

South St. Paul Levee Extension

February, 2014



Outline for today

- Project Purpose and Phasing
- Results of Phase 1 Study
 - Fatal flaw analysis of concept
 - ID possible alignments
 - Benefits/Costs
- Next Steps



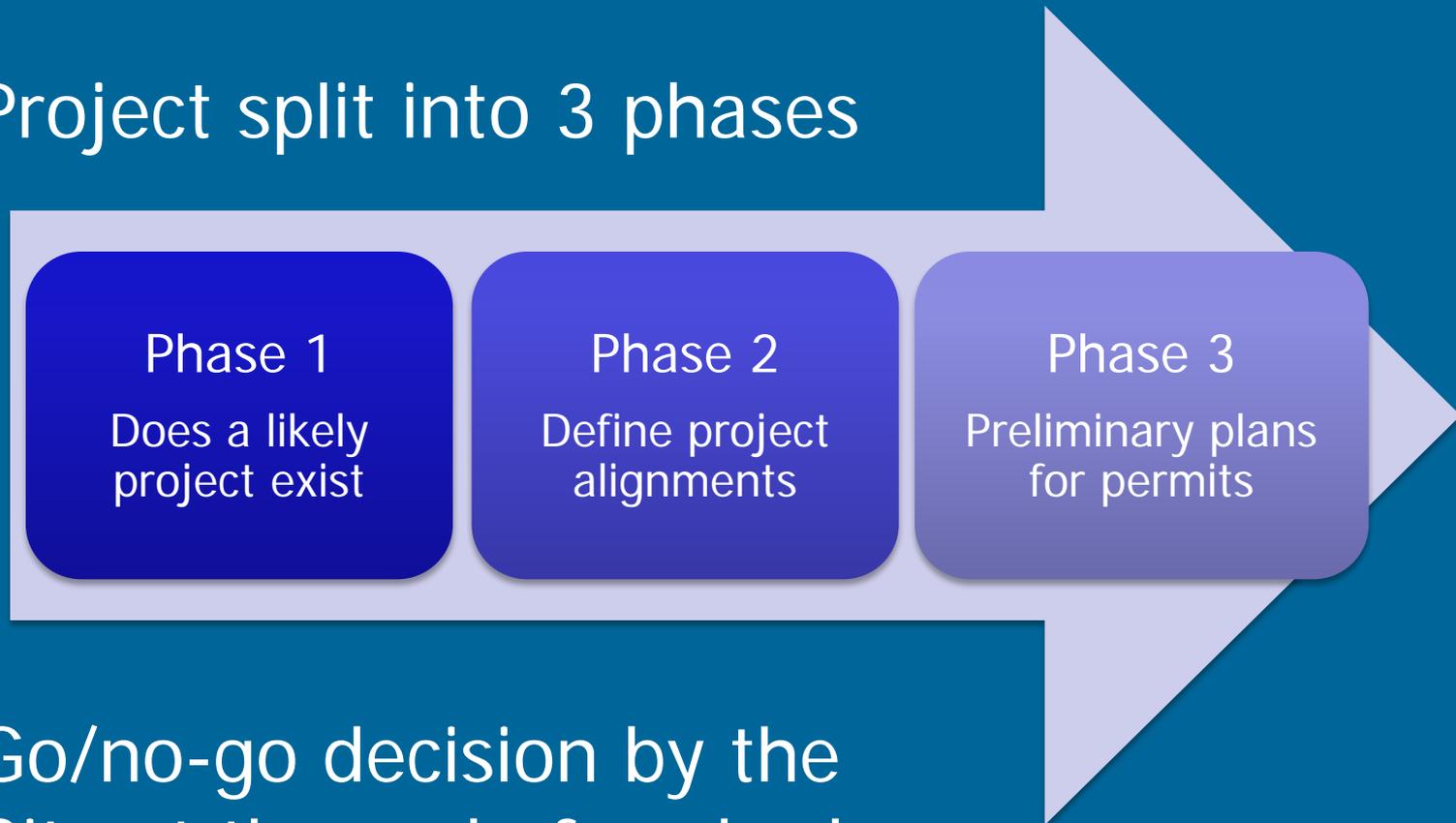
PROJECT PURPOSE & PHASING

Project Purpose

- Evaluate the feasibility and impacts of extending the City's flood control system
- Work funded under a \$500,000 grant from MN State Legislature with 50/50 cost share to the City

Project Phasing

- Project split into 3 phases



- Go/no-go decision by the City at the end of each phase

Phase 1 Study Objectives

- Evaluation of concept feasibility
 - Does a project likely exist
- Phase “1.5”
 - ID potential alignments
 - Benefit/Cost Ratios



RESULTS OF PHASE 1

Fatal Flaw Analysis of Concept

- Assessment of feasibility:
 - Environmental site conditions (potential contamination, threatened species, etc.)
 - Utility impacts
 - Regulatory issues and permitability
 - Stormwater and floodplain issues
 - Potential geotechnical issues

