

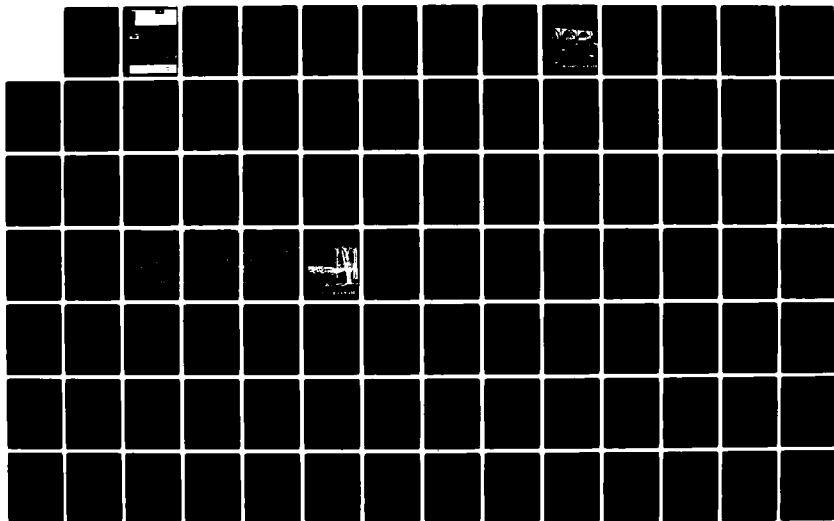
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GREAT I STUDY OF THE UPPER MISSISSIPPI RIVER TECHNICAL
APPENDIXES VOLUME B..(U) GREAT RIVER ENVIRONMENTAL
ACTION TEAM SEP 80

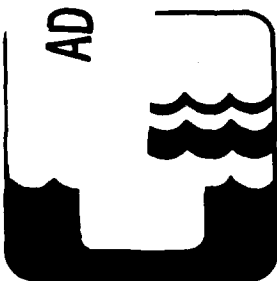
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GREAT STUDY OF THE UPPER MISSISSIPPI RIVER

TECHNICAL APPENDIXES

VOLUME 8

CHANNEL MAINTENANCE

PART II - POOL PLANS AND SITE DESCRIPTIONS—
MINNESOTA RIVER, ST. CROIX RIVER,
UPPER ST. ANTHONY FALLS,
AND POOLS 1& 2

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18. SUPPLEMENTARY NOTES Volume 8 issues in 5 parts: Part I: narrative; Part II: Pool Plans and Site Descriptions-Minnesota River; St. Croix River, St Anthony Falls, and Pools 1 and 2; Part III: Pools 3 & 4; Part IV: Pools 5, 5A, 6 & 7; Part V: Pools 8, 9, and 10.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Channels (waterways) Mississippi River Dredged Material		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The channel maintenance plan is composed of a detailed dredged material placement plan (described in part I) and a set of supporting recommend- ations for dredging and channel maintenance. Parts II-V detail the channel maintenance plan by specific sites.		

OUTLINE

GREAT I

SEPTEMBER 1980



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VOLUME 1 MAIN REPORT

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B. DREDGED MATERIAL USES
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VOLUME 7 J. PUBLIC PARTICIPATION
K. PLAN FORMULATION

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PART II - POOL PLANS AND SITE DESCRIPTIONS -
MINNESOTA RIVER, ST. CROIX RIVER,
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VOLUME 9 M. ENVIRONMENTAL IMPACT STATEMENT

PART II

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POOL ONE SUMMARY

BRIDGING VOLUME DETAILS FOR EACH CUT

BRIDGED MATERIAL PLACEMENT SITES

DESCRIPTIONS AND COSTS

Cut 1, site 1.01

Cut 1, site 1.02

Cut 2, site 1.01

Cut 2, site 1.02

Cut 3, site 1.01

Cut 4, site 1.01

Cut 4, site 1.03

Cut 5, site 1.01

Cut 5, site 1.07

Cut 6, site 1.01

Cut 7, site 1.01

COMPARISON OF ALTERNATIVE PLACEMENT SITES

KEY TO CONDITIONS USED IN SITE COMPARISONS

POOL MAP (Includes Upper St. Anthony Pool)

POOL 2

POOL TWO SUMMARY

BRIDGING VOLUME DETAILS FOR EACH CUT

BRIDGED MATERIAL PLACEMENT SITES

DESCRIPTIONS AND COSTS

Cut 1, site 2.01

Cut 2, site 2.01

Cut 3, site 2.01

Cut 4, site 2.01

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COMPARISON OF ALTERNATIVE PLACEMENT SITES

KEY TO CONDITIONS USED IN SITE COMPARISONS

POOL MAP

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MINNESOTA RIVER

CHANNEL MAINTENANCE PLAN SUMMARY

POOL MN River

Dredge Cut	MPFWG CY @ 1985-0225	Selected Site	NED Site	EQ Site	RPFP Site	MPFWG Site	MPFWG CY @ 1985-2025	Temporary Site
1. Mouth of Minnesota River	117,500	2.18	MN.27	2.18/MN.27	MN.11	MN.21	128,000	-
2. Four Mile Cut-off	80,000	MN.28	MN.25	MN.27	MN.11	MN.25	87,500	-
3. Peterson's Bar	387,500	MN.30/MN.06	MN.06	MN.30	MN.13	MN.07	425,500	-
4. Cargill	35,500	MN.03	MN.03	MN.03	MN.14	MN.03	36,500	-
5. Savage Bridge	101,500	MN.03	MN.26	MN.03	MN.14	MN.03	109,000	-
	722,000						786,500	

SELECTED PLAN SUMMARY

Total Volume Dredged (cy)	- 722,000	No. of sites with:	
Beneficial Use (cy) Potential from Selected Sites	- 117,500	Recreation Enhancement	- 1
Total Area (acres)	- 114*	Cultural Resources Impacts	- 0
		Wetlands Affected:	
		Types 1, 2 (acres)	- 7
		Types 3, 4, 5 (acres)	- 0

*will not need all 65 acres of site MN. 30 for cut 3.

Table 2
Minnesota River Dredging Volumes

Item	Cut 1		Cut 2		Cut 3		Cut 4		Cut 5	
	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT
Cut Name	Mouth of Minnesota River		Four-Mile Cutoff		Peterson's Bar		Cargill		Savage Bridge	
955 - 1974 average annual dredging volume	4,600	4,600	3,100	3,100	15,100	15,100	1,300	1,300	3,400	3,400
Bend width changes (percent)	—	—	—	—	—	—	—	—	—	—
Adjusted average annual volume	4,600	4,600	3,100	3,100	15,100	15,100	1,300	1,300	3,400	3,400
Change for 1986 - 2000 (percent)	-34	-19	-34	-19	-34	-19	-34	-19	-24(1)	-9(1)
Adjusted average annual volume	3,000	3,700	2,000	2,500	10,000	12,200	900	1,100	2,600	3,100
Total volume dredged, 1986 - 2000	45,000	55,500	30,000	37,500	150,000	183,000	13,500	16,500	39,000	46,500
Change for 2001 - 2025 (percent)	-37	-36	-37	-36	-37	-36	-37	-36	-27	-26
Adjusted average annual volume	2,900	2,900	2,000	2,000	9,500	9,700	800	800	2,500	2,500
Total volume dredged, 2001 - 2025	72,500	72,500	50,000	50,000	237,500	242,500	20,000	20,000	62,500	62,500
Total volume dredged, 1986 - 2025	117,500	128,000	80,000	87,500	387,500	425,500	33,500	36,500	101,500	109,000
Frequency of dredging (percent)	30	30	10	10	25	25	30	30	40	40
Expected number of dredging jobs (1986 - 2025)	12	12	4	4	10	10	12	12	16	16
Average dredging volume per job	9,800	10,700	20,000	21,900	38,800	42,600	2,800	3,000	6,300	6,800

Note: 1) Cut in approach to rigid structure

Note: 1) Volumes in Cubic Yards

DREDGED MATERIAL PLACEMENT SITE

POOL: MN River

EXISTING CONDITIONS DESCRIPTION

CUT: 1

SITE: 2.18

SITE: 2.18

Page 1 of 3

CUT LOCATION: 0.0 - 0.5 (Mouth of Minnesota River)

PLACEMENT SITE LOCATION: RM 843.5 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 740 (approx)

100-year flood: 712.5

5-year flood: 701.2

Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: No

Site within floodway (effective flow area): No

Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100

% Wetland: 0

% Open water: 0

DISTANCE FROM SITE TO:

Open Water: 500

Wetland: 1200' Across Channel

Residence: 1100'

Beneficial Use Site: 0'

Other: None

VEGETATION CHARACTER:

No vegetation (sand and gravel operation site)

SITE OWNER: J.L. Shiely Co. (sand and gravel company)

SPECIAL CONCERNS:

Endangered species habitat: Unknown

Historical or archeological value: None

Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Stockpile and distribution point for sand and gravel products.

Adjacent land use: Highway, railroad, open space

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: MN River
CUT: 1
SITE: 2.18

Page 2 of 3

SITE: 2.18

MAXIMUM SITE DEVELOPMENT DIMENSIONS: *

Volume capacity (cubic yards):
Area at base (acres):
Height (feet):
Length (feet): N/A
Width (feet):
Side slope (ratio):
Final elevation (feet):

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 12/40
Volume dredged per job (cubic yards): 9,800
Beneficial use demand (cubic yards): all material
Beneficial Use by: J. L. Shiely
Other cuts using sites: Pool 2, Cut 10

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):
Silt (%):
Other (%): No Analysis has been done
Contaminants:
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): No

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

* Land owner has offered to unload barges with his own equipment and stock pile it on the site with his own conveyor equipment.

DREDGED MATERIAL PLACEMENT SITE

POOL: MN River

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

CUT: 1

SITE: 2.18

(Continued from previous page)

Page 3 of 3

SITE: 2.18

SPECIAL CONDITIONS FOR SITE USE: Mechanical unloading with landowner's equipment

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	None	
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

North of Minnesota River
POOL: MN
CUT: 1
SITE: 2.18

Frequency: 30%
12/40 yrs
Volume per job: 9,800 cy

TYPES OF DREDGES

PIPELINE	MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.
				700 H.P.
				350 H.P.
				700 H.P.
				Clamshell 700 H.P.

Basic Dredging Operation	\$ -	\$195,000*	\$167,000*	\$55,000*	\$59,000*	\$66,000*	\$69,000*
Berming Costs(1)	-	6,000*	7,000*	-	-	-	-
Diking Costs(1)	-	7,000	3,000	-	-	-	-
Riprapping Costs	-	0	0	0	0	0	0
Seasonal Removal	-	0	0	0	0	0	0
Special Construction	-	0	0	0	0	0	0
Land Acquisition	-	0	0	0	0	0	0

Total of GREAT recommended Actions	-	201,000	174,000	55,000	59,000	66,000	69,000
Average Annual Costs	-	60,300	52,200	165,000	17,700	19,800	20,700

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: MN River

EXISTING CONDITIONS DESCRIPTION

CUT: 2

SITE: MN 28

SITE: MN.28

Page 1 of 3

CUT LOCATION: 4.0 - 4.7 (Four Mile Cutoff)

PLACEMENT SITE LOCATION: RM 3.8

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 700
100-year flood: 717.5
5-year flood: 703.5
Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark:

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: 1000 ft.
Residence: Mile
Beneficial Use Site: 3 miles
Other:

VEGETATION CHARACTER:

Willows, shrubs, grasses

SITE OWNER: MN DNR

SPECIAL CONCERNS:

Endangered species habitat: No
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: upland game birds, passerine birds, furbearers
Socioeconomic: dredged material placement site.
Adjacent land use: main channel, backwater, national wildlife refuge

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: MN River
CUT: 2
SITE: MN.28

Page 2 of 3

SITE: MN.28

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 1,011,000
Area at base (acres): 18
Height (feet): 35
Length (feet):
Width (feet):
Side slope (ratio):
Final elevation (feet):

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 4/40
Volume dredged per job (cubic yards): 20,000
Beneficial use demand (cubic yards): 0
Beneficial Use by: No demand identified
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):
Silt (%):
Other (%): No Analysis has been done
Contaminants:
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes
Hydraulic (in slurry): No

EROSION CONTROL NEEDED:

Riprap: No
Revegetation: Yes
Other:
Areas and features protected by erosion control: on site habitat and
vegetation

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: MN River
CUT: 2
SITE: MN.28

Page 3 of 3

SITE: MN.28

SPECIAL CONDITIONS FOR SITE USE: Revegetation of island required to maintain habitat.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	18	disturbed meadow
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:		

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Four Mile Cutoff
POOL: MN
CUT: 2
SITE: MN.28

Frequency: 10%
4/40 yrs
Volume per job: 20,000 cy

	TYPES OF DREDGES					
	PIPELINE	MECHANICAL				Clamshell
		16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	350 H.P.
	20 inch					700 H.P.
\$	-	\$151,000*	\$154,000*	\$ 88,000*	\$97,000*	\$113,000*
Basic Dredging Operation	-					
Berming Costs	-	6,000*	7,000*	-	-	-
Diking Costs	-	6,000	4,000	-	-	-
Riprapping Costs	-	0	0	0	0	0
Seasonal Removal	-	0	0	0	0	0
Special Constuction	-	0	0	0	0	0
Land Acquisition	-	0	0	0	0	0
Total of GREAT recommended Actions	-	157,000	161,000	88,000	97,000	113,000
Average Annual Costs	-	15,700	16,100	8,800	9,700	11,300

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: MN River

EXISTING CONDITIONS DESCRIPTION

CUT: 3

SITE: MN.30

SITE: MN.30

Page 1 of 3

CUT LOCATION: 11.2 - 12.8 (Peterson's Bar)

PLACEMENT SITE LOCATION: RM 11.2

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 700 (approx)

100-year flood: 719.4

5-year flood: 706.3

Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: No

Site within floodway (effective flow area): No

Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 50

% Wetland: 0

% Open water: 50 (quarry site)

DISTANCE FROM SITE TO:

Open Water: 5000'

Wetland: 2,000'

Residence: Mile

Beneficial Use Site: 0'

Other:

VEGETATION CHARACTER:

Sparse (limestone quarry)

SITE OWNER: Private

SPECIAL CONCERNS:

Endangered species habitat: None

Historical or archeological value: Unknown

Other:

EXISTING USE OF SITE:

Fish and Wildlife: some fish and amphibians

Socioeconomic: limestone quarry

Adjacent land use: working quarry

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: MN River
CUT: 3
SITE: MN.30

Page 2 of 3

SITE: MN.30

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 1,573,000
Area at base (acres): 65
Height (feet): 15
Length (feet): 1700
Width (feet): 1700
Side slope (ratio):
Final elevation (feet): 715 (approx)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 10/40
Volume dredged per job (cubic yards): 38,800
Beneficial use demand (cubic yards): 0
Beneficial Use by: No demand identified
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 95% medium sand
Silt (%): 5%
Other (%): -
Contaminants: Minor
Contaminant Source: Agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: MN River
CUT: 3
SITE: MN.30

Page 3 of 3

SITE: MN.30

SPECIAL CONDITIONS FOR SITE USE: Return slurry water must be channeled to drain into river.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	32.5	
Upland altered:	32.5	abandoned quarry
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Peterson's Bar
POOL: MN
CUT: 3
SITE: M..30

Frequency: 25%
 10/40 yrs
 Volume per job: 38,800 cy

CHANNEL MAINTENANCE PLAN COSTS PER DREDGING JOB

PIPELINE	TYPES OF DREDGES				
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	MECHANICAL 700 H.P. 350 H.P. 700 H.P. Clamshell

Basic Dredging Operation	\$ -	\$ 333,000*	\$ 304,000*	\$ 154,000*	\$ 173,000*	\$ 174,000*	\$ 185,000*
Berming Costs(1)	-	5,000	5,000	-	-	-	-
Diking Costs(1)	-	7,000	7,000	-	-	-	-
Riprapping Costs	-	0	0	0	0	0	0
Seasonal Removal	-	0	0	0	0	0	0
Special Construction(2)	-	84,000*	84,000*	84,000*	84,000*	84,000*	84,000
Land Acquisition	-	-	-	-	-	-	-
Total of GREAT recommended Actions	-	317,000	388,000	238,000	157,000	258,000	169,000
Average Annual Costs	-	79,300	97,000	59,500	39,300	64,500	42,300

*GREAT recommended actions

Note: The cost effectiveness of direct pipeline disposal overlaid to site MN.30 should be investigated.

- (1) At site across from MN.07
- (2) Trucking to final disposal site.

