn this form before February 24th.	Houston Engineering Inc.
		1401 21st Avenue North Fargo ND 58102