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NO FATAL FLAWS

Utilities

- Alignments avoid most utilities
- Major impacts to 120" storm sewer

Linetype

Water

Sanitary Sewer

Storm Sewer

Power

Existing Levee Alignment



Levee Alignment 1: Protect Maximum Area



Levee Alignment 2: Follow Floodway



Levee Alignment 3: Most Permissible



Levee Alignment 4: Exclude Riverfront Properties



Levee Alignment 5: Minimize Pump Station



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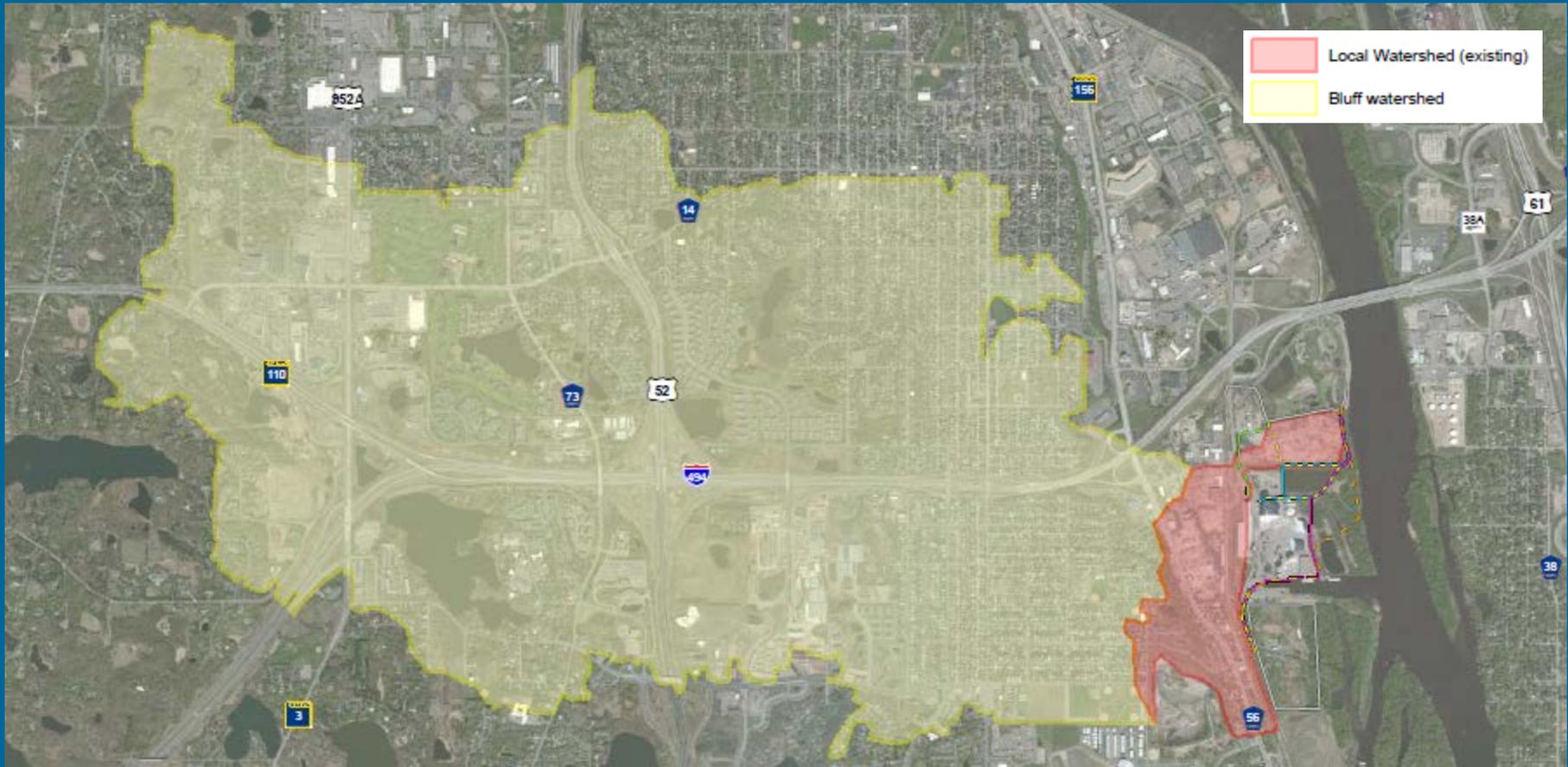
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Levee Alignment 5: Minimize Pump Station