DREDGED MATERIAL PLACEMENT SITE

POOL: MN River

EXISTING CONDITIONS DESCRIPTION

CUT: 3

SITE: MN.06

SITE: MN.06

Page 1 of 3

CUT LOCATION: 11.2 - 12.8 (Peterson's Bar)

PLACEMENT SITE LOCATION: RM 11.5

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 700
100-year flood: 719.4
5-year flood: 706.3
Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: 3000'
Wetland: 500'
Residence: Mile
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER:

Some brush and shrubs

SITE OWNER: Private

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: upland game birds, furbearers, raptors
Socioeconomic: gravel pit
Adjacent land use: gravel and limestone quarry

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: MN River
CUT: 3
SITE: MN.06

Page 2 of 3

SITE: MN.06

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 1,361,000
Area at base (acres): 24
Height (feet): 35
Length (feet): 1000
Width (feet): 1000
Side slope (ratio):
Final elevation (feet): 735 (approx)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 10/40
Volume dredged per job (cubic yards): 38,800
Beneficial use demand (cubic yards): 0
Beneficial Use by: No demand identified
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 95% medium sand
Silt (%): 5%
Other (%): -
Contaminants: Minor
Contaminant Source: Agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: MN River
CUT: 3
SITE: MN.06

Page 3 of 3

SITE: MN.06

SPECIAL CONDITIONS FOR SITE USE: Return water must be channeled to river.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	24	disturbed meadow
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Peterson's Bar
POOL: MN
CUT: 3
SITE: MN.06

Frequency: 25%
10/40 yrs
Volume per job: 38,800 cy

	TYPES OF DREDGES						
	PIPELINE			MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	350 H.P.	Clamshell 700 H.P.
\$	-	\$204,000*	\$304,000*	\$151,000*	\$173,000*	\$170,000*	\$182,000*
Basic Dredging Operation	-	9,000	5,000	-	-	-	-
Berming Costs(1)	-	7,000	7,000	-	-	-	-
Diking Costs(1)	-	0	0	0	0	0	0
Riprapping Costs	-	0	0	0	0	0	0
Seasonal Removal	-	84,000*	84,000*	84,000*	84,000*	84,000*	84,000*
Special Construction(2)	-						
Land Acquisition	-						
Total of GREAT recommended Actions	-	288,000	388,000	235,000	257,000	154,000	166,000
Average Annual Costs	-	72,000	97,000	58,800	64,300	46,200	41,500

*GREAT recommended actions
(1) At site across for MN.07
(2) Trucking to final disposal site

DREDGED MATERIAL PLACEMENT SITE

EXISTING CONDITIONS DESCRIPTION

POOL: MN River

CUT: 4

SITE: MN.03

SITE: MN.03

Page 1 of 3

CUT LOCATION: 13.2 - 13.5 (Cargill)

PLACEMENT SITE LOCATION: RM 14.0

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 710 (approx)

100-year flood: 719.0

5-year flood: 706.3

Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: Yes

Site within floodway (effective flow area): No

Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 0

% Wetland: 100

% Open water: 0

DISTANCE FROM SITE TO:

Open Water: 6000'

Wetland: 0'

Residence: 3000'

Beneficial Use Site: 0'

Other:

VEGETATION CHARACTER:

Willows, reeds, shrubs

SITE OWNER: Private

SPECIAL CONCERNS:

Endangered species habitat: None

Historical or archeological value: Unknown

Other:

EXISTING USE OF SITE:

Fish and Wildlife: upland game birds, furbearers, passerine birds, waterfowl

Socioeconomic: potential development site

Adjacent land use: grain elevators, wetlands, railroad

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: MN River
CUT: 4
SITE: MN.03

Page 2 of 3

SITE: MN.03

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 138,000
Area at base (acres): 7
Height (feet): 15
Length (feet): 500
Width (feet): 500
Side slope (ratio):
Final elevation (feet): 725 (approx)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 12/40
Volume dredged per job (cubic yards): 2,800
Beneficial use demand (cubic yards): 0
Beneficial Use by: No demand identified
Other cuts using sites: 5

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 15%
Silt (%): 85%
Other (%): -
Contaminants: Minor Nutrients, Pesticides & PCB's
Contaminant Source: Agricultural, Twin Cities

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: Yes
Other: None
Areas and features protected by erosion control: adjacent wetlands

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: MN River
CUT: 4
SITE: MN.03

Page 3 of 3

SITE: MN.03

SPECIAL CONDITIONS FOR SITE USE: Adjacent wetlands must be protected.
Industrial Development may occur.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	7	1
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	None	
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Cargill
POOL: MN
CUT: 4
SITE: MN.03

Frequency: 30%
12/40 yrs
Volume per job: 2,800 cy

	TYPES OF DREDGES					
	PIPELINE 20 inch				MECHANICAL	
		16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	Clamshell 350 H.P. 700 H.P.
Basic Dredging Operation	\$ -	\$78,000*	\$ 56,000*	\$ 42,000*	\$49,000*	\$45,000* \$48,000
Berming Costs	-	3,000	3,000			
Diking Costs	-	15,000*	4,000			
Riprapping Costs	-					
Seasonal Removal	-	0	0	0	0	0
Spec'al Construction	-					
Land Acquisition	-					
Total of GREAT recommended Actions	-	93,000	60,000	42,000	49,000	45,000 48,000
Average Annual Costs	-	27,900	18,000	12,600	14,700	13,500 14,400

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: MN River

EXISTING CONDITIONS DESCRIPTION

CUT: 5

SITE: MN.03

SITE: MN.03

Page 1 of 3

CUT LOCATION: 14.3 - 14.7 (Savage Bridge)

PLACEMENT SITE LOCATION: RM 14.0

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 710 (approx)

100-year flood: 719.4

5-year flood: 706.3

Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: Yes

Site within floodway (effective flow area): No

Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 0

% Wetland: 100

% Open water: 0

DISTANCE FROM SITE TO:

Open Water: 6000'

Wetland: 0'

Residence: 3000'

Beneficial Use Site: 0'

Other:

VEGETATION CHARACTER:

Willows, reeds, shrubs

SITE OWNER: Private

SPECIAL CONCERNS:

Endangered species habitat: None

Historical or archeological value: Unknown

Other:

EXISTING USE OF SITE:

Fish and Wildlife: upland game birds, furbearers, passerine birds,
waterfowl

Socioeconomic: potential development site

Adjacent land use: grain elevators, wetlands, railroads

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: MN River
CUT: 5
SITE: MN.03

Page 2 of 3

SITE: MN.03

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 138,000
Area at base (acres): 7
Height (feet): 15
Length (feet): 500
Width (feet): 500
Side slope (ratio):
Final elevation (feet): 725 (approx)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 16/40
Volume dredged per job (cubic yards): 6,300
Beneficial use demand (cubic yards): 0
Beneficial Use by: No demand identified
Other cuts using sites: 4

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 85% medium to fine sand
Silt (%): 15%
Other (%):
Contaminants:
Contaminant Source: No Analysis Done

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: Yes
Other: None
Areas and features protected by erosion control: adjacent wetlands

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: MN River
CUT: 5
SITE: MN.03

Page 3 of 3

SITE: MN.03

SPECIAL CONDITIONS FOR SITE USE: Adjacent wetlands must be protected.
Industrial Development may occur

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	<u>7</u>	<u>1</u>
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	None	
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:		

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS

PER DREDGING JOB

POOL: Minnesota River
CUT: 5
SITE: MN .03

Frequency: 40 %
16 /40 yrs
Volume per job: 6,300 cy

PIPELINE	TYPES OF DREDGES				
	20 inch	16 inch	12 inch	MECHANICAL	
				Backhoe 350 H.P.	Clamshell 350 H.P. 700 H.P.

Basic Dredging Operation	\$ -	\$ 176,000*	\$ -	\$ -	\$ -
Berming Costs	-	3,000	-	-	-
Diking Costs	-	15,000*	-	-	-
Riprapping Costs	-	-	-	-	-
Seasonal Removal	-	-	-	-	-
Special Construction	-	-	-	-	-
Land Acquisition	-	-	-	-	-
Total of GREAT recommended Actions	-	191,000	-	-	-
Average Annual Costs	-	76,400	-	-	-

*GREAT recommended actions

COMPARISON OF ALTERNATIVE PLAN SITES

Pool MN River Cut 1

Alternative Plan	Selected, EQ	NED, EQ	RIFP	MPFW/OG	
Placement Site No.	2.18	MN.27	MN.11	MN.21	
Site Capacity (cy)	Unlimited	311,100	185,000	130,000	
Site Acreage		19	8	8	
Site Height (ft)		10	10	10	
Potential Beneficial use removal (cy)	All material	No Demand Identified	No Demand Identified	No Demand Identified	
Conditions ¹ favoring use of site	21	21	2	21	
	2	24	24	22	
	23	25	25	23	
	4	26	10	24	
	5	27	11?	5	
	27	28	12	30	
	10	9	33	11	
	11	50	16	12	
	12	11		33	
	33	32		16	
	35	33			
		16			
Conditions ¹ adverse to use of site	46	62	41	46	
	68	43	43	47	
	49	54	66	48	
	54	55	47	49	
	56		68	54	
			69	55	
			74		
			55		
¹ Code numbers in columns represent conditions listed on pages ____.					
29					

COMPARISON OF ALTERNATIVE PLAN SITES

Pool MN River Cut 2

Alternative Plan	Selected	NED,MPFW/OG	EQ	RFFP	
Placement Site No.	MN. 28	MN. 25	MN. 27	MN. 11	
Site Capacity (cy)	1,011,000	78,000	311,000	185,000	
Site Acreage	18	5	19	8	
Site Height (ft)	35	10	10	10	
Potential Beneficial use removal (cy)	No Demand Identified	No Demand Identified	No Demand Identified	No Demand Identified	
Conditions ¹ favoring use of site	6 27 8 9 11 32 33 16	24 5 26 28 29 50 11 32 33 16	21 24 25 27 50 11 32 33 16	2 24 25 10 11? 12 33 16	
Conditions ¹ adverse to use of site	41 62 43 64 65 50 74 75	61 62 63 67 74 55	62 43 66 48 49 54 55	41 43 66 47 68 69 74 55	
¹ Code numbers in columns represent conditions listed on pages _____.					
30					

COMPARISON OF ALTERNATIVE PLAN SITES

Pool MN River Cut 3

Alternative Plan	Selected, EQ	Selected, NED EQ	MPFW/OG		
Placement Site No.	MN.30	MN.06	MN.07		
Site Capacity (cy)	1,573,000	1,361,000	200,000		
Site Acreage	65	24	8.2		
Site Height (ft)	15	35'	15		
Potential Beneficial use removal (cy)	No Demand Identified	No Demand Identified	No Demand Identified		
Conditions ¹ favoring use of site	21 2 23 24 5 10 12 33 16	21 2 24 5 10 12 33 16	24 6 8 9 11 32 33		
Conditions ¹ adverse to use of site	46 47 48 49 71 54 55	43 46 47 48 49 71 54 55	41 42 63 45 67 50 74 55 76		
¹ Code numbers in columns represent conditions listed on pages _____.					

COMPARISON OF ALTERNATIVE PLAN SITES

Pool MN River Cut 4

Alternative Plan	Selected, NED EQ, MPFW/OG	RFFP			
Placement Site No.	MN.03	MN.14			
Site Capacity (cy)	178,000	1,280,000			
Site Acreage	7	23			
Site Height (ft)	5	35			
Potential Beneficial use removal (cy)	No Demand Identified	No Demand Identified			
Conditions ¹ favoring use of site	24 25 29 30 11? 32 33 16	2 24 5 10 12 33 16			
Conditions ¹ adverse to use of site	41 42 63 46 47 48 74 55	41 43 46 47 68 69 71 74 55			

¹ Code numbers in columns represent conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool MN River Cut 5

Alternative Plan	Selected, EQ, MPFW/OG	NEO	RFFP		
Placement Site No.	MN.03	MN.26	MN.14		
Site Capacity (cy)	178,000	73,000	1,280,000		
Site Acreage	7	3	23		
Site Height (ft)	5	15	35		
Potential Beneficial use removal (cy)	No Demand Identified	No Demand Identified	No Demand Identified		
Conditions ¹ favoring use of site	24 25 29 30 11? 32 33 16	21 22 24 25 6 27 28 9 11 32 33 16	2 24 5 10 12 33 16		
Conditions ¹ adverse to use of site	41 42 63 46 47 48 74 55	43 50 54 55	41 43 46 47 68 69 71 74 55		

¹ Code numbers in columns represent
conditions listed on pages ____.

Key to Conditions Used in Site Comparisons

1. Recreation enhancement
 2. Remove from floodplain
 3. Fish and wildlife enhancement
 4. Beneficial use identified
 5. Existing road access
 6. Adjacent to cut
 7. No land acquisition required
 8. Provides flexibility of equipment
 9. Least cost to dredge
 10. No erosion potential
 11. No special construction required
 12. No diking or berming
 13. No water quality concerns
 14. Aesthetic enhancement
 15. Beneficial use on the site
 16. Sufficient capacity on the site
-
21. No adverse impacts on recreation use
 22. Potential for removal from floodplain
 23. No adverse fish and wildlife impacts
 24. Potential for identifying a beneficial user
 25. Road access can be constructed
 26. Within $\frac{1}{2}$ mile of cut (easy reach of cutterhead dredges)
 27. No apparent problem in acquiring land or easement
 28. Slight limitation on equipment choice
 29. Less costly than dredging to most other sites
 30. Some erosion potential
 31. (Unused)
 32. Berming required
 33. No water quality concern expected
 34. (Unused)
 35. Know of area where material can be put to beneficial use
 36. Sufficient capacity site but less impact if beneficial use demand is developed

PRECEDING PAGE BLANK-NOT FILLED

41. Some adverse impacts on recreation use
42. In floodplain - no effect on flood flows
43. Some adverse impacts on fish and wildlife
44. No suspected beneficial user can be identified
45. Poor access to the site
46. Within 2 miles of cut (barely within reach of hydraulic dredges)
47. Land or easement acquisition required
48. Equipment choice limited to just a few options
49. More costly than dredging to most of the other sites
50. Severe erosion potential
51. (Unused)
52. Diking required
53. Suspected water quality concerns
54. Some aesthetic problems
55. Potential market for beneficial use suspected but not identified
56. Sufficient capacity on site with removal by identified users

61. Severe adverse impacts on recreation use
62. Placement would cause suspected constriction on flood flows
63. Severe adverse impacts on fish and wildlife
64. No potential for identifying beneficial user
65. No access to the site
66. Beyond 2 miles from cut (cannot be reached directly by cutterhead dredges)
67. Land or easement acquisition required but does not seem likely
68. Severe restrictions on choice of equipment
69. Most costly to dredge
70. Severe erosion potential with severe consequences if failure occurs
71. Special construction required to use the site
72. Berming or diking required with severe consequences if failure occurs
73. Known water quality concerns
74. Adverse aesthetic impacts
75. No potential market for beneficial use
76. Sufficient capacity on site only if potential beneficial use, not now identified, develops

LEGEND

RECOMMENDED CHANNEL MAINTENANCE PLAN

- 5 ————— Dredge cut number
 ————— Location of dredge cut
-  ————— Recommended placement site
- 2 06 T ————— Site number
 3, 4, 5 ————— Special conditions on use
 1 ————— Temporary use site
- Dredge cuts for which site is used
- Parentheses if site is used for placement of material from a cut in another pool

ALTERNATIVE MATERIAL PLACEMENT PLANS

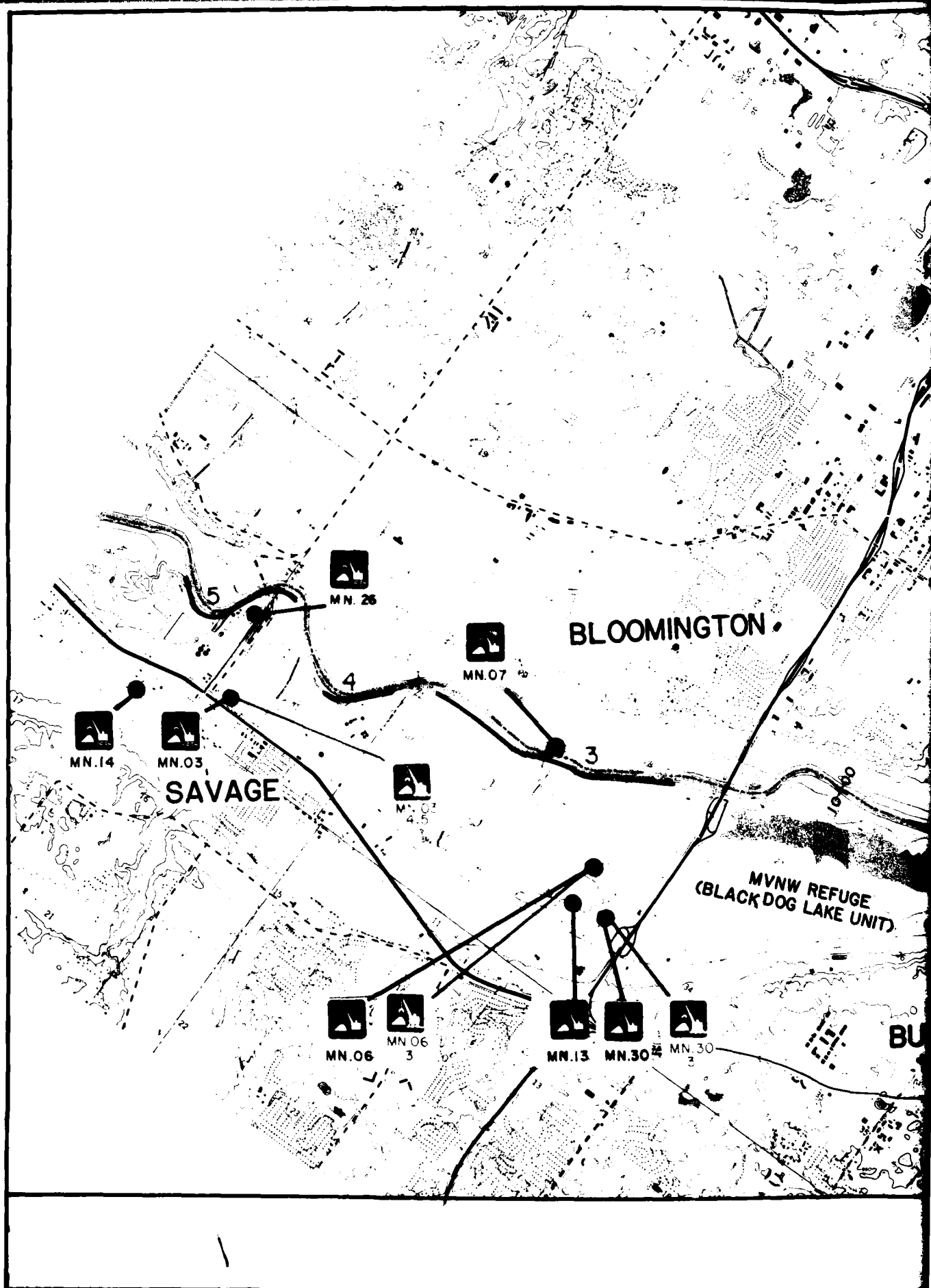
-  ————— Alternative placement site
- 4 09 ————— Site number

POOL MN				
DREDGE CUT	ALTERNATIVE PLACEMENT PLANS			
	MPFW / OG	NED	EQ	RFFP
1	MN.21	MN.27	2.18 / MN.27	MN.11
2	MN.25	MN.25	MN.27	MN.11
3	MN.07	MN.06	MN.30	MN.13
4	MN.03	MN.03	MN.03	MN.14
5	MN.03	MN.26	MN.03	MN.14

M = Most probable future without GREAT
 N = National economic development
 E = Environmental quality
 R = Removal from floodplain

SCALE: 1" = 4,000'

CONTOUR INTERVAL 20 FEET
 NATIONAL GEODETIC VERTICAL DATUM OF 1929



NGTON

MVNW REFUGE
(BLACK DOG LAKE UNIT)

BLACK DOG
POWER
PLANT

BURNSVILLE

MINNESOTA VALLEY NATIONAL
(LONG MEADOW LAKE)

MINNESOTA RIVER



MN. 25

REFUGE



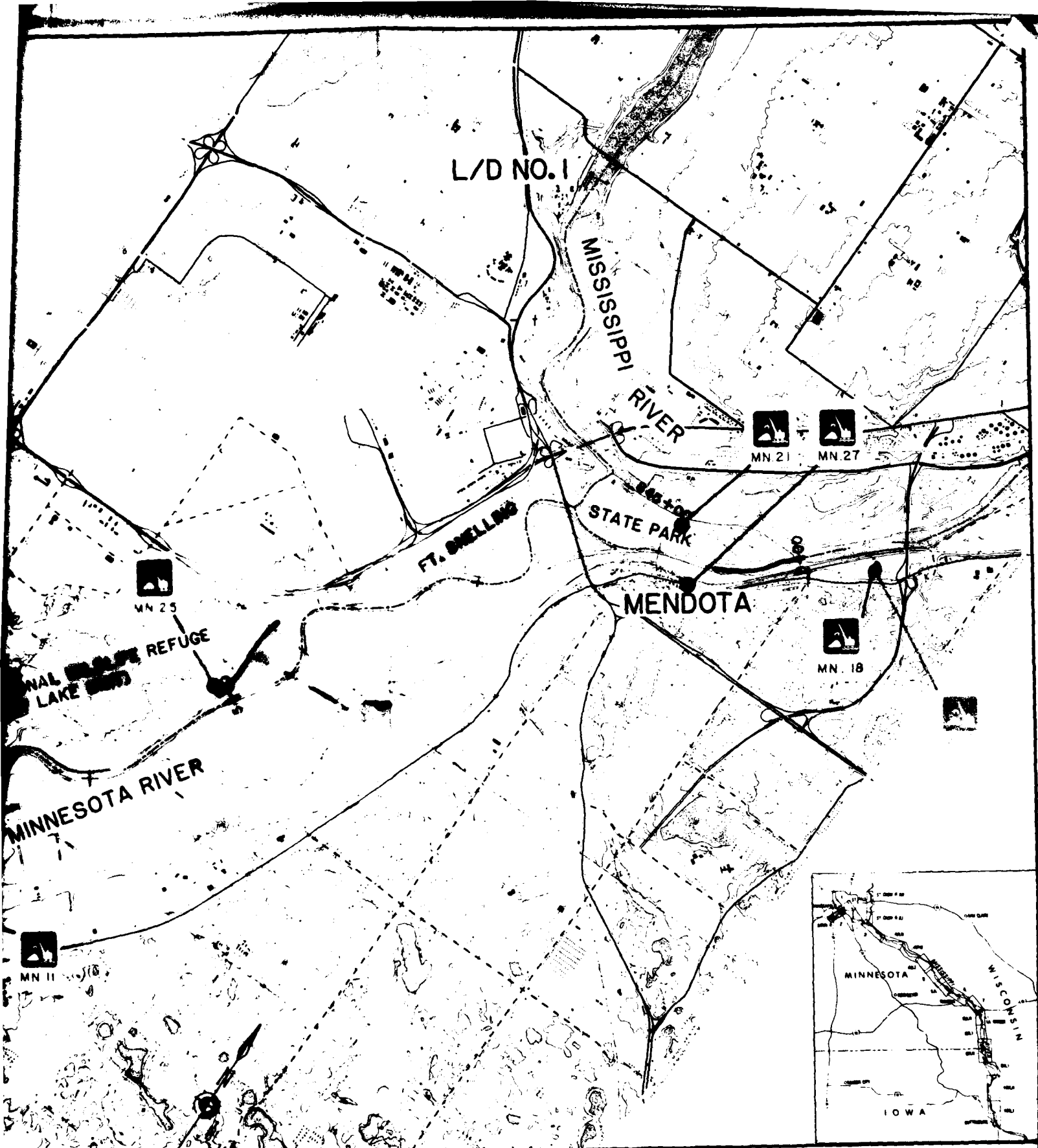
MN. 11



MN. 30

2

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GREAT RIVER ENVIRONMENTAL ACTION TEAM
MINNESOTA RIVER
(MILE 0 TO MILE 15)

3



ST. CROIX RIVER

CHANNEL MAINTENANCE PLAN SUMMARY

POOL St. Croix River

Dredge Cut	MPFAC CY @ 1985-0225	Selected Site	NED Site	EQ Site	RFP Site	MPFAC Site	MPFAC CY @ 1985-2025	Temporary Site
1. Kinnickinnic Bar	461,000	SC.12/SC.13/ SC.16/SC.26/ 3.34	SC.11/SC.13/ SC.14/SC.16/ 3.34/SC.23	2.10	2.10	SC.12/SC.13/ SC.14/SC.16/ 3.34	506,000	-
2. Catfish Bar	44,000	SC.21/SC.27	SC.21	2.10	2.10	SC.21/SC.11	48,500	-
3. Hudson	764,000	SC.01/SC.22/ SC.18/SC.03/ SC.04/SC.05/ SC.06/SC.28/ SC.24	SC.01/SC.07	SC.07/2.10	2.10	SC.03/SC.04/ SC.17/SC.05/ SC.06/SC.07/ SC.18/SC.22/ SC.23	830,000	-
	1,269,000						1,385,000	

SELECTED PLAN SUMMARY

Total Volume Dredged (cy)	-	1,269,000	No. of sites with:	
Beneficial Use (cy) Potential from Selected Sites	-	679,000	Recreation Enhancement	- 14
Total Area (acres)	-	83.5	Cultural Resources Impacts	- 0
			Wetlands Affected:	
			Types 1, 2 (acres)	- 18
			Types 3, 4, 5 (acres)	- 4

Table 2
St. Croix River Dredging Volumes

Item	Cut 1			Cut 2			Cut 3		
	With GREAT	Without GREAT		With GREAT	Without GREAT		With GREAT	Without GREAT	
Cut Name	Kinnickinnic Bar			Catfish Bar			Hudson		
1955 - 1974 average annual dredging volume	18,000	18,000		1,700	1,700		25,800	25,800	
Bend width changes (percent)	-	-		-	-		-	-	
Adjusted average annual volume	18,000	18,000		1,700	1,700		25,800	25,800	
Changes for 1986 - 2000 (percent)	-34	-19		-34	-19		-24 (1)	-9 (1)	
Adjusted average annual volume	11,900	14,600		1,100	1,400		19,600	23,500	
Total volume dredged, 1986 - 2000	178,500	219,000		16,500	21,000		294,000	352,500	
Change for 2001 - 2025 (percent)	-37	-36		-37	-36		-27	-26	
Adjusted average annual volume	11,300	11,500		1,100	1,100		18,800	19,100	
Total volume dredged, 2001 - 2025	282,500	287,500		27,500	27,500		470,000	477,500	
Total volume dredged, 1986 - 2025	461,000	506,500		44,000	48,500		764,000	830,000	
Frequency of dredging (percent)	40	40		5	5		15	15	
Expected number of dredging jobs (1986 - 2025)	16	16		2	2		6	6	
Average dredging volume per job	28,800	31,700		22,000	24,200		127,300	138,300	

Note: All volumes in Cubic Yards
(1) Cut in approach to rigid structure.

DREDGED MATERIAL PLACEMENT SITE

POOL: St. Croix

EXISTING CONDITIONS DESCRIPTION

CUT: 1

SITE: SC.12

SITE: SC.12

Page 1 of 3

CUT LOCATION: 5.8 - 6.2 (Kinnickinnic Bar)

PLACEMENT SITE LOCATION: RM 6.0

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): (approx) 678'
100-year flood: 692.4'
5-year flood: 687.0'
Flat pool: 675.0'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: 500'
Residence: 1,000'
Beneficial Use Site: 0'
Other: None

VEGETATION CHARACTER: Willows, grasses, shrubs.

SITE OWNER: Wisconsin DNR

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Lost
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Shore birds, passerine birds
Socioeconomic: Recreational use, state park development.
Adjacent land use: Navigation channel, backwater.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix

CUT: 1

SITE: SC.12

Page 2 of 3

SITE: SC.12

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 139,900
Area at base (acres): 17
Height (feet): 5
Length (feet): 1,500
Width (feet): 500
Side slope (ratio): recreational beach
Final elevation (feet): 783

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 16/40
Volume dredged per job (cubic yards): 28,800
Beneficial use demand (cubic yards): 140,000
Beneficial Use by: Wisconsin DNR at site
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 95% fine sand
Silt (%): 5%
Other (%):
Contaminants:
Contaminant Source: No Analysis Done

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: No
Revegetation: No
Other: Recreational beach guidelines.
Areas and features protected by erosion control: Adjacent backwater with
opening downstream.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix
CUT: 1
SITE: SC.12

Page 3 of 3

SITE: SC.12

SPECIAL CONDITIONS FOR SITE USE: The site must not form a connection to a private island either by direct placement or secondary movement.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	17	Recreational beach
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Kinnikinnic Bar
POOL: SC
CUT: 1
SITE: SC.12

Frequency: 40 %
16/40 yrs
Volume per job: 28,800 cy

	TYPES OF DREDGES					
	PIPELINE 20 inch				MECHANICAL	
		16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$ 148,000*	\$ 180,000*	\$ 163,000*	\$ 116,000*	\$ 127,000*	\$ 152,000*
Berming Costs	5,000	7,000	8,000	-	-	-
Diking Costs	8,000	7,000	6,000	-	-	-
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Constuction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	148,000	180,000	163,000	116,000	127,000	152,000
Average Annual Costs	59,200	72,000	65,200	46,400	60,800	59,600

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: St. Croix

EXISTING CONDITIONS DESCRIPTION

CUT: 1

SITE: SC.13

SITE: SC.13

Page 1 of 3

CUT LOCATION: 5.8 - 6.2 (Kinnickinnic Bar)

PLACEMENT SITE LOCATION: RM 6.5

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 678' (approx)
100-year flood: 691.4'
5-year flood: 685.0'
Flat pool: 675.0'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: Unknown
Residence: less than 1,000'
Beneficial Use Site: 0'
Other: None

VEGETATION CHARACTER: Willows, grasses, and shrubs.

SITE OWNER: WI DNR

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Lost
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Shorebirds

Socioeconomic: Recreational use, state park development.

Adjacent land use: Navigation channel, Kinnickinnic River.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix
CUT: 1
SITE: SC.13

Page 2 of 3

SITE: SC.13

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards):	75,000
Area at base (acres):	9
Height (feet):	5
Length (feet):	750
Width (feet):	525
Side slope (ratio):	recreational beach
Final elevation (feet):	683

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged:	16/40
Volume dredged per job (cubic yards):	28,800
Beneficial use demand (cubic yards):	75,000
Beneficial Use by:	Wisconsin DNR, on site
Other cuts using sites:	None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 95% fine sand
Silt (%): 5%
Other (%): -
Contaminants:
Contaminant Source: No Analysis Done

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: No
Revegetation: No
Other: Recreational beach guidelines
Areas and features protected by erosion control: Adjacent backwaters
with opening downstream.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix

CUT: 1

SITE: SC.13

Page 3 of 3

SITE: SC.13

SPECIAL CONDITIONS FOR SITE USE: The site must not form a connection to a private island either by direct placement or secondary movement.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	9	Recreational beach
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☐

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Kinnikinnic Bar
POOL: SC
CUT: 1
SITE: SC.13

Frequency: 40 %
16/40 yrs
Volume per job: 28,800 cy

TYPES OF DREDGES				
PIPELINE	16 inch	12 inch	Backhoe	MECHANICAL
20 inch			350 H.P.	700 H.P. 350 H.P. 700 H.P. Clamshell

Basic Dredging Operation	\$ 195,000	\$ 245,000	\$ 285,000	\$ 118,000	\$ 127,000	\$ 152,000	\$ 149,000
Berming Costs	6,000	9,000	11,000	-	-	-	-
Diking Costs	8,000	7,000	6,000	-	-	-	-
Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0	0

Total of GREAT recommended Actions	195,000	245,000	285,000	118,000	127,000	152,000	149,000
Average Annual Costs	78,000	98,000	114,000	47,200	50,800	60,800	59,600

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: St. Croix

EXISTING CONDITIONS DESCRIPTION

CUT: 1

SITE: SC.16

SITE: SC.16

Page 1 of 3

CUT LOCATION: 5.8 - 6.2 (Kinnickinnic Bar)

PLACEMENT SITE LOCATION: RM 0.4

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): (approx) 670'
100-year flood: 692.2'
5-year flood: 684.8'
Flat pool: 675.0'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: Yes

SITE CHARACTER:

% Upland: 0
% Wetland: 0
% Open water: 100

DISTANCE FROM SITE TO:

Open Water: 0'
Wetland: 500'
Residence: 500'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Some aquatic weeds(site is in open water off existing beach)

SITE OWNER: State of Minnesota (river bed)

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: None
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Known mussel bed, fish feeding waterfowl feeding.
Socioeconomic: Recreation
Adjacent land use: Navigation channel, county park, state highway.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix
CUT: 1
SITE: SC.16

Page 2 of 3

SITE: SC.16

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 65,000
Area at base (acres): 2.5
Height (feet): 15
Length (feet): 700
Width (feet): 155
Side slope (ratio): Recreation beach
Final elevation (feet): 685 (approx)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 16/40
Volume dredged per job (cubic yards): 28,800
Beneficial use demand (cubic yards): 65,000
Beneficial Use by: Washington County
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 95% fine sand
Silt (%): 5%
Other (%):
Contaminants:
Contaminant Source: No Analysis Done

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): No

EROSION CONTROL NEEDED:

Riprap: Yes (upstream edge)
Revegetation: None
Other:
Areas and features protected by erosion control: Aquatic habitat downstream,
mussel bed adjacent to site.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix
CUT: 1
SITE: SC.16

Page 3 of 3

SITE: SC.16

SPECIAL CONDITIONS FOR SITE USE: Some means of protecting island from flood
caused erosion is necessary.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	2.5	
Upland altered:	None	
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: .

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Kinnikinnic Bar
POOL: SC
CUT: 1
SITE: SC.16

Frequency: 40%
16/40 yrs
Volume per job: 28,800 cy

	TYPES OF DREDGES					
	PIPELINE			MECHANICAL		
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	Clamshell 350 H.P. 700 H.P.
Basic Dredging Operation	\$ 327,000*	\$ 359,000*	\$ 342,000*	\$ 153,000*	\$ 162,000*	\$ 170,000* \$ 189,000*
Berming Costs (1)	5,000	7,000	8,000	-	-	-
Diking Costs (1)	8,000	7,000	6,000	-	-	-
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	327,000	359,000	342,000	153,000	162,000	170,000 189,000
Average Annual Costs	130,800	143,600	136,800	61,200	64,800	68,000 75,600

*GREAT recommended actions

(1) At. SC.12.

DREDGED MATERIAL PLACEMENT SITE

POOL: St. Croix

EXISTING CONDITIONS DESCRIPTION

CUT: 1

SITE: SC.26

SITE: SC.26

Page 1 of 3

CUT LOCATION: 5.8 - 6.2 (Kinnickinnic Bar)

PLACEMENT SITE LOCATION: RM 0.4

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): (Approx) 675'
100-year flood: 692.2'
5-year flood: 684.8'
Flat pool: 675.0'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 50
% Wetland:
% Open water 50

DISTANCE FROM SITE TO:

Open Water: 0'
Wetland: 300'
Residence: 200'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Sparse grasses

SITE OWNER: Washington County

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Shorebirds

Socioeconomic: Recreational beach

Adjacent land use: Main channel, state highway

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix
CUT: 1
SITE: SC.26

Page 2 of 3

SITE: SC.26

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards):	60,000
Area at base (acres):	5
Height (feet):	10
Length (feet):	1,000
Width (feet):	200
Side slope (ratio):	
Final elevation (feet):	680

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged:	16/40
Volume dredged per job (cubic yards):	28,800
Beneficial use demand (cubic yards):	60,000
Beneficial Use by:	Washington County
Other cuts using sites:	0

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 95%
Silt (%): 5%
Other (%):
Contaminants:
Contaminant Source: No Analysis Done

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes
Hydraulic (in slurry): No

EROSION CONTROL NEEDED:

Riprap: No
Revegetation: No
Other: No
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix
CUT: 1
SITE: SC.26

Page 3 of 3

SITE: SC.26

SPECIAL CONDITIONS FOR SITE USE: Coordination with Washington County on site development is necessary.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	2.5	
Upland altered:	2.5	Recreational beach
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:		

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Kinnikinnic Bar
POOL: SC
CUT: 1
SITE: SC.26

Frequency: 40%
 16/40 yrs
 Volume per job: 28,800 cy

CHANNEL MAINTENANCE PLAN COSTS PER DREDGING JOB

	TYPES OF DREDGES					
	PIPELINE				MECHANICAL	
		20 inch	16 inch	12 inch	Backhoe 350 H.P.	Clamshell 350 H.P. 700 H.P.
Basic Dredging Operation	\$327,000*	\$359,000*	\$342,000*	\$153,000*	\$162,000*	\$ 189,000*
Berming Costs(1)	5,000	7,000	8,000	-	-	-
Diking Costs(1)	8,000	7,000	6,000	-	-	-
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	327,000	359,000	342,000	153,000	162,000	189,000
Average Annual Costs	130,800	143,600	136,800	61,200	64,800	75,600

*GREAT recommended actions

(1) at SC.12

DREDGED MATERIAL PLACEMENT SITE

POOL: St. Croix

EXISTING CONDITIONS DESCRIPTION

CUT: 1

SITE: 3.34

SITE: 3.34

Page 1 of 3

CUT LOCATION: 5.8 - 6.2 (Kinnickinnic Bar)

PLACEMENT SITE LOCATION: RM 811.9

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 705'
100-year flood: 692'
5-year flood: 685'
Flat pool: 675'

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 60
% Wetland: 40
% Open water:

DISTANCE FROM SITE TO:

Open Water: less than 200'
Wetland: 0'
Residence: less than 300'
Beneficial Use Site: 0'
Other: Site is adjacent to rail line.