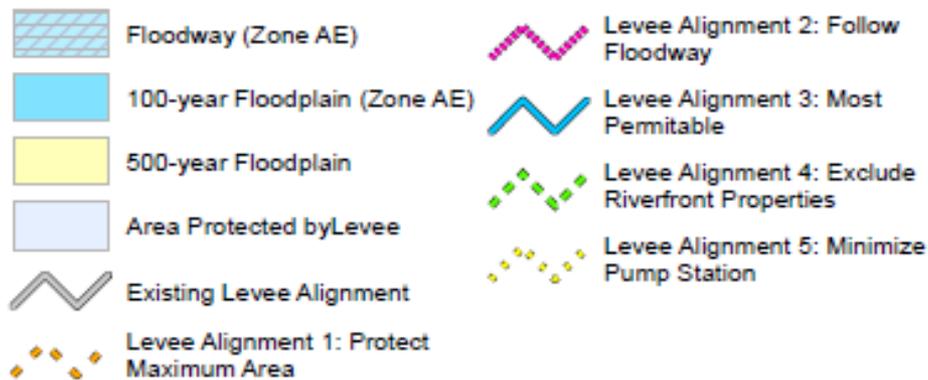
Bluff and Local Drainage



- 120" storm sewer handles a significant amount of bluff drainage

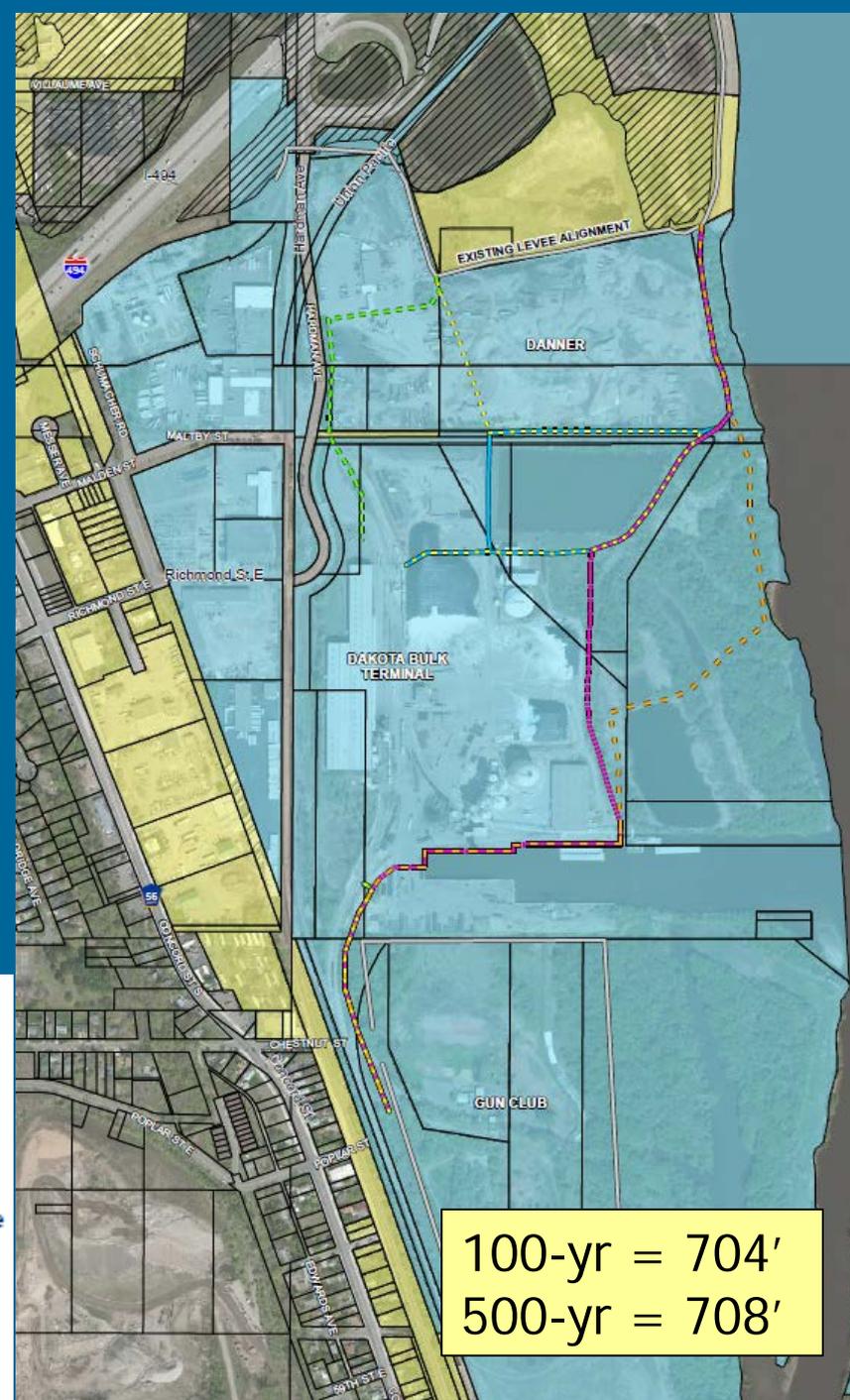
FEMA Floodplain

- 708' provides 100-year protection (FEMA certifiable)
- Existing levee built to 710'



FEMA Floodplain

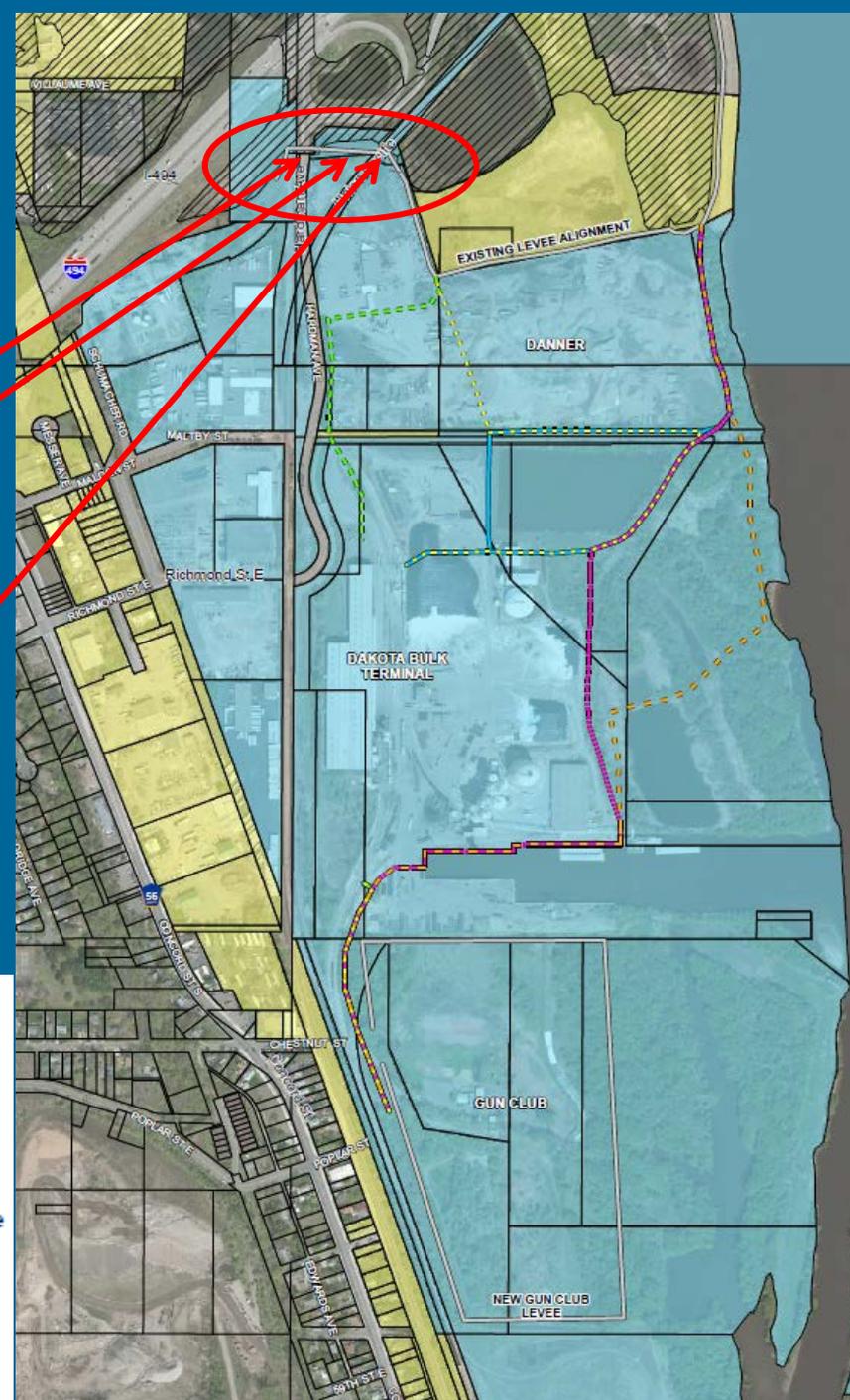
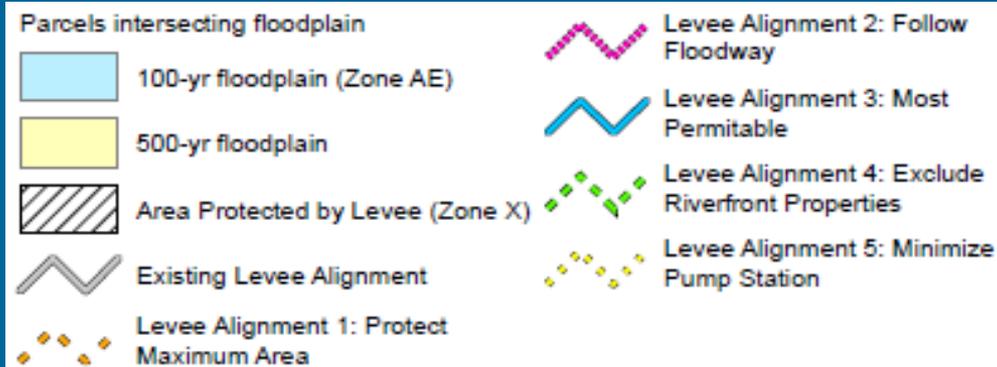
- 710' must tie-in to USACE levee
 - Major modification
- 708' may or may not tie-in to USACE levee
 - Major or Minor mod.