VEGETATION CHARACTER: Bottomland hardwoods and aquatic vegetation

SITE OWNER: Public

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Fish, waterfowl, furbearers
Socioeconomic: None
Adjacent land use: Railroad and state highway.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix
CUT: 1
SITE: 3.34

Page 2 of 3

SITE: 3.34

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards):	400,000
Area at base (acres):	10
Height (feet):	25
Length (feet):	1,900
Width (feet):	225
Side slope (ratio):	4:1
Final elevation (feet):	730

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged:	16/40
Volume dredged per job (cubic yards):	28,800
Beneficial use demand (cubic yards):	254,000
Beneficial Use by:	Prescott, Washington County *
Other cuts using sites:	Pool 3, cuts 4,5,6,7

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 95% fine sand
Silt (%): 5%
Other (%): -
Contaminants:
Contaminant Source: No Analysis Done

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): No

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: Site is not subject to direct flood flows.
Areas and features protected by erosion control: N/A

* For on-site development

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix
CUT: 1
SITE: 3.34

Page 3 of 3

SITE: 3.34

SPECIAL CONDITIONS FOR SITE USE: Requires special construction to deliver material to site.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	4	4 and 5
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	6	wooded
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Kinnikinnic Bar
POOL: SC
CUT: 1
SITE: 3.34

Frequency: 40%
16/40 yrs
Volume per job: 28,800cy

	TYPES OF DREDGES					
	PIPELINE				MECHANICAL	
		20 inch	16 inch	12 inch	Backhoe 350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$ 453,000*	\$485,000*	\$468,000*	\$ 214,000*	\$235,000*	\$256,000*
Berming Costs(1)	8,000*	8,000*	8,000*	8,000*	8,000	8,000*
Diking Costs(1)	6,000	6,000	6,000	6,000	6,000	6,000
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	461,000	493,000	476,000	222,000	243,000	264,000
Average Annual Costs	184,000	197,200	190,400	88,800	97,200	105,000

*GREAT recommended actions

(1) at 3.34

DREDGED MATERIAL PLACEMENT SITE

POOL: St. Croix

EXISTING CONDITIONS DESCRIPTION

CUT: 2

SITE: SC.21

SITE: SC.21

Page 1 of 3

CUT LOCATION: 11.5 - 12.2 (Catfish Bar)

PLACEMENT SITE LOCATION: RM 13.1

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 680
100-year flood: 692.5
5-year flood: 685.2
Flat pool: 675

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 100
% Wetland:
% Open water:

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: 2 miles
Residence: 500'
Beneficial Use Site: 0'
Other: None

VEGETATION CHARACTER: Sparse willows, grasses, shrubs.

SITE OWNER: City of Lake St. Croix Beach

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Fish spawning and feeding, shorebirds
Socioeconomic: Recreation Beach
Adjacent land use: Navigation channel, residential

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix

CUT: 2

SITE: SC.21

Page 2 of 3

SITE: SC.21

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 85,000
Area at base (acres): 5
Height (feet): 10
Length (feet): 1,450
Width (feet): 150
Side slope (ratio): recreational beach
Final elevation (feet): 690

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 2/40
Volume dredged per job (cubic yards): 22,000
Beneficial use demand (cubic yards): 85,000
Beneficial Use by: public
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):
Silt (%):
Other (%): No Analysis Done
Contaminants:
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): No

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: Recreational beach guidelines
Areas and features protected by erosion control: Downstream aquatic habitat.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix
CUT: 2
SITE: SC.21

Page 3 of 3

SITE: SC.21

SPECIAL CONDITIONS FOR SITE USE: Coordination with City of Lake St. Croix Beach
on further site development.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	1450 ft.	shoreline
Upland altered:	5	recreational beach
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Catfish Bar

POOL: SC

CUT: 2

SITE: SC.21

Frequency: 5%

2/40 yrs

Volume per job: 22,000 cy

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

TYPES OF DREDGES

PIPELINE	MECHANICAL				
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	Clamshell 700 H.P.

Basic Dredging Operation	\$412,000*	\$356,000*	\$325,000*	\$94,000*	\$102,000*	\$121,000*	\$121,000*
Berming Costs	9,000*	8,000 ⁽¹⁾	9,000 ⁽¹⁾	-	-	-	-
Diking Costs	7,000	6,000 ⁽¹⁾	5,000 ⁽¹⁾	-	-	-	-
Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0	0

Total of GREAT recommended Actions	421,000	364,000	334,000	94,000	102,000	121,000	121,000
Average Annual Costs	21,100	18,200	16,700	4,700	5,100	6,100	6,100

*GREAT recommended actions

(1) at SC.11

DREDGED MATERIAL PLACEMENT SITE

POOL: St. Croix

EXISTING CONDITIONS DESCRIPTION

CUT: 2

SITE: SC.27

SITE: SC.27

Page 1 of 3

CUT LOCATION: 11.5-12.2 (Catfish Bar)

PLACEMENT SITE LOCATION: RM 8.4 LB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): (approx) 680'
100-year flood: 692.4'
5-year flood: 685.1'
Flat pool: 675'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 0
% Wetland: 100
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: 0'
Residence: 1,000'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Bottomland hardwoods

SITE OWNER: Minnesota DNR

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Fish spawning, waterfowl nesting, furbearers, raptors.
Socioeconomic: State park
Adjacent land use: Main channel, railroad, creek.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix

CUT: 2

SITE: SC.27

Page 2 of 3

SITE: SC.27

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards):	50,000
Area at base (acres):	2
Height (feet):	20
Length (feet):	325
Width (feet):	325
Side slope (ratio):	
Final elevation (feet):	700

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 2/40
Volume dredged per job (cubic yards): 22,000
Beneficial use demand (cubic yards): 0
Beneficial Use by: No Demand Identified
Other cuts using sites:

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):
Silt (%):
Other (%): No Analysis Done
Contaminants:
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): No (possible for rehandling)

EROSION CONTROL NEEDED:

Riprap: riprap (possibly)
Revegetation: No
Other: Material to be removed for beneficial use.
Areas and features protected by erosion control: Adjacent creek and wetlands.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix
CUT: 2
SITE: SC.27

Page 3 of 3

SITE: SC.27

SPECIAL CONDITIONS FOR SITE USE: Minnesota DNR must be prepared to use the material at Afton State Park when material delivered.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	2	1
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	0	
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:	0	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Catfish Bar
POOL: SC
CUT: 2
SITE: SC.27

Frequency: 5%
2/40 yrs
Volume per job: 22,000 cy

	TYPES OF DREDGES					
	PIPELINE			MECHANICAL		
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	Clamshell 350 H.P. 700 H.P.
Basic Dredging Operation	\$293,000*	\$ 384,000*	\$ 353,000*	\$ 112,000*	\$110,000*	\$143,000* \$140,000*
Berming Costs(1)	5,000	8,000	9,000	-	-	-
Diking Costs(1)	7,000	6,000	5,000	-	-	-
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	293,000	384,000	353,000	112,000	110,000	143,000 140,000
Average Annual Costs	14,700	19,200	17,700	5,600	5,500	7,200 7,000

*GREAT recommended actions

(1) at SC.11

DREDGED MATERIAL PLACEMENT SITE

POOL: St. Croix

EXISTING CONDITIONS DESCRIPTION

CUT: 3

SITE: SC.01

SITE: SC.01

Page 1 of 3

CUT LOCATION: 16.2-17.8 (Hudson)

PLACEMENT SITE LOCATION: RM 16.6 LB

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 670 (approx)

100-year flood: 692.6

5-year flood: 685.4

Flat pool: 675

FLOOD STAGE FACTORS:

Site within floodplain: Yes

Site within floodway (effective flow area): Yes

Site below ordinary high water mark: Yes

SITE CHARACTER:

% Upland: 0

% Wetland: 0

% Open water: 100

DISTANCE FROM SITE TO:

Open Water: 0'

Wetland: Mile

Residence: 1,000'

Beneficial Use Site: 0'

Other: 0'

VEGETATION CHARACTER: Sparse aquatic vegetation

SITE OWNER: State of Wisconsin

SPECIAL CONCERNS:

Endangered species habitat: None

Historical or archeological value: Lost

Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Some fish and waterfowl use

Socioeconomic: Recreation area

Adjacent land use: Navigation channel, backwater

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix
CUT: 3
SITE: SC.01

Page 2 of 3

SITE: SC.01

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): Minimal
Area at base (acres): 7
Height (feet): Minimal
Length (feet): 1000
Width (feet): 300
Side slope (ratio): 4:1
Final elevation (feet): 695

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 6/40
Volume dredged per job (cubic yards): 127,300
Beneficial use demand (cubic yards): Minimal
Beneficial Use by: City of Hudson
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):
Silt (%):
Other (%): No Analysis Done
Contaminants:
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EKOSION CONTROL NEEDED:

Riprap: Yes (Site is to be dike extension)
Revegetation: None
Other:
Areas and features protected by erosion control: Adjacent backwaters
with downstream entrance

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix
CUT: 3
SITE: SC.01

Page 3 of 3

SITE: SC.01

SPECIAL CONDITIONS FOR SITE USE:

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	7	
Upland altered:	None	
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☐

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Hudson
POOL: SC
CUT: 3
SITE: SC.01

Frequency: 15%
6/40 yrs
Volume per job: 127,300cy

PIPELINE	TYPES OF DREDGES				
	20 inch	16 inch	12 inch	MECHANICAL	
				Backhoe 350 H.P.	Clamshell 700 H.P.

Basic Dredging Operation	\$ 571,000*	\$ 688,000*	\$ 736,000*	\$ 466,000*	\$ 514,000*	\$ 601,000*	\$ 582,000*
Berming Costs	17,000	25,000	40,000	-	-	-	-
Diking Costs	12,000	11,000	10,000	-	-	-	-
Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0	0
Total of GREAT recommended Actions	571,000	688,000	736,000	466,000	514,000	601,000	582,000
Average Annual Costs	85,700	103,200	110,400	69,900	77,100	90,200	87,300

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

EXISTING CONDITIONS DESCRIPTION

POOL: St. Croix
CUT: 3
SITE: SC.22

SITE: SC.22

Page 1 of 3

CUT LOCATION: 16.2-17.8 (Hudson)

PLACEMENT SITE LOCATION: RM 17.0 LB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 680'
100-year flood: 692.6'
5-year flood: 684.4'
Flat pool: 675'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: 50'
Wetland: 2,500'
Residence: Adjacent
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Weeds and small trees (open industrial area)

SITE OWNER: City of Hudson

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Old factory site

Adjacent land use: Commercial, industrial, navigation channel,
recreation harbor, commercial development.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix

CUT: 3

SITE: SC.22

Page 2 of 3

SITE: SC.22

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 75,000

Area at base (acres): 3

Height (feet): 15

Length (feet): 550

Width (feet): 250

Side slope (ratio): Appropriate for recreation beach

Final elevation (feet): 690

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 6/40

Volume dredged per job (cubic yards): 127,300

Beneficial use demand (cubic yards): Uncertain

Beneficial Use by: City of Hudson

Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):

Silt (%):

Other (%): No Analysis Done

Contaminants:

Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semi-dry): X

Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None

Revegetation: None

Other:

Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix
CUT: 3
SITE: SC.22

Page 3 of 3

SITE: SC.22

SPECIAL CONDITIONS FOR SITE USE: Development of site for recreation should be coordinated with the city of Hudson and in compliance with the guidelines of the Lower St. Croix Management Commission.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	1½	Abandoned industrial
Upland altered:	1½	
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Hudson
POOL: SC
CUT: 3
SITE: SC.22

Frequency: 15%
6/40 yrs
Volume per job: 127,300 cy

TYPES OF DREDGES

PIPELINE	MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.
				700 H.P.
				Clamshell 700 H.P.

Basic Dredging Operation	\$ 1,025,000*	\$ 958,000*	\$ 1,571,000*	\$ 621,000*	\$ 694,000*	\$ 784,000*	\$ 782,000*
Berming Costs	21,000*	28,000*	39,000*	39,000*	39,000*	39,000*	39,000*
Diking Costs	12,000	11,000	10,000	10,000	10,000	10,000	10,000
Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0	0

Total of GREAT recommended Actions	1,046,000	986,000	1,610,000	660,000	733,000	823,000	821,000
Average Annual Costs	156,900	147,900	241,500	99,000	110,000	123,500	123,200

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: St. Croix

EXISTING CONDITIONS DESCRIPTION

CUT: 3

SITE: SC.18

SITE: SC.18

Page 1 of 3

CUT LOCATION: 16.2 - 17.8 (Hudson)

PLACEMENT SITE LOCATION: RM 182 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 675

100-year flood: 692.6

5-year flood: 685.61

Flat pool: 6751

FLOOD STAGE FACTORS:

Site within floodplain: Yes

Site within floodway (effective flow area): Yes

Site below ordinary high water mark: Yes

SITE CHARACTER:

% Upland: 33

% Wetland:

% Open water: 66

DISTANCE FROM SITE TO:

Open Water: 0'

Wetland: 800'

Residence: ½ mile

Beneficial Use Site: 0'

Other:

VEGETATION CHARACTER: Sparse Willows

SITE OWNER: ?

SPECIAL CONCERNS:

Endangered species habitat: None

Historical or archeological value: Unknown

Other:

EXISTING USE OF SITE:

Fish and Wildlife: Shorebirds, fish

Socioeconomic: recreational use

Adjacent land use: main channel, railroad

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix
CUT: 3
SITE: SC.18

Page 2 of 3

SITE: SC.18

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 45,000
Area at base (acres): 6
Height (feet): 5
Length (feet): 500
Width (feet): 500
Side slope (ratio): recreational beach
Final elevation (feet): 680

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 6/40
Volume dredged per job (cubic yards): 127,300
Beneficial use demand (cubic yards): 0
Beneficial Use by: No Demand Identified
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):
Silt (%): No Analysis Done
Other (%):
Contaminants:
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): Possible

EROSION CONTROL NEEDED:

Riprap: No
Revegetation: No (beach development)
Other:
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix
CUT: 3
SITE: SC.18

Page 3 of 3

SITE: SC.18

SPECIAL CONDITIONS FOR SITE USE:

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	4	
Upland altered:	2	sand bar
Endangered Species habitat lost:		
Side channels blocked:		
Other:		

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Hudson
POOL: SC
CUT: 3
SITE: SC.18

Frequency: 15%
6/40 yrs
Volume per job: 127,300 cy

	TYPES OF DREDGES					
	PIPELINE				MECHANICAL	
		16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	350 H.P. 700 H.P. Clamshell
Basic Dredging Operation	\$1,164,000*	\$1,343,000*	\$1,285,000*	\$540,000*	\$522,000*	\$616,000* \$661,000*
Berming Costs(1)	17,000	23,000	30,000	-	-	-
Diking Costs(1)	12,000	11,000	10,000	-	-	-
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	1,164,000	1,343,000	1,285,000	540,000	522,000	616,000 661,000
Average Annual Costs	174,600	201,500	192,800	81,000	78,300	92,400 99,200

*GREAT recommended actions
(1) at SC.01

DREDGED MATERIAL PLACEMENT SITE

EXISTING CONDITIONS DESCRIPTION

POOL: St. Croix
CUT: 3
SITE: SC.03

SITE: SC.03

Page 1 of 3

CUT LOCATION: 16.2 - 17.8 (Hudson)

PLACEMENT SITE LOCATION: RM 16.9 LB

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 675'
100-year flood: 692.6'
5-year flood: 684.4'
Flat pool: 675'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 100
% Wetland:
% Open water:

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: 3000'
Residence: 2000'
Beneficial Use Site: 200'
Other:

VEGETATION CHARACTER: Willows

SITE OWNER: State of Wisconsin

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Recreation island

Adjacent land use: Dike, recreational harbor

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix

CUT: 3

SITE: SC.03

Page 2 of 3

SITE: SC.03

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): Minimal

Area at base (acres):

Height (feet):

Length (feet):

Width (feet): (only enough material allowed on site to kill

Side slope (ratio): back vegetation on island)

Final elevation (feet):

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 6/40

Volume dredged per job (cubic yards): 127,300

Beneficial use demand (cubic yards): uncertain

Beneficial Use by: City of Hudson

Other cuts using sites: 0

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):

Silt (%):

Other (%): No Analysis Done

Contaminants:

Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes

Hydraulic (in slurry): No (Site not to be expanded)

EROSION CONTROL NEEDED:

Riprap: No

Revegetation: No

Other:

Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix
CUT: 3
SITE: SC.03

Page 3 of 3

SITE: SC.03

SPECIAL CONDITIONS FOR SITE USE: Place material on site sufficient to kill
or bury emerging willow and weeds on island.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	1	dredged material island
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Hudson
POOL: SC
CUT: 3
SITE: SC.03

Frequency: 15%
6/40 yrs
Volume per job: 127,300 cy

	TYPES OF DREDGES					
	PIPELINE			MECHANICAL		
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	Clamshell 350 H.P. 700 H.P.
Basic Dredging Operation	\$ 574,000*	\$ 692,000*	\$ 742,000*	\$ 466,000*	\$ 514,000*	\$ 601,000* \$ 582,000*
Berming Costs	18,000	25,000	41,000	-	-	-
Diking Costs	12,000	11,000	10,000	-	-	-
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	574,000	692,000	742,000	466,000	514,000	601,000 582,000
Average Annual Costs	86,100	103,800	111,300	69,900	77,100	90,200 87,300

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: St. Croix
CUT: 3
SITE: SC.04

EXISTING CONDITIONS DESCRIPTION

SITE: SC.04

Page 1 of 3

CUT LOCATION: 16.2 - 17.8 (Hudson)

PLACEMENT SITE LOCATION: RM 17.0 LB

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 675'
100-year flood: 692.6'
5-year flood: 684.4'
Flat pool: 675

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 100
% Wetland:
% Open water:

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: 3000'
Residence: 2000'
Beneficial Use Site: 1000
Other:

VEGETATION CHARACTER: Willows

SITE OWNER: State of Wisconsin

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Recreational island

Adjacent land use: Recreation harbor, main channel

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix

CUT: 3

SITE: SC.04

Page 2 of 3

SITE: SC.04

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): Minimal

Area at base (acres):

Height (feet):

Length (feet): (only enough material allowed on site to kill back

Width (feet): vegetation on island.

Side slope (ratio):

Final elevation (feet):

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 6/40

Volume dredged per job (cubic yards): 127,300

Beneficial use demand (cubic yards): uncertain

Beneficial Use by: City of Hudson

Other cuts using sites: 0

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):

Silt (%):

Other (%): No Analysis Done

Contaminants:

Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes

Hydraulic (in slurry): No (Site not to be expanded)

EROSION CONTROL NEEDED:

Riprap: No

Revegetation: No

Other:

Areas and features protected by erosion control: N.A

DREDGED MATERIAL PLACEMENT SITE

POOL: St. Croix

CUT: 3

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

SITE: SC.04

(Continued from previous page)

Page 3 of 3

SITE: SC.04

SPECIAL CONDITIONS FOR SITE USE: Place material on site sufficient to kill or bury emerging willow and weeds on island.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	None	
Endangered Species habitat lost:	1	dredged material island
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Hudson

POOL: SC

CUT: 3

SITE: SC.04

Frequency: 15 %

6/40 yrs

Volume per job: 127,300 cy

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

PIPELINE	TYPES OF DREDGES				
	20 inch	16 inch	12 inch	MECHANICAL	
				Backhoe 350 H.P.	Clamshell 700 H.P.