100-yr = 704'
500-yr = 708'

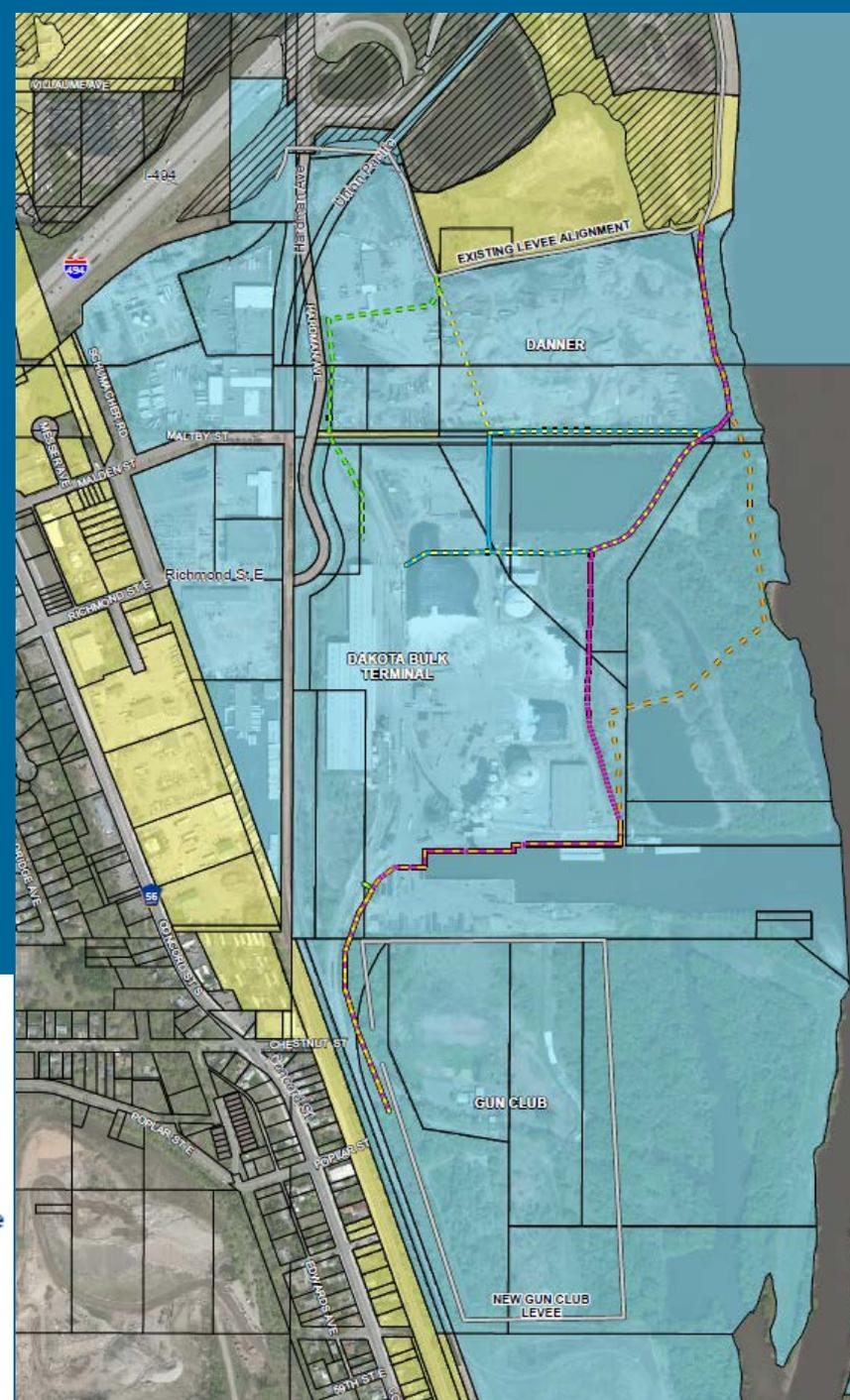
Existing Closures

- Hardman Avenue
- Gatewell R
- Railroad Crossing



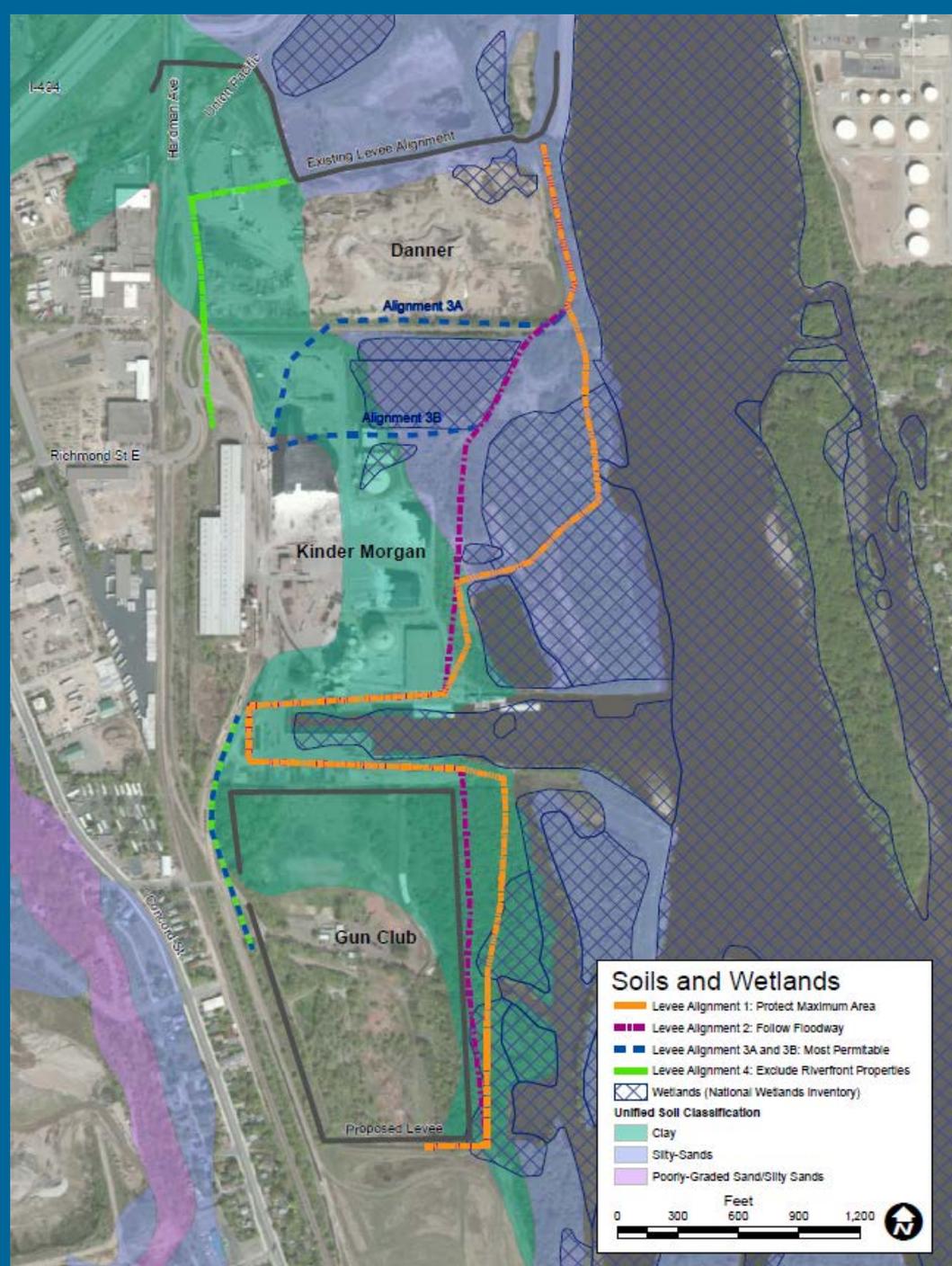
408 Permit

- W/permit
 - 100% PL 8499 funding for repairs
 - Elimination of existing closures
 - Abandon east/west portion of existing levee (for other uses)
 - Annual inspection required
- W/out permit
 - Faster implementation
 - Less inspection burden



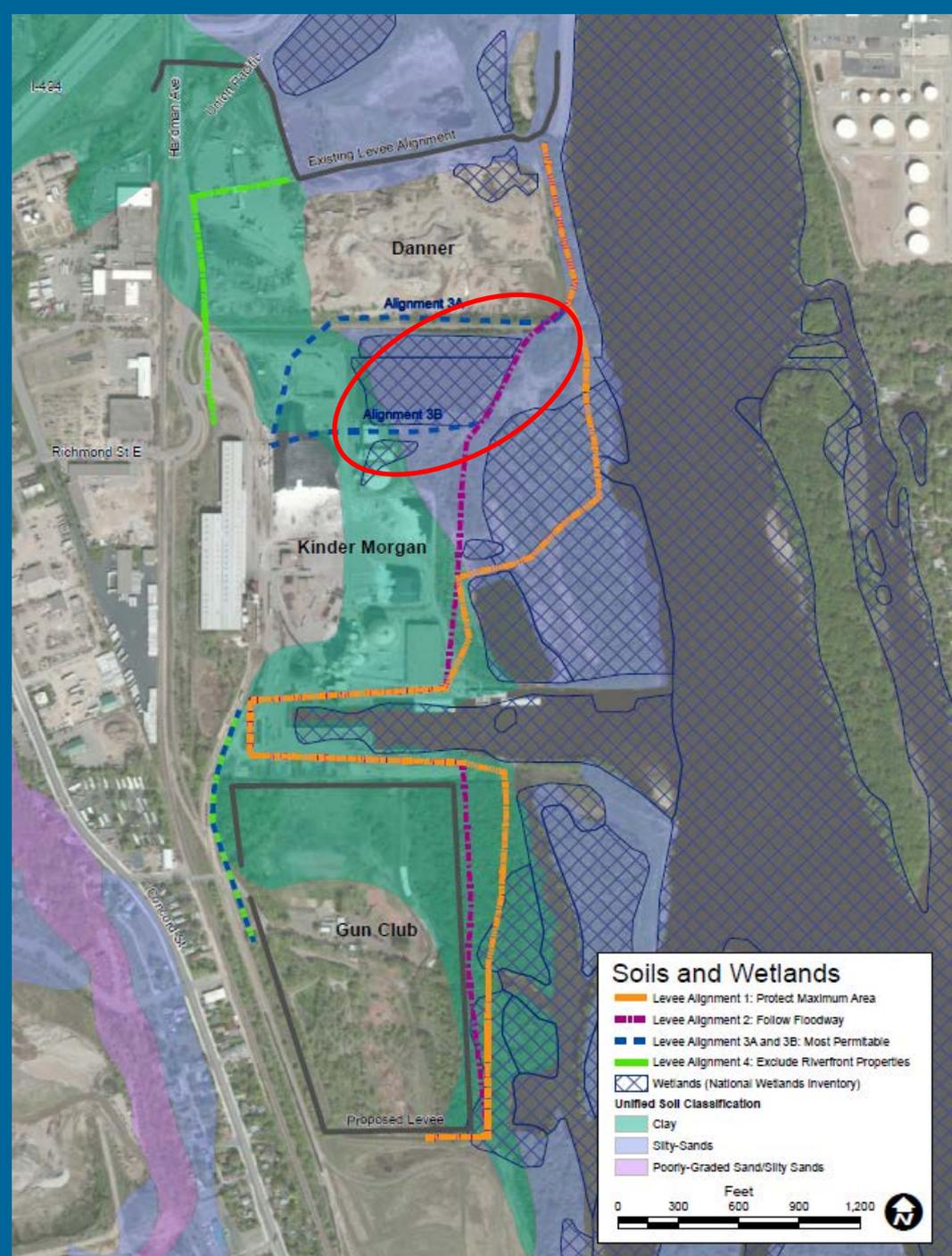
Geotechnical

- No fatal flaws
- Existing data not on alignments



Geotechnical

- New data needed for design
- Area around wetland/pond most critical

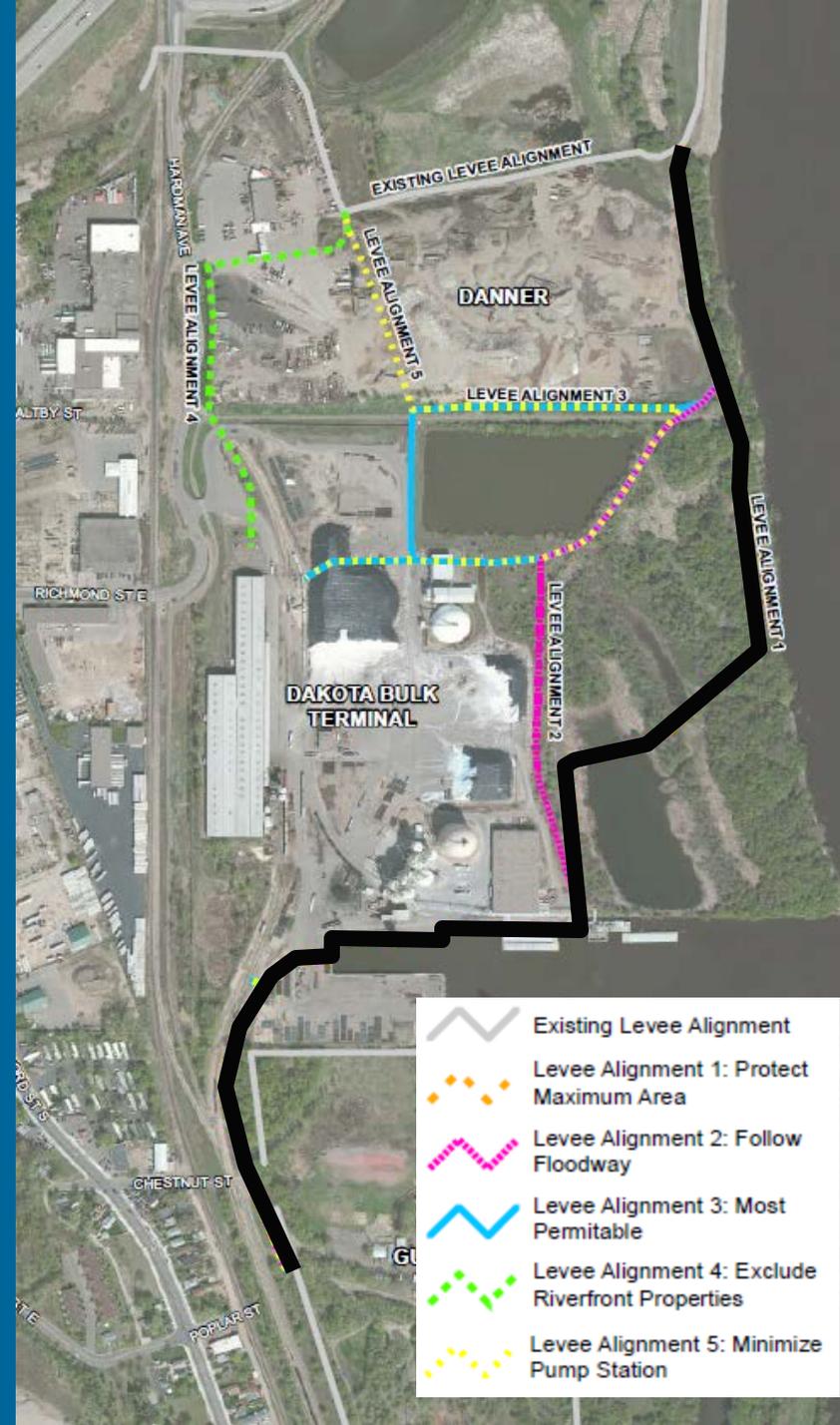


Proposed Alignments

- Six alignments initially identified