Basic Dredging Operation	\$ 552,000*	\$ 663,000*	\$ 707,000*	\$ 466,000*	\$ 514,000*	\$ 601,000*	\$ 582,000
Berming Costs	17,000	24,000	39,000	-	-	-	-
Diking Costs	12,000	11,000	10,000	-	-	-	-
Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0	0

Total of GREAT recommended Actions	552,000	663,000	707,000	466,000	514,000	601,000	582,000
Average Annual Costs	82,800	99,500	106,100	69,900	77,100	90,200	87,300

*GREAT recommended actions

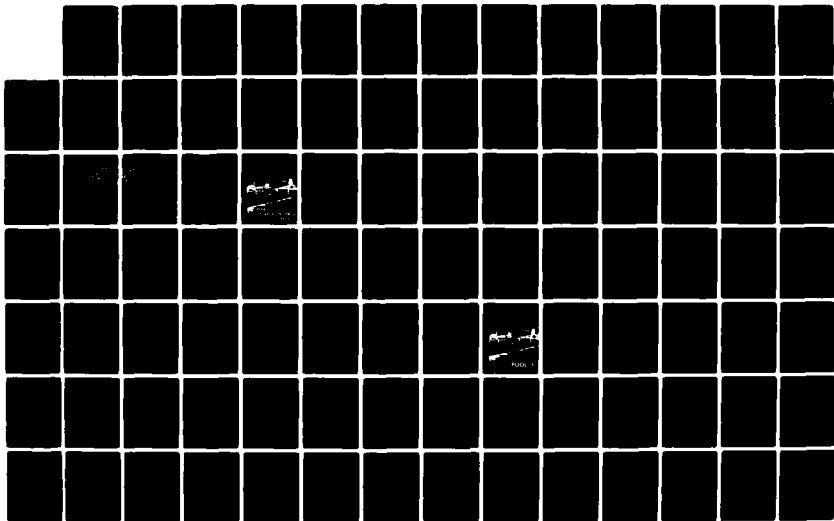
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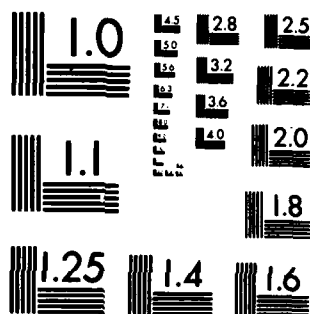
GREAT I STUDY OF THE UPPER MISSISSIPPI RIVER TECHNICAL
APPENDICES VOLUME B..(U) GREAT RIVER ENVIRONMENTAL
ACTION TEAM SEP 80

2/4

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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

DREDGED MATERIAL PLACEMENT SITE

POOL: St. Croix

EXISTING CONDITIONS DESCRIPTION

CUT: 3

SITE: SC.05

SITE: SC.05

Page 1 of 3

CUT LOCATION: 16.2 - 17.8 (Hudson)

PLACEMENT SITE LOCATION: RM 17.1 LB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 675'
100-year flood: 692.6'
5-year flood: 684.4'
Flat pool: 675'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 100
% Wetland:
% Open water:

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: 3,000'
Residence: 2,000'
Beneficial Use Site: 1,500'
Other:

VEGETATION CHARACTER: Willows

SITE OWNER: State of Wisconsin

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Recreation island

Adjacent land use: Recreation harbor, main channel

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix
CUT: 3
SITE: SC.05

Page 2 of 3

SITE: SC.05

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): Minimal

Area at base (acres):

Height (feet):

Length (feet):

Width (feet):

Side slope (ratio):

Final elevation (feet):

Only enough material allowed on site to
kill back vegetation on island.

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 6/40

Volume dredged per job (cubic yards): 127,300

Beneficial use demand (cubic yards): Uncertain

Beneficial Use by: City of Hudson

Other cuts using sites: 0

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):

Silt (%):

Other (%): No Analysis Done

Contaminants:

Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes

Hydraulic (in slurry): No (Site not to be expanded)

EROSION CONTROL NEEDED:

Riprap: No

Revegetation: No

Other:

Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix
CUT: 3
SITE: SC.05

Page 3 of 3

SITE: SC.05

SPECIAL CONDITIONS FOR SITE USE: Place material on site sufficient to kill or bury emerging willow and weeds on island.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	2	Dredged material island
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:		

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Hudson
POOL: SC
CUT: 3
SITE: SC.05

Frequency: 15 %
6/40 yrs
Volume per job: 127,200 cy

PIPELINE	TYPES OF DREDGES				
	20 inch	16 inch	12 inch	MECHANICAL	
				Backhoe 350 H.P.	Clamshell 700 H.P.

Basic Dredging Operation	\$ 542,000*	\$ 650,000*	\$ 690,000*	\$ 466,000*	\$ 514,000*	\$ 601,000*	\$ 582,000*
Berming Costs	16,000	23,000	38,000	-	-	-	-
Diking Costs	12,000	11,000	10,000	-	-	-	-
Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0	0
Total of GREAT recommended Actions	542,000	60,000	690,000	466,000	514,000	601,000	582,000
Average Annual Costs	81,300	97,500	103,500	69,900	77,100	90,200	87,300

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

EXISTING CONDITIONS DESCRIPTION

POOL: St. Croix

CUT: 3

SITE: SC.06

SITE: SC.06

Page 1 of 3

CUT LOCATION: 16.2 - 17.8 (Hudson)

PLACEMENT SITE LOCATION: RM 17.2 LB

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 675'
100-year flood: 692.6'
5-year flood: 684.4'
Flat pool: 675'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 100
% Wetland:
% Open water:

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: 3,000'
Residence: 2,000'
Beneficial Use Site: 200'
Other:

VEGETATION CHARACTER: Willows

SITE OWNER: State of Wisconsin

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Recreation island

Adjacent land use: Recreational harbor, main channel

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix

CUT: 3

SITE: SC.06

Page 2 of 3

SITE: SC.06

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): Minimal

Area at base (acres):

Height (feet):

Length (feet):

Width (feet):

Side slope (ratio):

Final elevation (feet):

} Only enough material allowed on site to kill
back vegetation on island.

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 6/40

Volume dredged per job (cubic yards): 127,300

Beneficial use demand (cubic yards): Uncertain

Beneficial Use by: City of Hudson

Other cuts using sites: 0

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):

Silt (%):

Other (%): No Analysis Done

Contaminants:

Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes

Hydraulic (in slurry): No (Site not to be expanded.)

EROSION CONTROL NEEDED:

Riprap: No

Revegetation: No

Other:

Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix
CUT: 3
SITE: SC.06

Page 3 of 3

SITE: SC.06

SPECIAL CONDITIONS FOR SITE USE: Place material on site sufficient to kill or bury emerging willow and weeds on island.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	3	dredged material island
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:		

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Hudson
POOL: SC
CUT: 3
SITE: SC.06

Frequency: 15 %
6/40 yrs
Volume per job: 127,300 cy

	TYPES OF DREDGES						
	PIPELINE			MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$ 571,000*	\$ 688,000*	\$ 736,000*	\$ 466,000*	\$ 514,000*	\$ 601,000*	\$ 582,000*
Berming Costs	17,000	25,000	40,000	-	-	-	-
Diking Costs	12,000	11,000	10,000	-	-	-	-
% Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0	0
Total of GREAT recommended Actions	571,000	688,000	736,000	466,000	514,000	601,000	582,000
Average Annual Costs	85,700	103,200	110,400	69,900	77,100	90,200	87,300

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: St. Croix

EXISTING CONDITIONS DESCRIPTION

CUT: 3

SITE: SC.28

SITE: SC.28

Page 1 of 3

CUT LOCATION: 16.2 - 17.8 (Hudson)

PLACEMENT SITE LOCATION: RM 17.8 LB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980):
100-year flood: 692.7'
5-year flood: 685.5'
Flat pool: 675'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 100
% Wetland:
% Open water:

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: 1,000'
Residence: 2,000'
Beneficial Use Site: 3,000'
Other:

VEGETATION CHARACTER: Willows

SITE OWNER: State of Wisconsin

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Recreation island

Adjacent land use: Main channel, railroad.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix
CUT: 3
SITE: SC.28

Page 2 of 3

SITE: SC.28

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): Minimal

Area at base (acres):

Height (feet):

Length (feet):

Width (feet):

Side slope (ratio):

Final elevation (feet):

Only enough material allowed on site to kill
back vegetation on island.

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 6/40

Volume dredged per job (cubic yards): 127,300

Beneficial use demand (cubic yards): Uncertain

Beneficial Use by: City of Hudson

Other cuts using sites: 0

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):

Silt (%):

Other (%): No Analysis Done

Contaminants:

Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes

Hydraulic (in slurry): No (Site not to be expanded)

EROSION CONTROL NEEDED:

Riprap: No

Revegetation: No

Other:

Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix
CUT: 3
SITE: SC.28

Page 3 of 3

SITE: SC.28

SPECIAL CONDITIONS FOR SITE USE: Place material on site sufficient to kill
or bury emerging willow and weeds on island.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	4	dredged material disposal
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:		

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Hudson
POOL: SC
CUT: 3
SITE: SC.28

Frequency: 15%
6/40 yrs
Volume per job: 127,300 cy

	TYPES OF DREDGES					
	PIPELINE				MECHANICAL	
		20 inch	16 inch	12 inch	Backhoe 350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$1,039,000*	\$1,378,000*	\$1,319,000*	\$540,000*	\$522,000*	\$616,000*
Berming Costs (1)	21,000	23,000	39,000	-	-	-
Diking Costs (1)	12,000	11,000	10,000	-	-	-
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	1,039,000	1,378,000	1,319,000	540,000	522,000	616,000
Average Annual Costs	155,900	206,700	197,900	81,000	78,300	99,200

*GREAT recommended actions

(1) At SC.01.

DREDGED MATERIAL PLACEMENT SITE

EXISTING CONDITIONS DESCRIPTION

POOL: St. Croix

CUT: 3

SITE: SC.24

Page 1 of 3

SITE: SC.24

CUT LOCATION: 16.2 - 17.8 (Hudson)

PLACEMENT SITE LOCATION: RM 21.8 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 695'
100-year flood: 693.0'
5-year flood: 685.7'
Flat pool: 675'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 40
% Wetland: 60
% Open water:

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: 0'
Residence: 100'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Cattails, weeds, willows.

SITE OWNER: Private

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Fish spawning and feeding, waterfowl nesting, passerine birds.
Socioeconomic: Commercial-industrial fringe

Adjacent land use: Substation sewage treatment facility, power plant, urban development.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: St. Croix

CUT: 3

SITE: SC.24

Page 2 of 3

SITE: SC.24

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 500,000
Area at base (acres): 16
Height (feet): 20
Length (feet): 900
Width (feet): 900
Side slope (ratio): 715
Final elevation (feet):

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 6/40
Volume dredged per job (cubic yards): 127,300
Beneficial use demand (cubic yards): Uncertain
Beneficial Use by: No Demand Identified
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):
Silt (%):
Other (%): No Analysis Done
Contaminants:
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes
Hydraulic (in slurry): No (possibly for rehandling)

EROSION CONTROL NEEDED:

Riprap: Yes
Revegetation: None
Other: None
Areas and features protected by erosion control: Adjacent wetlands.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: St. Croix
CUT: 3
SITE: SC.24

Page 3 of 3

SITE: SC.24

SPECIAL CONDITIONS FOR SITE USE: Industrial Development may occur.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	16	1 and 3
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	None	
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:		

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Hudson
POOL: SC
CUT: 3
SITE: SC.24

Frequency: 15%
6/40 yrs
Volume per job: 127,200 cy

TYPES OF DREDGES				
PIPELINE	MECHANICAL			
	20 inch	16 inch	12 inch	Clamshell
			Backhoe 350 H.P.	700 H.P. 350 H.P. 700 H.P.

Basic Dredging Operation	\$ 1,678,000*	\$ 1,892,000*	\$ 1,834,000*	\$ 796,000*	\$ 809,000*	\$ 875,000*	\$ 906,000*
Berming Costs(1)	17,000	23,000	39,000	-	-	-	-
Diking Costs(1)	12,000	11,000	10,000	-	-	-	-
Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0	0
Special Construction(2)	39,000*	39,000	39,000*	39,000*	39,000*	39,000*	39,000*
Land Acquisition	0	0	0	0	0	0	0
Total of GREAT recommended Actions	1,717,000	1,931,000	1,873,000	835,000	848,000	914,000	945,000
Average Annual Costs	257,600	289,700	281,000	125,300	127,200	137,100	141,800

*GREAT recommended actions

- (1) at SC.01
(2) Berming at SC.24

COMPARISON OF ALTERNATIVE PLAN SITES

Pool St. Croix Cut 1

Alternative Plan	MPFW/OG, Selected, NED ^{2/}	Selected, NED, MPFW/OG	Selected, NED, MPFW/OG	Selected	NED ^{3/} , MPFW/OG
Placement Site No.	SC.12, 13	SC.16	3.34	SC.26	SC.14, 15
Site Capacity (cy)	139,900/75,000	65,000	400,000	60,000	215,000
Site Acreage	17/9	25	10	5	9
Site Height (ft)	5/5	15	15	10	15
Potential Beneficial use removal (cy)	214,900	65,000	400,000	60,000	215,000
Conditions ¹ favoring use of site	1	1	1	1	4
	4	4	2	4	26
	6	27	4	5	27
	27	11	5	27	28
	8	12	27	11	29
	9	33	10	32	11
	11	15	12	33	32
	32		33	15	33
	33		15		
	15				
Conditions ¹ adverse to use of site	62	62	63	42	61
	43	43	66	43	42
	45	65	68	66	43
	50	66	69	68	65
	54	48	71	49	50
	76	49	54	50	74
		50	56	54	75
		54		76	76
		76			
<u>2/</u> SC.13 only			<u>3/</u> SC.14 only		
¹ Code numbers in columns represent conditions listed on pages ____.					

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COMPARISON OF ALTERNATIVE PLAN SITES - Continued

Pool St. Croix Cut 1

Alternative Plan	NED	NED	EQ, RFFP		
Placement Site No.	SC.11	SC.23*	2.10		
Site Capacity (cy)	30,000	85,000	1,300,000		
Site Acreage	2	5	43		
Site Height (ft)	10	10	25		
Potential Beneficial use removal (cy)	30,000	85,000	1,900,000		
Conditions ¹ favoring use of site	1 4 5 27 11 32 33	4 27 12 33 15	24 25 11 32 33 16		
Conditions ¹ adverse to use of site	42 43 66 68 69 50 74 75 76	61 62 43 65 66 48 49 70 71 54 76	61 62 63 66 47 48 49 50 74 55		

*Potential de-
velopment of
highway bridge

¹ Code numbers in columns represent
conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool St. Croix Cut 2

Alternative Plan	Selected, NED, MPFW/OG	Selected	EQ, RFFP	MPFW/OG	
Placement Site No.	SC.21	SC.27	2.10	SC.11	
Site Capacity (cy)	85,000	50,000	1,300,000	300,000	
Site Acreage	5	2	43	2	
Site Height (ft)	10	20	25	10	
Potential Beneficial use removal (cy)	85,000	uncertain	1,900,000	All material	
Conditions ¹ favoring use of site	1 4 5 27 28 29 11 32 33 15 16	24 25 27 30 11 12 33 16	24 25 28 29 11 32 33 16	1 4 25 26 27 28 9 11 32 33 15 16	
Conditions ¹ adverse to use of site	42 43 46 50 54	41 42 43 66 68 49 74 55	61 62 63 46 47 50 74 55	62 43 50 74	

¹ Code numbers in columns represent
conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool St. Croix Cut 3

Alternative Plan	Selected, MPFW/OG	Selected, NED, MPFW/OG	Selected, MPFW/OG	Selected, MPFW/OG	Selected
Placement Site No.	SC.03/04/05/06	SC.01	SC.22	SC.18	SC.28
Site Capacity (cy)	Minimal	500,000	75,000	45,000	Minimal
Site Acreage	7	7	3	6	4
Site Height (ft)	0 - 5	20	15	5	0 - 5
Potential Beneficial use removal (cy)	uncertain	500,000	uncertain	0	uncertain
Conditions ¹ favoring use of site	1 4 6 27 11 12 33 15	1 3 4 6 7 33 15 16	1 23 24 5 27 30 11 32 33	1 27 11 12 33	1 4 6 27 11 12 33 15
Conditions ¹ adverse to use of site	42 43 65 48 49 50 54 76	42 65 48 69 70 71 72 54	42 66 48 49 54 55 56	62 43 44 65 46 48 49 50 54 75 76	42 43 65 48 49 50 54 76

¹ Code numbers in columns represent conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES - Continued

Pool St. Croix Cut 3

Alternative Plan	Selected	NED, EQ, MPFW/OG	EQ, RFFP	MPFW/OG	MPFW/OG
Placement Site No.	SC.24	SC.07	2.10	SC.17	SC.23*
Site Capacity (cy)	500,000	233,000	1,300,000	50,000	85,000
Site Acreage	16	12.5	43	6	5
Site Height (ft)	20	15	25	15	10
Potential Beneficial use removal (cy)	uncertain	233,000	1,900,000	0	85,000
Conditions ¹ favoring use of site	24 25 30 11 12 33 16	3 4 25 26 27 30 12 33 15	24 25 11 32 33 16	1 4 26 27 28 29 11 12 33	4 27 12 33 15
Conditions ¹ adverse to use of site	41 62 43 66 47 68 49 54 55	41 42 48 49 71 54 76	61 62 63 66 47 48 49 50 74 55	62 43 65 50 54 75 76	61 62 43 65 66 48 49 70 71 54 76
¹ Code numbers in columns represent conditions listed on pages _____.					*Potential development of highway bridge
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Key to Conditions Used in Site Comparisons

1. Recreation enhancement
2. Remove from floodplain
3. Fish and wildlife enhancement
4. Beneficial use identified
5. Existing road access
6. Adjacent to cut
7. No land acquisition required
8. Provides flexibility of equipment
9. Least cost to dredge
10. No erosion potential
11. No special construction required
12. No diking of berming
13. No water quality concerns
14. Aesthetic enhancement
15. Beneficial use on the site
16. Sufficient capacity on the site

21. No adverse impacts on recreation use
22. Potential for removal from floodplain
23. No adverse fish and wildlife impacts
24. Potential for identifying a beneficial user
25. Road access can be constructed
26. Within $\frac{1}{2}$ mile of cut (easy reach of cutterhead dredges)
27. No apparent problem in acquiring land or easement
28. Slight limitation on equipment choice
29. Less costly than dredging to most other sites
30. Some erosion potential
31. (Unused)
32. Berming required
33. No water quality concern expected
34. (Unused)
35. Know of area where material can be put to beneficial use
36. Sufficient capacity site but less impact if beneficial use demand is developed

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41. Some adverse impacts on recreation use
42. In floodplain - no effect on flood flows
43. Some adverse impacts on fish and wildlife
44. No suspected beneficial user can be identified
45. Poor access to the site
46. Within 2 miles of cut (barely within reach of hydraulic dredges)
47. Land or easement acquisition required
48. Equipment choice limited to just a few options
49. More costly than dredging to most of the other sites
50. Severe erosion potential
51. (Unused)
52. Diking required
53. Suspected water quality concerns
54. Some aesthetic problems
55. Potential market for beneficial use suspected but not identified
56. Sufficient capacity on site with removal by identified users