- Alignments selected to cover range of protection (i.e., bookends)
- Alignments exclude Gun Club property
- Initial evaluation is qualitative

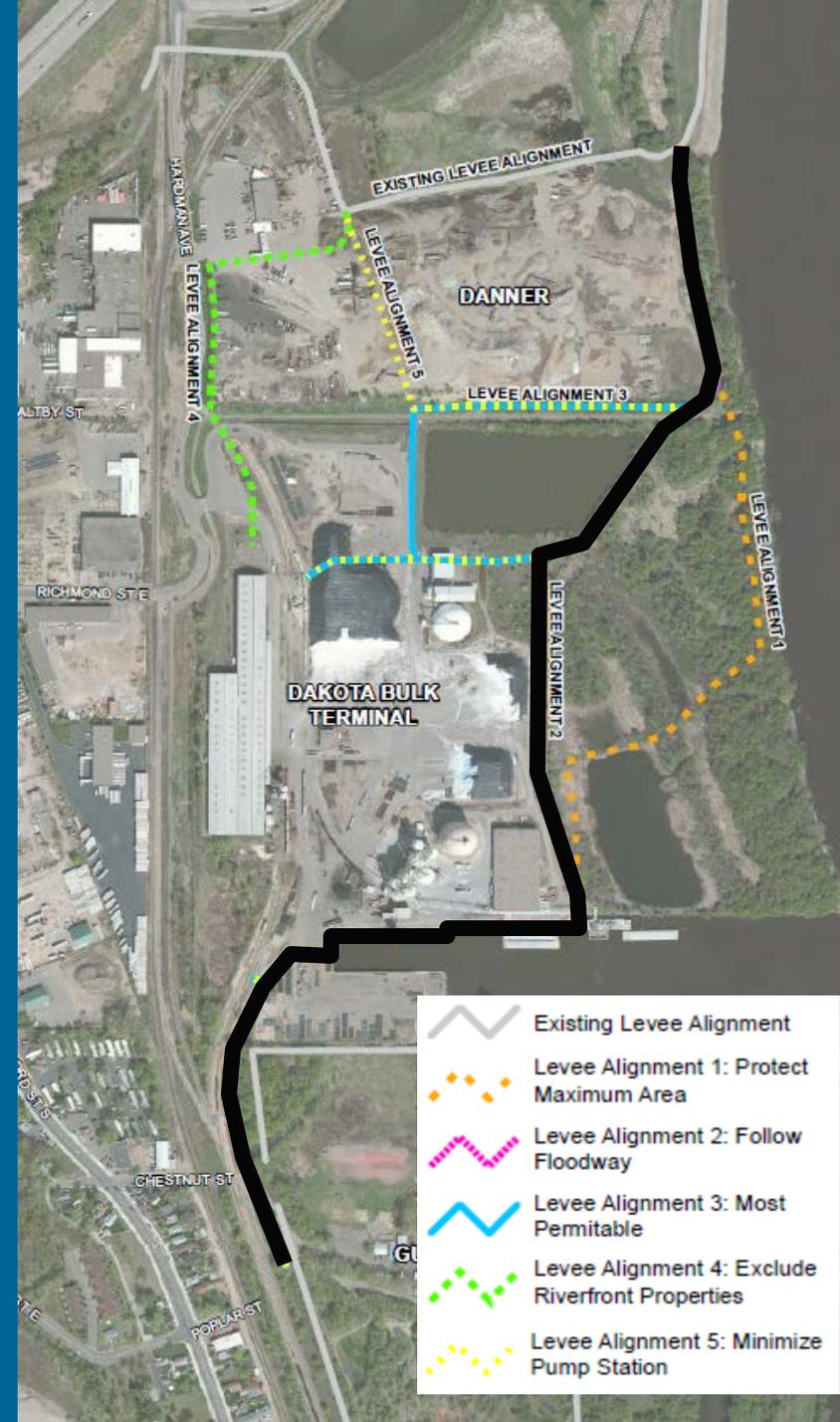
Proposed Alignments

1. Maximum protection
2. Follow the floodway
3. Connect high ground
 - A. Without pond
 - B. With pond
4. Exclude Riverfront
5. Minimize pump station



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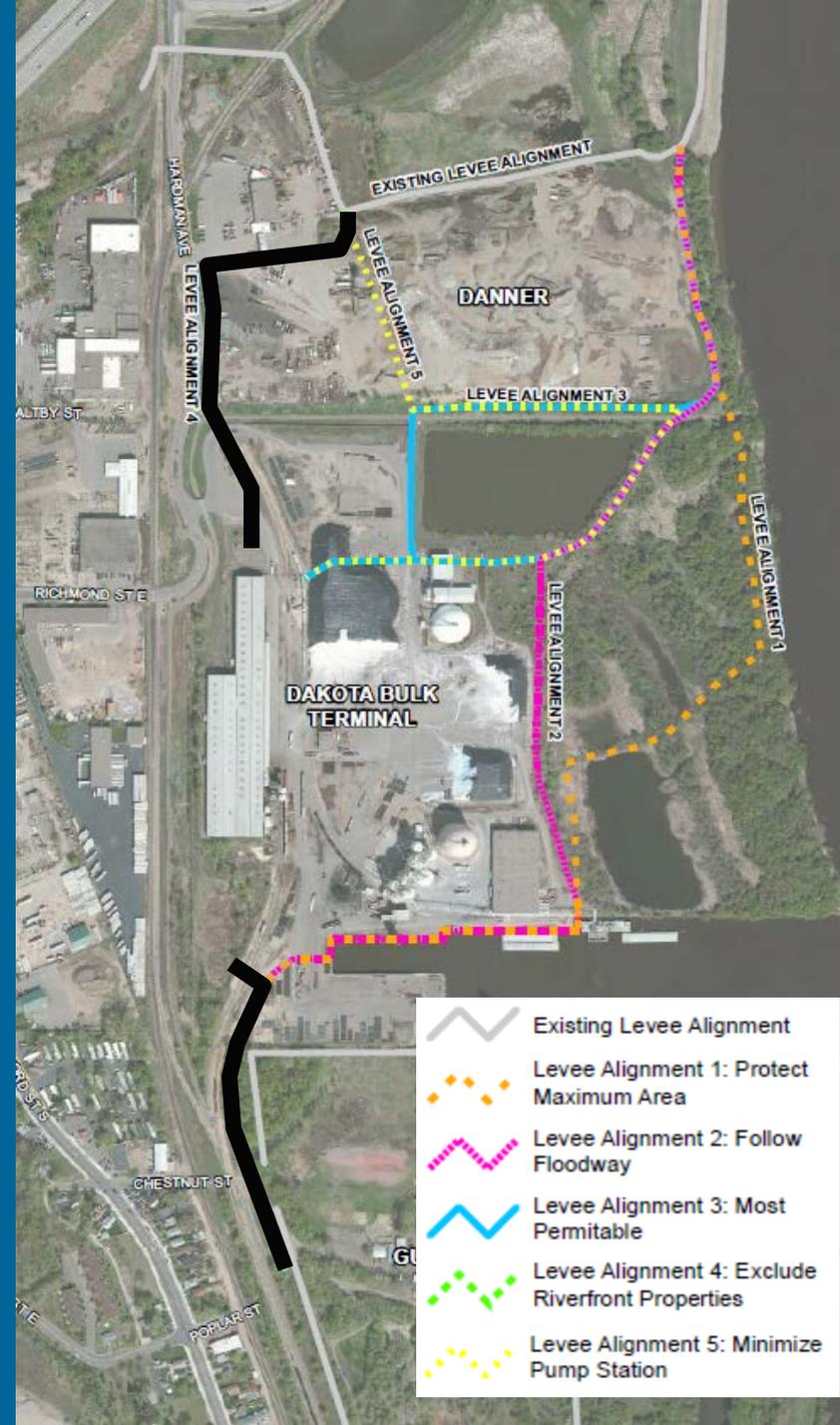
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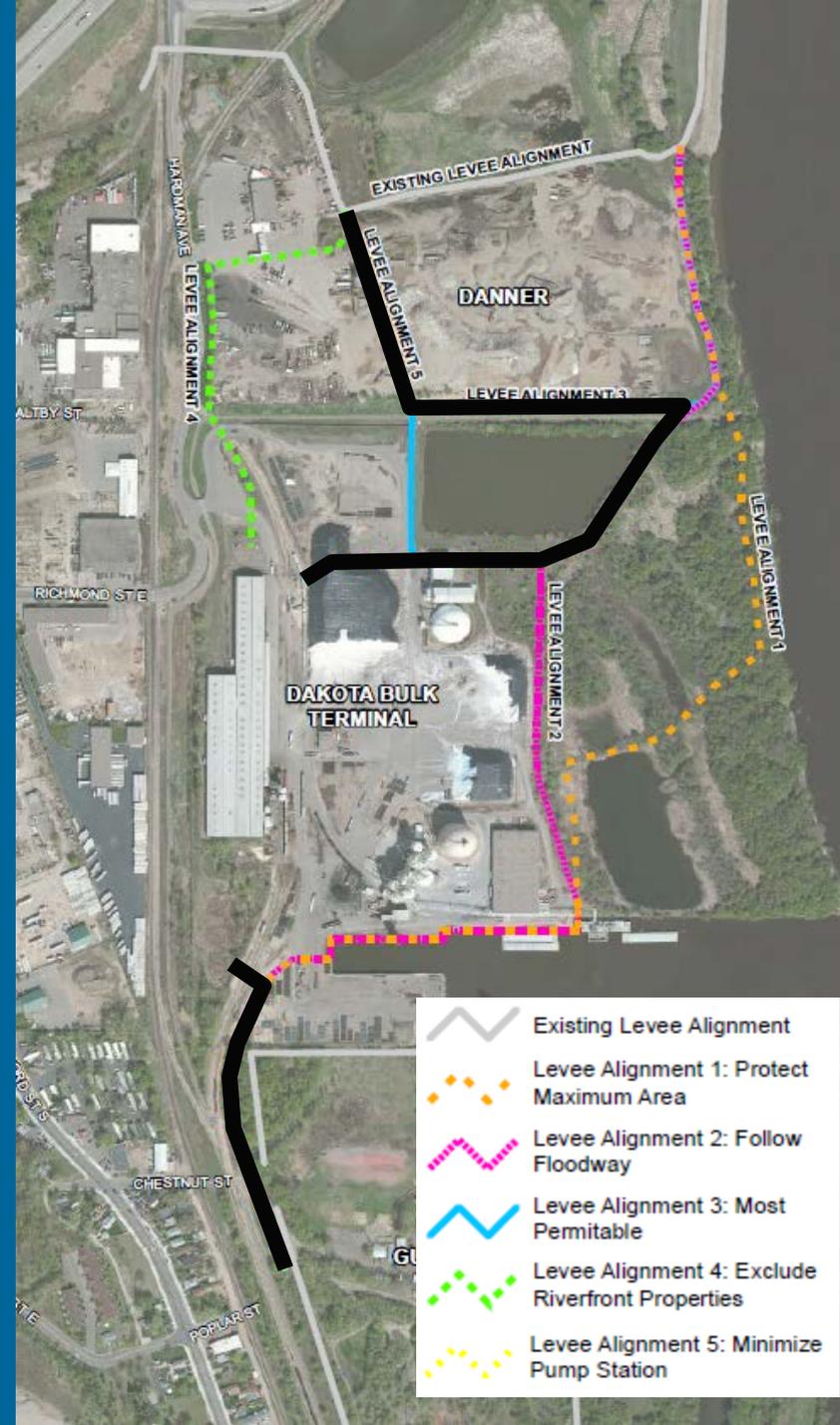
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Alignment Selection