61. Severe adverse impacts on recreation use
62. Placement would cause suspected constriction on flood flows
63. Severe adverse impacts on fish and wildlife
64. No potential for identifying beneficial user
65. No access to the site
66. Beyond 2 miles from cut (cannot be reached directly by cutterhead dredges)
67. Land or easement acquisition required but does not seem likely
68. Severe restrictions on choice of equipment
69. Most costly to dredge
70. Severe erosion potential with severe consequences if failure occurs
71. Special construction required to use the site
72. Berming or diking required with severe consequences if failure occurs
73. Known water quality concerns
74. Adverse aesthetic impacts
75. No potential market for beneficial use
76. Sufficient capacity on site only if potential beneficial use, not now identified, develops

LEGEND

RECOMMENDED CHANNEL MAINTENANCE PLAN

- 5 ————— Dredge cut number
- Location of dredge cut
-  Recommended placement site
- 2.06T ————— Site number
- 3,4,5 —————
- 3 — Special conditions cut site
 - 4 — Temporary cut site
- Dredge cuts for which site is used
- For these, site is used for placement of material from a cut in another pool

ALTERNATIVE MATERIAL PLACEMENT PLANS

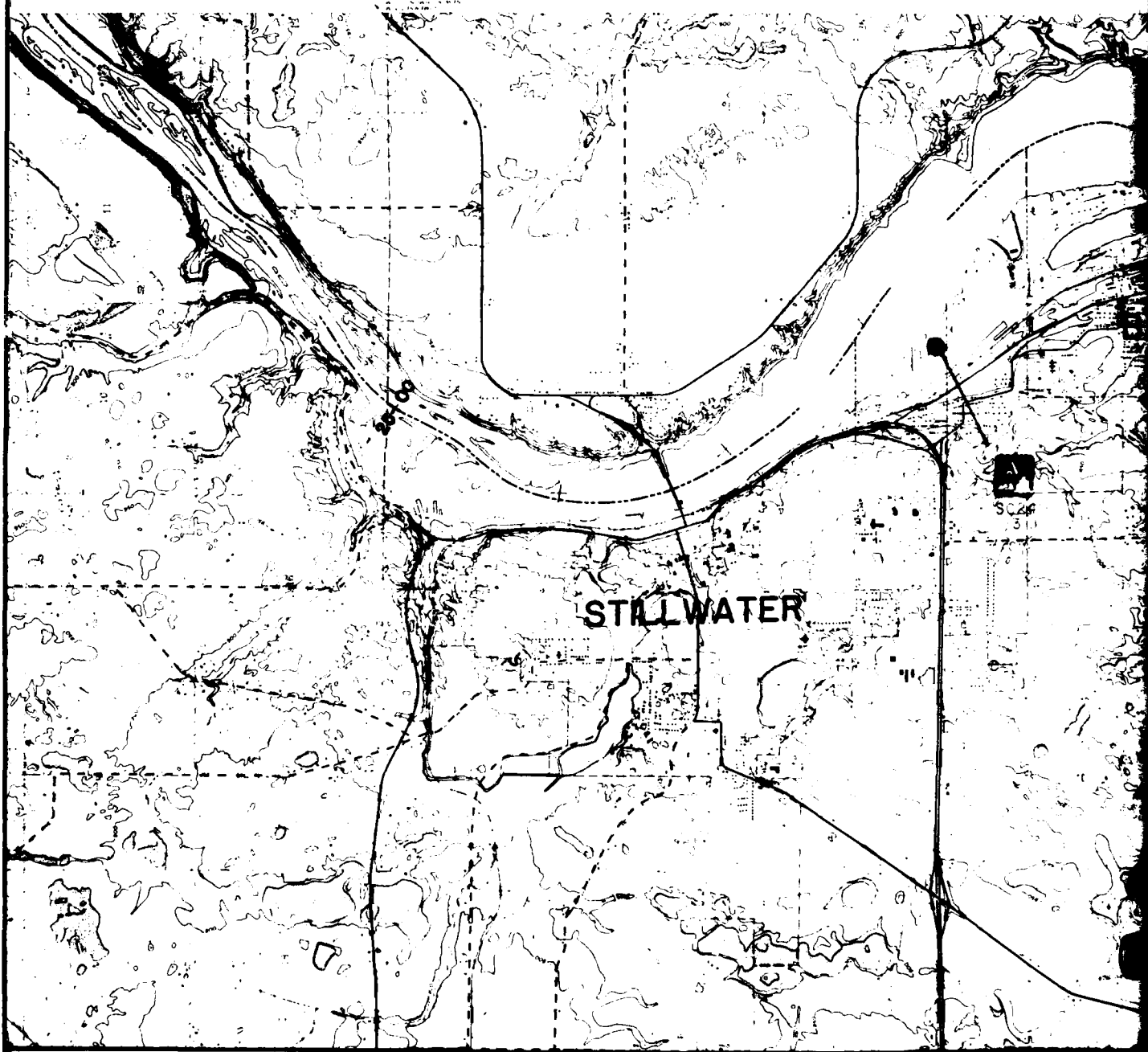
-  Alternative placement site
- 4.09 ————— Site number

POOL SC				
DREDGE CUT	ALTERNATIVE PLACEMENT PLANS			
	MPFW/OG	NED	EQ	RFFP
1	SC.12/.13/.14/.16/3.34	SC.11/.13/.14/.16/3.34/SC.23	2.10	2.10
2	SC.21/SC.11	SC.21	2.10	2.10
3	SC.03/.04/.17/.05/.06/.07/.18/.22/.23	SC.01/SC.07	SC.07/2.10	2.10

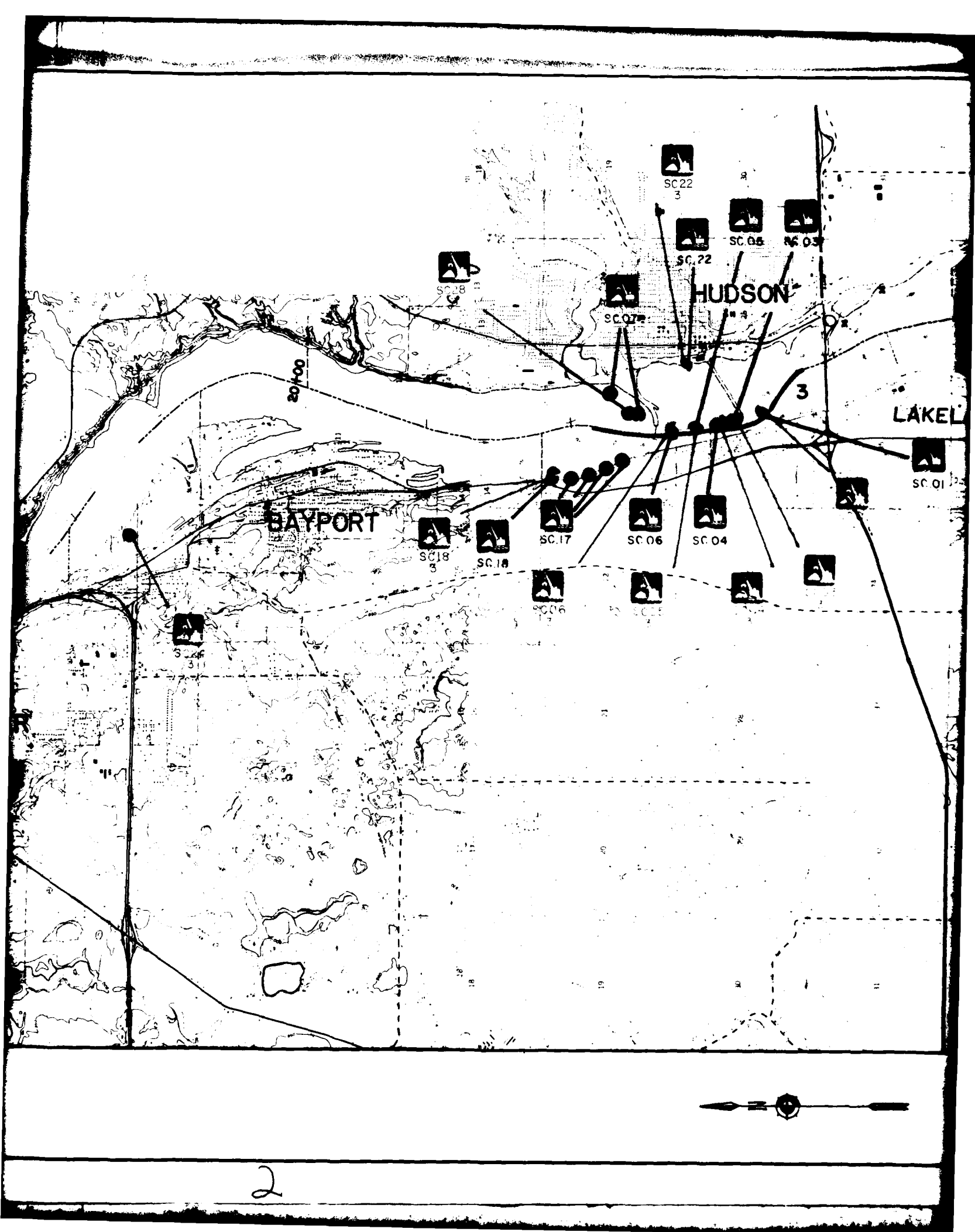
M = Most probable future without GREAT
 N = National economic development
 E = Environmental quality
 R = Removal from floodplain

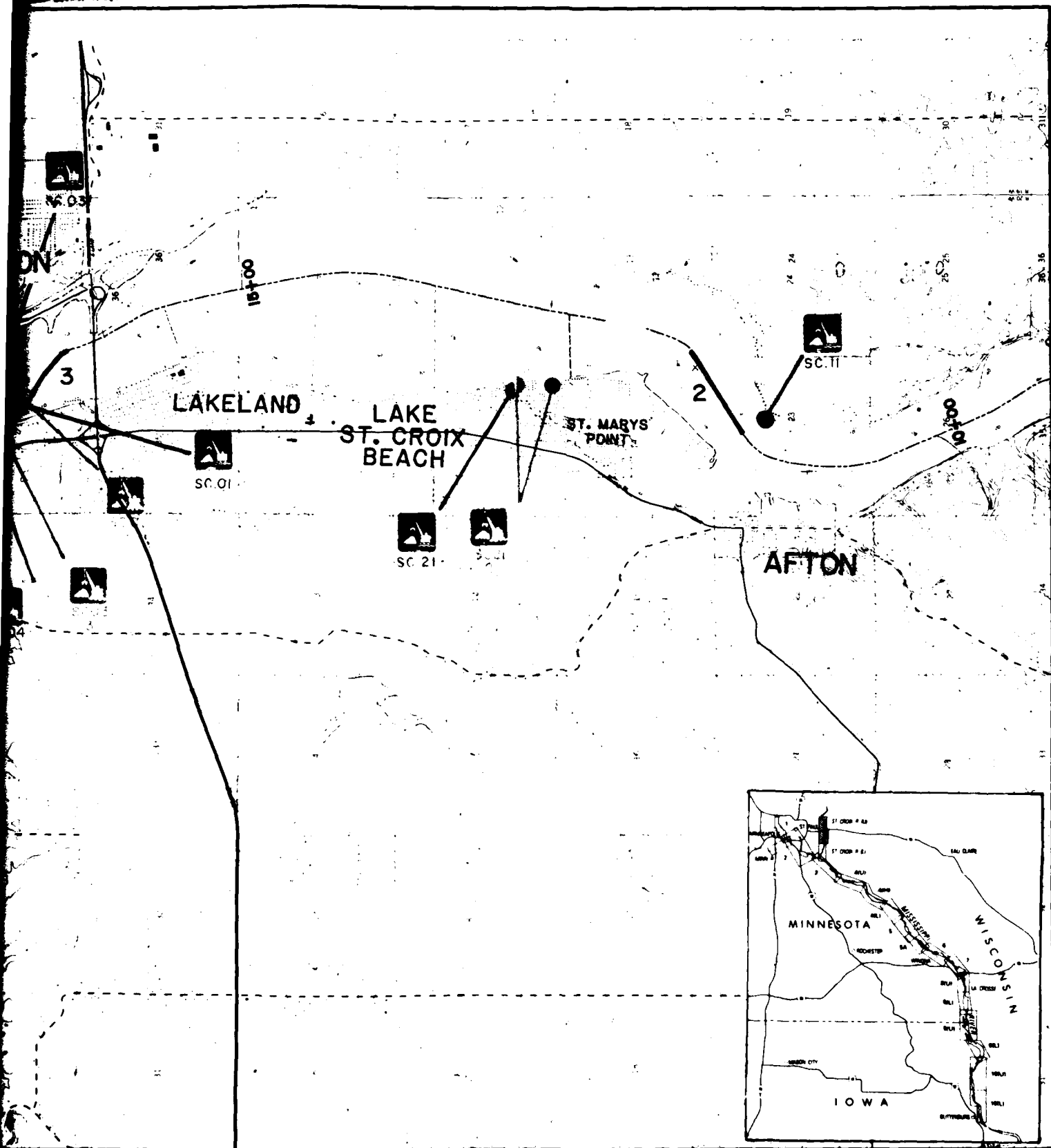
SCALE: 1" = 4,000'

CONTOUR INTERVAL 20 FEET
 NATIONAL GEODETIC VERTICAL DATUM OF 1929

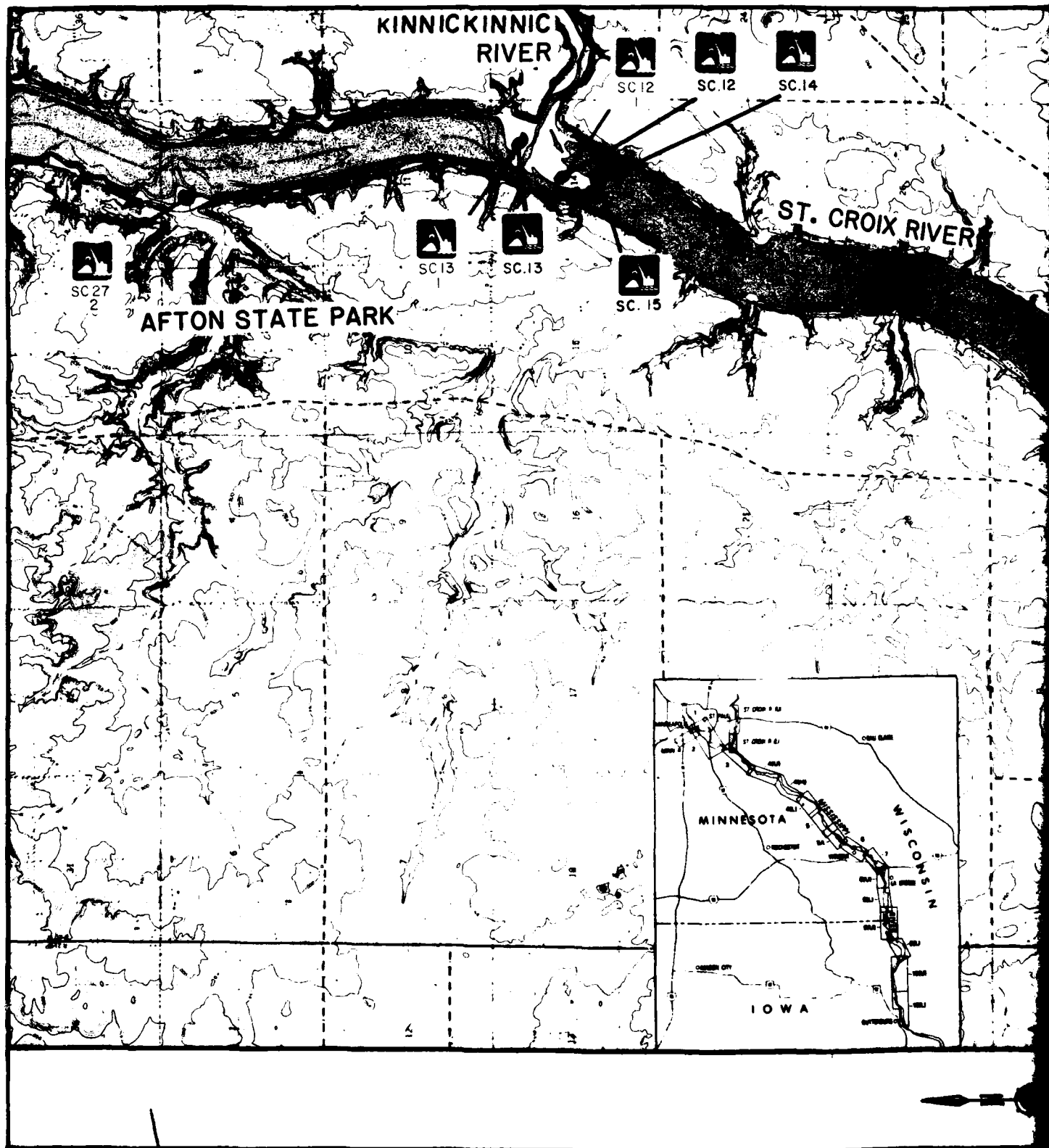


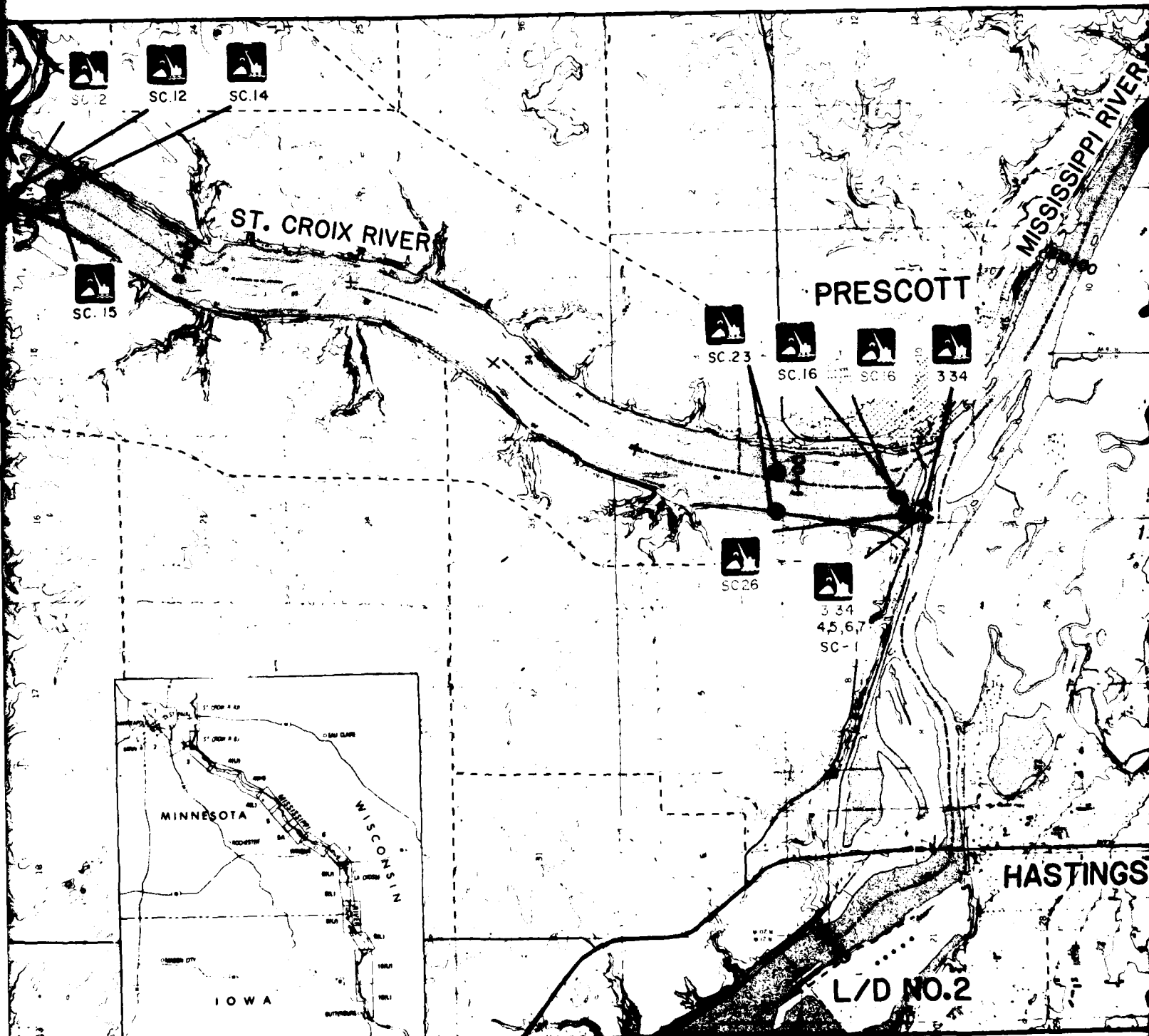
LEGEND



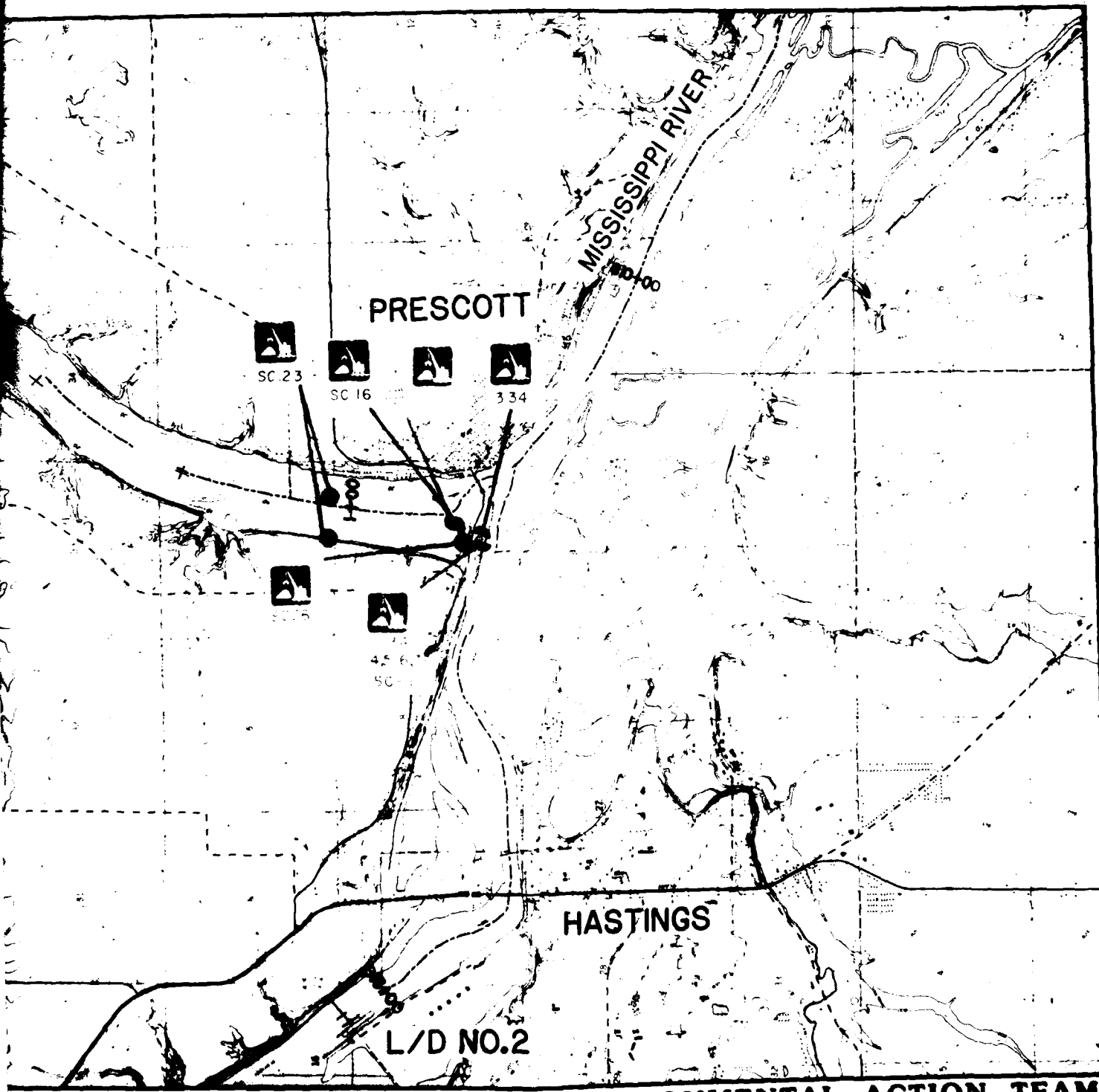


GREAT RIVER ENVIRONMENTAL ACTION TEAM
ST. CROIX RIVER (U)
 (MILE 10 TO MILE 24)





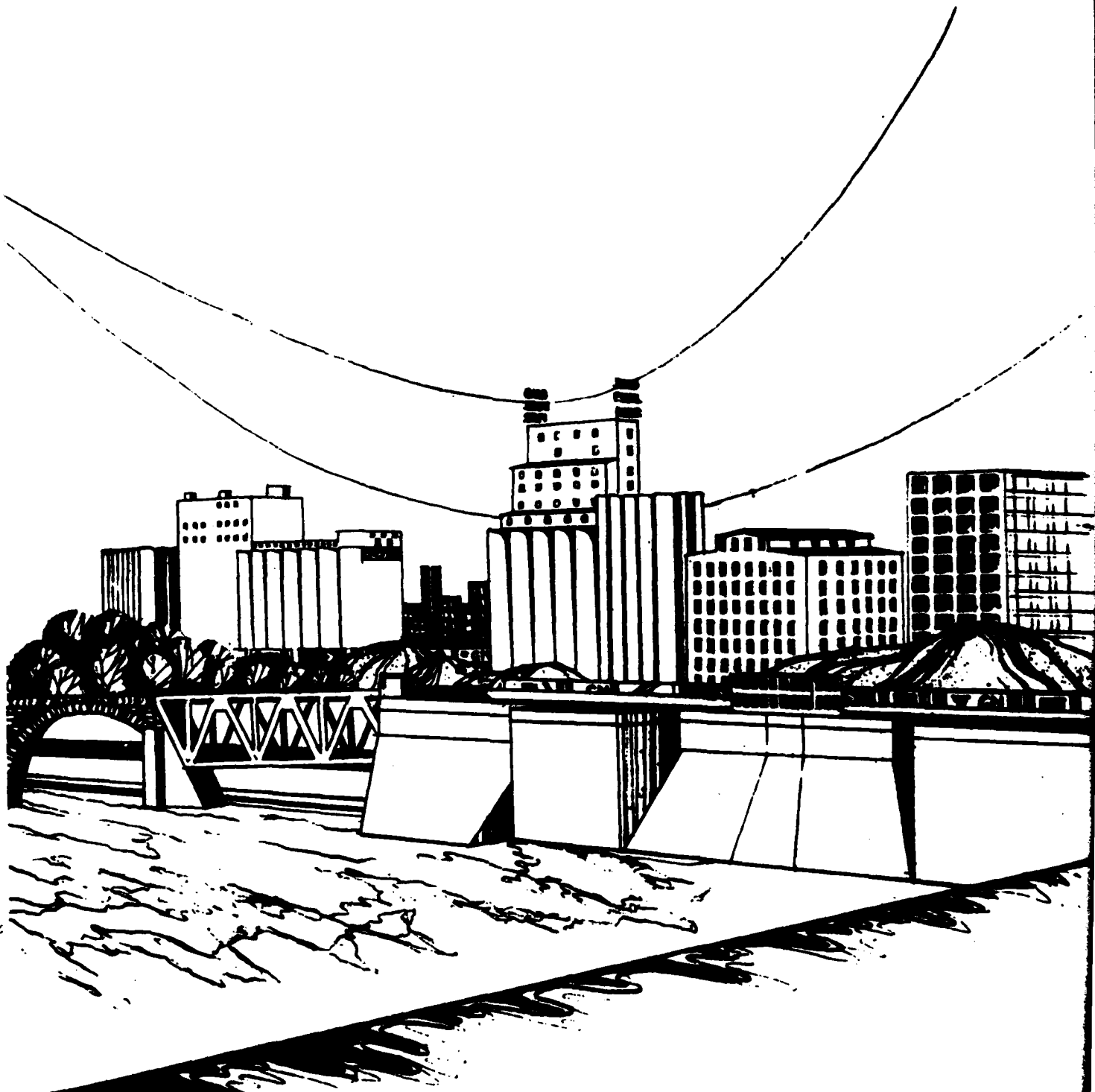
GREAT RIVER ENVIRON
ST. CROIX
(MILE 0 TO



GREAT RIVER ENVIRONMENTAL ACTION TEAM
ST. CROIX RIVER (L)
(MILE 0 TO MILE 9)

3

2



UPPER

**ST. ANTHONY FALLS
POOL**

CHANNEL MAINTENANCE PLAN SUMMARY

POOL USAF

Dredge Cut	MPFMC CY @ 1985-0225	Selected Site	NED Site	EQ Site	RFPF Site	MPFMC Site	MPFMC CY @ 1985-2025	Temporary Site
1. Above and Below Broadway - Plymouth Ave Bridge	352,500	U.02/U.03	U.01	U.02	U.03	U.01	382,000	-
2. Above and Below Lowry Ave Bridge	706,500	U.02/U.03	U.01	U.02	U.03	U.01	765,500	-
3. Below Soo Line Railroad Bridge	446,000	U.02/U.02	U.01	U.02	U.03	U.01	483,000	-
	1,505,000						1,630,500	

SELECTED PLAN SUMMARY

Total Volume Dredged (cy)	-	1,505,000	No. of sites with:	
Beneficial Use (cy) potential from selected sites	-	1,505,000	Recreation Enhancement	- 0
Total Area (acres)	-	10	Cultural Resources Impacts	- 0
			Wetlands Affected:	
			Types 1, 2 (acres)	- 0
			Types 3, 4, 5 (acres)	- 0

Table 2--
St. Anthony Falls Pool Dredging Volumes

Item	Cut 1		Cut 2		Cut 3	
	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT
Cut Name	Above & Below Broadway and Plymouth Ave. Bridges		Above & Below Lowry Avenue Bridge		Below MCP & SSM RR Bridge	
1955 - 1974 average annual dredging volume	11,900	11,900	23,800	23,800	15,000	15,000
Bed width changes (percent)	-	-	-	-	-	-
Adjusted average annual volume	11,900	11,900	23,800	23,800	15,000	15,000
Changes for 1986 - 2000 (percent)(1)	-24	-9	-24	-9	-24	-9
Adjusted average annual volume	9,000	10,800	18,100	21,700	11,400	13,700
Total volume dredged, 1986 - 2000	135,000	162,000	271,500	325,500	171,000	205,500
Change for 2001 - 2025 (percent)(1)	-27	-26	-27	-26	-27	-26
Adjusted average annual volume	8,700	8,800	17,400	17,600	11,000	11,100
Total volume dredged, 2001 - 2025	217,500	220,000	435,000	440,000	275,000	277,500
Total volume dredged, 1986 - 2025	352,500	382,000	706,500	765,500	446,000	483,000
Frequency of dredging (percent)	65	65	55	55	35	35
Expected number of dredging jobs (1986 - 2025)	26	26	22	22	14	14
Average dredging volume per job	13,600	14,700	32,100	34,800	31,800	34,500

(1) All cuts in approach to rigid structure.

Note: All volumes in Cubic Yards

DREDGED MATERIAL PLACEMENT SITE

POOL: USAF

EXISTING CONDITIONS DESCRIPTION

CUT: 1

SITE: U.02

SITE: U.02

Page 1 of 3

CUT LOCATION: 854.0 - 855.6 (Above & Below Broadway/Plymouth Ave. Bridge)

PLACEMENT SITE LOCATION: 857.1 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 812 (Approximately)
100-year flood: 811.6
5-year flood: (10 year flood) = 807.3
Flat pool: 798.3

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: Greater than 2 miles
Residence: 1000'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Sparse grassland shrubs.

SITE OWNER: City of Minneapolis

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: None
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Potential for building site

Adjacent land use: Industrial main channel

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: USAF
CUT: 1
SITE: U.02

Page 2 of 3

SITE: U.02

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 110,000
Area at base (acres): 3
Height (feet): 20
Length (feet): 450
Width (feet): 300
Side slope (ratio): 4:1
Final elevation (feet): 812 (Material removed after placement)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 26/40
Volume dredged per job (cubic yards): 13,600
Beneficial use demand (cubic yards): All material
Beneficial Use by: City of Minneapolis
Other cuts using sites: 2,3

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 85% fine sand
Silt (%): 15%
Other (%):
Contaminants: Minor Nutrients
Contaminant Source: Twin Cities, Agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

POOL: USAF

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

CUT: 1

SITE: U.02

Page 3 of 3

SITE: U.02

SPECIAL CONDITIONS FOR SITE USE: Material must be removed before
seasonal high water.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	0	Previously disturbed
Endangered Species habitat lost:	None	site
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☐

St. Anthony Falls

POOL: USAF

CUT: 1

SITE: U.02

Frequency: 65%

26/40 yrs

Volume per job: 13,600 cy

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

PIPELINE	TYPES OF DREDGES				
	20 inch	16 inch	12 inch	MECHANICAL	
				Backhoe 350 H.P.	Clamshell 700 H.P.

Basic Dredging Operation	\$ 219,000*	\$ 279,000*	\$ 229,000*	\$ 77,500*	\$ 90,000*	\$ 89,000*	\$ 101,000
Berming Costs 1/	4,000*	6,000*	6,000*	-	-	-	-
Diking Costs	9,000	7,000	4,000	-	-	-	-
Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal 2/	-	-	-	-	-	-	-
Special Construction	0	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0	0

Total of GREAT recommended Actions	223,000	285,000	235,000	77,500	90,000	89,000	101,000
Average Annual Costs	145,000	185,300	152,800	50,400	58,500	57,900	65,700

*GREAT recommended actions

1/ at U.03

2/ by the city of Minneapolis for street sanding

DREDGED MATERIAL PLACEMENT SITE

POOL: USAF

EXISTING CONDITIONS DESCRIPTION

CUT: 1

SITE: U.03

SITE: U.03

Page 1 of 3

CUT LOCATION: 854.0 - 855.6 (Above & Below Broadway/Plymouth Ave. Bridge)

PLACEMENT SITE LOCATION: RM 854.7 LB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 810 (Approximately)

100-year flood: 808.3

5-year flood: (10 year flood) = 804.8

Flat pool: 798.3

FLOOD STAGE FACTORS:

Site within floodplain: No

Site within floodway (effective flow area): No

Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100

% Wetland: 0

% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent

Wetland: Greater than 2 miles

Residence: 1000'

Beneficial Use Site: 0

Other:

VEGETATION CHARACTER: Minimal vegetation

SITE OWNER: Bolander - Conlon Company

SPECIAL CONCERNS:

Endangered species habitat: None

Historical or archeological value: Lost

Other: Good Road Access

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Stockpile site, potential for building or riverfront development.