Alignment ID	Description	Levee Length	Quantity of Fill	Likely Closures	Easements/Property Required	FEMA Permitability	Overall Permitability	Potential Geotechnical Concerns	Utility Challenges	Transportation Challenges	Protected Property
1	Protect maximum developable area	6	6	1 (tie)	6	6	6	6	1 (tie)	1 (tie)	1
2	Follow the floodway line	5	4 (tie)	1 (tie)	5	4	5	5	1 (tie)	1 (tie)	2
3A	Connect the high ground	2	2	3 (tie)	2 (tie)	3 (tie)	3 (tie)	3	3 (tie)	3 (tie)	3 (tie)
3B	Connect the high ground (with pond)	3	4 (tie)	3 (tie)	4	3 (tie)	3 (tie)	4	3 (tie)	3 (tie)	3 (tie)
4	Exclude riverfront properties	1	1	6	1	1	1 (tie)	1 (tie)	6	6	6
5	Minimize pump station	4	3	5	2 (tie)	2	1 (tie)	1 (tie)	3 (tie)	3 (tie)	5

Notes:

- A rank of 1 is the preferred option; a rank of 6 is the least preferred.
- Transportation challenges were initially identified in the *South Concord Redevelopment Transportation Plan*. A major issue is bridging the Union Pacific main track which would be required of all the alignments in order to provide predictable, safe, and controlled access to the Danner or Dakota Bulk Terminal sites.

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Cost Estimation

- Preliminary cost estimate includes:
 - Geotechnical investigation
 - Engineering and design
 - Permitting and certification
 - Land acquisition
 - Construction
 - Maintenance
 - 20% contingency

Cost Estimation

- Costs quantified for 4 feasible alignments
- With/without transportation improvements

Costs	Alignment 3A	Alignment 3B	Alignment 4	Alignment 5
w/o frontage road	\$ 33.3	\$ 9.6	\$ 27.5	\$ 7.6
w/ frontage road	\$ 36.3	\$ 12.6	\$ 30.5	\$ 10.6

* cost in millions

Benefits

- Flood damage reduction to existing property
 - USACE method to determine federal funding eligibility
- Increased property value
 - Existing/Future land use
 - w/ & w/o transportation improvements (*South Concord Redev. Trans. Plan*)
 - Reduced flood insurance costs (BW Act)



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 - ~~USACE method to determine federal funding eligibility~~



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 - w/ & w/o transportation improvements (*South Concord Redev. Trans. Plan*)
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Benefits and Land Use

- Benefits based on increased land value over existing conditions
- Considered 4 future scenarios:
 - w/ & w/o transportation improvements
 - Two land use scenarios for each
- Land use values based on *South Concord Redevelopment Transportation Plan*

Benefits (increase over baseline)

Benefits	Alignment 3A	Alignment 3B	Alignment 4	Alignment 5
Baseline	\$ -	\$ -	\$ -	\$ -
Low Value 1	\$ 9.4	\$ 9.9	\$ 2.6	\$ 4.5
Low Value 2	\$ 15.9	\$ 16.4	\$ 9.1	\$ 11.1
High Value 1	\$ 33.7	\$ 34.6	\$ 16.6	\$ 21.4
High Value 2	\$ 54.3	\$ 55.4	\$ 31.5	\$ 37.8

- values in millions
 - Low Value – w/o transportation improvements
 - High Value – w/ transportation improvements
-
- Zoning changes may be necessary to achieve land use assumed in high value scenarios

Benefit/Cost Ratios

B/C Ratios	Alignment 3A	Alignment 3B	Alignment 4	Alignment 5
Low Value 1	0.3	1.0	0.1	0.6
Low Value 2	0.5	1.7	0.3	1.4
High Value 1	0.9	2.8	0.5	2.0
High Value 2	1.5	4.4	1.0	3.6

- Zoning changes may be necessary to achieve land use assumed in high value scenarios

Summary of Findings – Phase 1

- No fatal flaws identified
- Multiple alignments with $B/C > 1$
- $B/C \geq 1$ for alignment 3B under all land use scenarios
- Greatest B/C estimated w/ transportation improvements



NEXT STEPS

Phase 2 Analysis

- ID feasible & preferred alignments
- Estimate alignment benefits and costs
- ID specific impacts to properties and City utilities



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- ID feasible & preferred alignments 
- Estimate alignment benefits and costs 
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Phase 2 Analysis – Tasks

- H & H modeling to refine drainage impacts and pumping needs
- Refine estimates of benefits and costs
- Contact property owners and other stakeholders
- Collection of site-specific data (e.g., soil borings) to clarify impacts to properties and utilities

Questions?