Adjacent land use: Industrial - commercial

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: USAF
CUT: 1
SITE: U.03

Page 2 of 3

SITE: U.03

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 225,000
Area at base (acres): 7
Height (feet): 20
Length (feet): 1000
Width (feet): 300
Side slope (ratio): 4:1
Final elevation (feet): 830

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 26/40
Volume dredged per job (cubic yards): 13,600
Beneficial use demand (cubic yards): All material
Beneficial Use by: Landowner
Other cuts using sites: 1,2,3

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 85% fine sand
Silt (%): 15%
Other (%):
Contaminants: Minor Nutrients
Contaminant Source: Twin Cities, agriculture

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: USAF
CUT: 1
SITE: U.03

Page 3 of 3

SITE: U.03

SPECIAL CONDITIONS FOR SITE USE:

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	7	Previously disturbed
Endangered Species habitat lost:	None	site
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☒
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☐

CHANNEL MAINTENANCE PLAN COSTS
Above and Below Broadway and Plymouth Avenue Bridge
PER DREDGING JOB

POOL: USAF 1
CUT: 1
SITE: U.03

Frequency: 65 %
26 /40 yrs
Volume per job: 13,600 cy

	TYPES OF DREDGES						
	PIPELINE			MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$ 138,000*	\$ 149,000*	\$ 152,000*	\$ 71,000*	\$ 78,000*	\$ 86,000*	\$ 90,000*
Berming Costs	4,000*	5,000*	6,000*	0	0	0	0
Diking Costs	9,000	7,000	4,000	0	0	0	0
Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal 1/	-	-	-	-	-	-	-
Special Construction	0	0	0	0	0	0	0
Land Acquisition	80,000	80,000	80,000	80,000	80,000	80,000	80,000
Total of GREAT recommended Actions	142,000	154,000	158,000	71,000	78,000	86,000	90,000
Average Annual Costs	92,300	100,100	102,700	46,200	50,700	55,900	58,500

*GREAT recommended actions

1/ by landowner

DREDGED MATERIAL PLACEMENT SITE

POOL: USAF

EXISTING CONDITIONS DESCRIPTION

CUT: 2

SITE: U.02

SITE: U.02

Page 1 of 3

CUT LOCATION: 855.7 - 856.7 (Above and Below Lowry Ave. Bridge)

PLACEMENT SITE LOCATION: 857.1 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 812 (Approximately)

100-year flood: 811.6

5-year flood: (10 year flood) = 807.3

Flat pool: 798.3

FLOOD STAGE FACTORS:

Site within floodplain: No

Site within floodway (effective flow area): No

Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100

% Wetland: 0

% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent

Wetland: Greater than 2 miles

Residence: 1000'

Beneficial Use Site: 0

Other:

VEGETATION CHARACTER: Sparse grasses and shrubs

SITE OWNER: City of Minneapolis

SPECIAL CONCERNS:

Endangered species habitat: None

Historical or archeological value: None

Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Potential for building site

Adjacent land use: Industrial, main channel

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: USAF
CUT: 2
SITE: U.02

Page 2 of 3

SITE: U.02

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 110,000
Area at base (acres): 3
Height (feet): 20
Length (feet): 450
Width (feet): 300
Side slope (ratio): 4:1
Final elevation (feet): 812 (Material removed after placement)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 22/40
Volume dredged per job (cubic yards): 32,100
Beneficial use demand (cubic yards): All material
Beneficial Use by: City of Minneapolis
Other cuts using sites: 1,2,3

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 95% medium to fine sands
Silt (%): 5%
Other (%):
Contaminants: Minor Nutrients
Contaminant Source: Twin Cities, Agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: USAF
CUT: 2
SITE: U.02

Page 3 of 3

SITE: U.02

SPECIAL CONDITIONS FOR SITE USE: Material must be removed before seasonal high water

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	3	Previously disturbed site
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☐

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Above and Below Lowry Avenue Bridge

POOL: USAF
CUT: 2
SITE: U.02

Frequency: 55%
22 / 40 yrs
Volume per job: 32,100 cy

	TYPES OF DREDGES					
	PIPELINE 20 inch	16 inch	12 inch	MECHANICAL		
				Backhoe 350 H.P.	700 H.P.	Clamshell 350 H.P. 700 H.P.
Basic Dredging Operation	\$137,000*	\$ 139,000*	\$ 133,000*	\$ 134,000*	\$ 149,000*	\$ 158,000*
Berming Costs	4,000*	4,000*	6,000*	-	-	-
Diking Costs	8,000	7,000	6,000	-	-	-
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal 1/	-	-	-	-	-	-
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	141,000	143,000	139,000	134,000	149,000	158,000
Average Annual Costs	77,600	78,700	76,500	73,700	82,000	86,900

*GREAT recommended actions

1/by the city of Minneapolis for street sanding.

DREDGED MATERIAL PLACEMENT SITE

POOL: USAF

EXISTING CONDITIONS DESCRIPTION

CUT: 2

SITE: U.03

SITE: U.03

Page 1 of 3

CUT LOCATION: 855.7 - 856.7 (Above and Below Lowry Ave. Bridge)

PLACEMENT SITE LOCATION: RM 854.7 LB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 810 (Approximately)
100-year flood: 808.63
5-year flood: (10 year flood) = 804.8
Flat pool: 798.3

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: Greater than 2 miles
Residence: 1000'
Beneficial Use Site: 0
Other:

VEGETATION CHARACTER: Minimal vegetation

SITE OWNER: Bolander - Conlon Company

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Lost
Other: Good Road Access

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Stackpile site, potential for building or riverfront

Adjacent land use: Industrial - Commercial development

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: USAF
CUT: 2
SITE: U.03

Page 2 of 3

SITE: U.03

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 225,000
Area at base (acres): 7
Height (feet): 20
Length (feet): 1000
Width (feet): 300
Side slope (ratio): 4:1
Final elevation (feet): 830

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 22/40
Volume dredged per job (cubic yards): 32,100
Beneficial use demand (cubic yards): All material
Beneficial Use by: Land owner
Other cuts using sites: 1,2,3

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 95% medium to fine sand
Silt (%): 5%
Other (%):
Contaminants: Minor Nutrients
Contaminant Source: Twin Cities, Agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: USAF
CUT: 2
SITE: U.03

Page 3 of 3

SITE: U.03

SPECIAL CONDITIONS FOR SITE USE:

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	7	Previously disturbed site
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☐

Above and Below Lowry Avenue Bridge

POOL: USAF
CUT: 2
SITE: U.03

Frequency: 55 %
22/40 yrs
Volume per job: 32,100 cy

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

	TYPES OF DREDGES						
	PIPELINE			MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$ -	\$ -	\$ -	\$ 144,000*	\$ 172,000*	\$ 166,000*	\$ 185,000*
Berming Costs	-	-	-	-	-	-	-
Diking Costs	-	-	-	-	-	-	-
Riprapping Costs	-	-	-	0	0	0	0
Seasonal Removal 1/	-	-	-	-	-	-	-
Special Construction	-	-	-	0	0	0	0
Land Acquisition	-	-	-	80,000	80,000	80,000	80,000
Total of GREAT recommended Actions	-	-	-	144,000	172,000	166,000	185,000
Average Annual Costs				79,200	94,600	91,300	101,800

*GREAT recommended actions

1/ by landowner

DREDGED MATERIAL PLACEMENT SITE

POOL: USAF

EXISTING CONDITIONS DESCRIPTION

CUT: 3

SITE: U.02

SITE: U.02

Page 1 of 3

CUT LOCATION: 856.8 - 857.7 (Below Soo Line Railroad Bridge)

PLACEMENT SITE LOCATION: 857.1 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 812 (Approximately)

100-year flood: 811.6

5-year flood: (10 year flood) = 807.3

Flat pool: 798.3

FLOOD STAGE FACTORS:

Site within floodplain: No

Site within floodway (effective flow area): No

Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100

% Wetland: 0

% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent

Wetland: Greater than 2 miles

Residence: 1000'

Beneficial Use Site: 0

Other:

VEGETATION CHARACTER: Sparse grasses and shrubs

SITE OWNER: City of Minneapolis

SPECIAL CONCERNS:

Endangered species habitat: None

Historical or archeological value: None

Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Potential for building site

Adjacent land use: Industrial main channel

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: USAF
CUT: 3
SITE. U.02

Page 2 of 3

SITE: U.02

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 110,000
Area at base (acres): 3
Height (feet): 20
Length (feet): 450
Width (feet): 300
Side slope (ratio): 4:1
Final elevation (feet): 812 (Material removed after placement)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 14/40
Volume dredged per job (cubic yards): 31,800
Beneficial use demand (cubic yards): All material
Beneficial Use by: City of Minneapolis
Other cuts using sites: 1,2,3

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 76%
Silt (%): 24%
Other (%):
Contaminants: Minor
Contaminant Source: Twin Cities, Agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: USAF
CUT: 3
SITE: U.02

Page 3 of 3

SITE: U.02

SPECIAL CONDITIONS FOR SITE USE: Material must be removed before seasonal
high water

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	3	Previously disturbed site
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☐

Below M. St. P. and S. Ste. M. RR. BR.

POOL: USAF
GUT: 3
SITE: U.02

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Frequency: 35 %
14/40 yrs
Volume per job: 31,800 cy

PIPELINE	TYPES OF DREDGES			
	20 inch	16 inch	12 inch	MECHANICAL
				Backhoe 350 H.P.
				Clamshell 700 H.P.

Basic Dredging Operation	\$ 139,000*	\$ 145,000*	\$ 111,000*	\$ 130,000*	\$ 148,000*	\$ 162,000*	\$ 156,000*
Berming Costs	5,000*	6,000*	6,000*	-	-	-	-
Diking Costs	8,000	7,000	6,000	-	-	-	-
Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal 1/	-	-	-	-	-	-	-
Special Construction	0	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0	0
Total of GREAT recommended Actions	144,000	151,000	117,000	130,000	148,000	162,000	156,000
Average Annual Costs	50,400	52,900	41,070	45,500	51,800	56,700	54,600

*GREAT recommended actions

1/ by the city of Minneapolis for street sanding.

DREDGED MATERIAL PLACEMENT SITE

POOL: USAF

EXISTING CONDITIONS DESCRIPTION

CUT: 3

SITE: U.03

SITE: U.03

Page 1 of 3

CUT LOCATION: 856.8 - 857.7 (Below Soo Line Railroad Bridge)

PLACEMENT SITE LOCATION: RM 854.7

TYPE OF PLACEMENT SITE: Permanent x Temporary

ELEVATIONS AT SITE:

Site (1980): 810 (Approximately)

100-year flood: 808.3

5-year flood: (10 year flood) = 804.8

Flat pool: 798.3

FLOOD STAGE FACTORS:

Site within floodplain: No

Site within floodway (effective flow area): No

Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100

% Wetland: 0

% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent

Wetland: Greater than 2 miles

Residence: 1000'

Beneficial Use Site: 0

Other:

VEGETATION CHARACTER: Minimal vegetation

SITE OWNER: Bolander - Conlon Company

SPECIAL CONCERNS:

Endangered species habitat: None

Historical or archeological value: Lost

Other: Good Road Access

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Stockpile site, potential for building or riverfront
development.

Adjacent land use: Industrial - Commercial

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: USAF
CUT: 3
SITE: U.03

Page 2 of 3

SITE: U.03

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 225,000
Area at base (acres): 7
Height (feet): 20
Length (feet): 1000
Width (feet): 300
Side slope (ratio): 4:1
Final elevation (feet): 810 (Material removed after placement)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 14/40
Volume dredged per job (cubic yards): 31,800
Beneficial use demand (cubic yards): All material
Beneficial Use by: Land Owner
Other cuts using sites: 1,2,3

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 76%
Silt (%): 24%
Other (%):
Contaminants: Minor
Contaminant Source: Twin Cities, Agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: USAF
CUT: 3
SITE: U.03

Page 3 of 3

SITE: U.03

SPECIAL CONDITIONS FOR SITE USE:

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	7	Previously disturbed site
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☐

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Below M. St. P. and S. Ste. M. RR. BR.

POOL: USAF

CUT: 3

SITE: U.03

Frequency: 35%
14/40 yrs
Volume per job: 31,8000 cy

	PIPELINE 20 inch	TYPES OF DREDGES				
		16 inch	12 inch	MECHANICAL		
		\$	\$	Backhoe 350 H.P.	700 H.P.	Clamshell 350 H.P. 700 H.P.
Basic Dredging Operation	\$ -	\$ -	\$ -	\$ 154,000*	\$ 152,000*	\$ 174,000* \$ 181,000*
Berming Costs	-	-	-	-	-	-
Diking Costs	-	-	-	-	-	-
Riprapping Costs	-	-	-	0	0	0
Seasonal Removal 1/	-	-	-	-	-	-
Special Construction	-	-	-	0	0	0
Land Acquisition	-	-	-	80,000	80,000	80,000
Total of GREAT recommended Actions	-	-	-	154,000	152,000	174,000 181,000
Average Annual Costs	-	-	-	53,900	53,200	60,900 63,400

*GREAT recommended actions

1/ by landowner

COMPARISON OF ALTERNATIVE PLAN SITES

Pool USAF Cut 1

Alternative Plan	Selected, RFFP	Selected, EQ	NED, MPFW/OG		
Placement Site No.	U.03	U.02	U.01		
Site Capacity (cy)	225,000	110,000	100,000		
Site Acreage	7	3	4		
Site Height (ft)	20	20	15		
Potential Beneficial use removal (cy)	All material	All Material			
Conditions ¹ favoring use of site	21 2 23 4 5 27 10 11 12 33 35	21 2 23 4 5 6 27 8 9 10 11 12 33 35	21 42 4 5 27 29 30 11 12 33 35		
Conditions ¹ adverse to use of site	66 48 49 54 56	54 56	43 46 48 54 56		
¹ Code numbers in columns represent conditions listed on pages ____.					
141					

COMPARISON OF ALTERNATIVE PLAN SITES

Pool USAF Cut 2

Alternative Plan	Selected, REFP	Selected, EQ	NED, MPFW/OG		
Placement Site No.	U.03	U.02	U.01		
Site Capacity (cy)	225,000	110,000	100,000		
Site Acreage	7	3	4		
Site Height (ft)	20	20	15		
Potential Beneficial use removal (cy)	All material	All material			
Conditions ¹ favoring use of site	21 2 23 4 5 27 10 11 12 33 35	21 2 23 4 5 27 28 29 10 11 12 33 35	21 42 4 5 26 27 28 29 30 11 12 33 35		
Conditions ¹ adverse to use of site	46 48 49 54 56	46 54 56	43 48 54		

¹ Code numbers in columns represent
conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool USAF Cut 3

Alternative Plan	Selected, RFFP	Selected, EQ	NED, MPFW/OG		
Placement Site No.	U.03	U.02	U.01		
Site Capacity (cy)	225,000	110,000	100,000		
Site Acreage	7	3	4		
Site Height (ft)	20	20	15		
Potential Beneficial use removal (cy)	All material	All material	-		
Conditions ¹ favoring use of site	21 2 23 4 5 6 27 8 9 10 11 12 33 35	21 2 23 4 5 27 10 11 12 33 35	21 42 4 5 27 29 30 11 12 33 35		
Conditions ¹ adverse to use of site	54 56	66 48 49 54 56	43 46 48 54 56		

¹ Code numbers in columns represent conditions listed on pages ____.

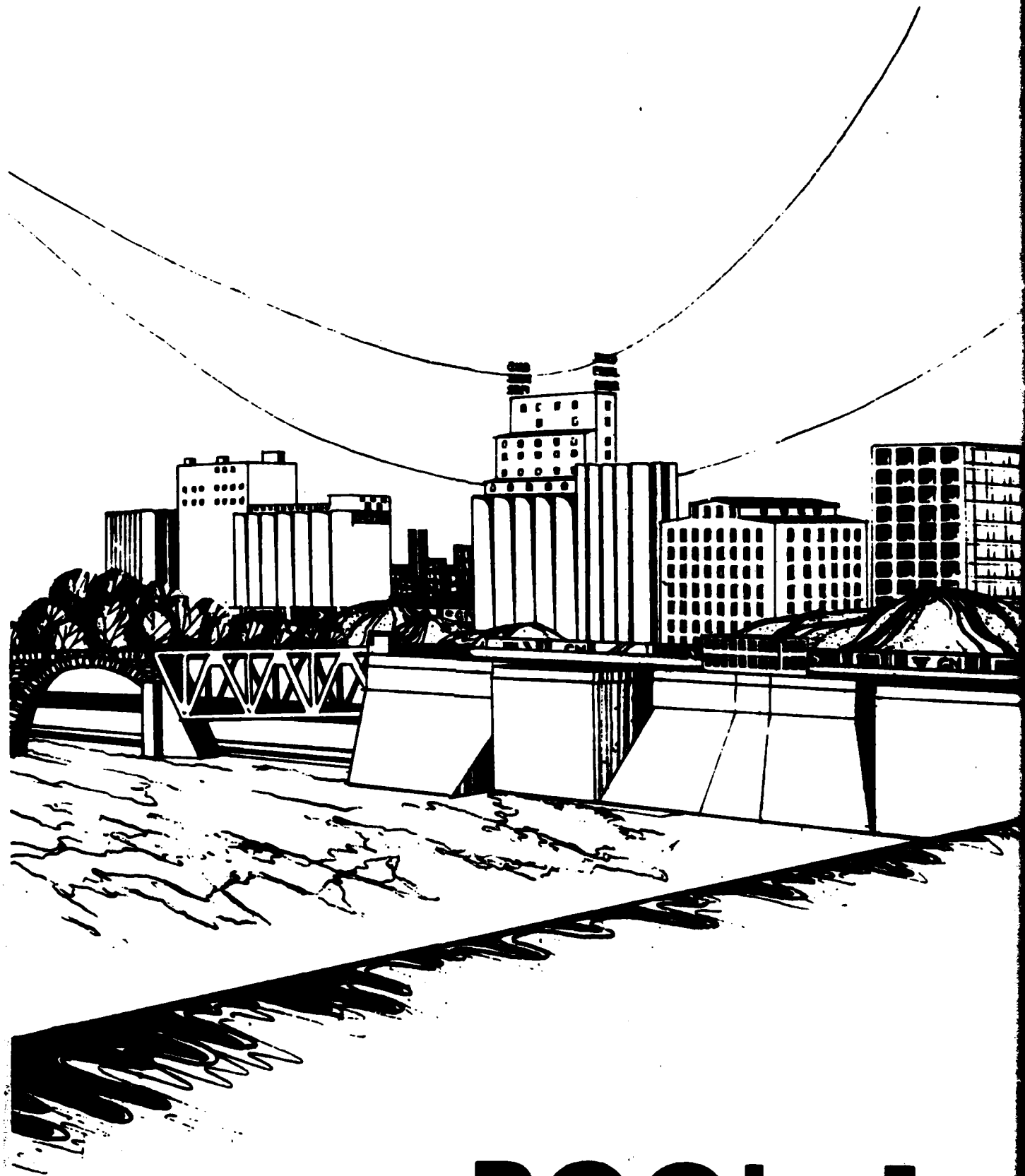
Key to Conditions Used in Site Comparisons

1. Recreation enhancement
 2. Remove from floodplain
 3. Fish and wildlife enhancement
 4. Beneficial use identified
 5. Existing road access
 6. Adjacent to cut
 7. No land acquisition required
 8. Provides flexibility of equipment
 9. Least cost to dredge
 10. No erosion potential
 11. No special construction required
 12. No diking of berming
 13. No water quality concerns
 14. Aesthetic enhancement
 15. Beneficial use on the site
 16. Sufficient capacity on the site
-
21. No adverse impacts on recreation use
 22. Potential for removal from floodplain
 23. No adverse fish and wildlife impacts
 24. Potential for identifying a beneficial user
 25. Road access can be constructed
 26. Within $\frac{1}{2}$ mile of cut (easy reach of cutterhead dredges)
 27. No apparent problem in acquiring land or easement
 28. Slight limitation on equipment choice
 29. Less costly than dredging to most other sites
 30. Some erosion potential
 31. (Unused)
 32. Berming required
 33. No water quality concern expected
 34. (Unused)
 35. Know of area where material can be put to beneficial use
 36. Sufficient capacity site but less impact if beneficial use demand is developed

PRECEDING PAGE BLANK-NOT FILLED

- 41. Some adverse impacts on recreation use
- 42. In floodplain - no effect on flood flows
- 43. Some adverse impacts on fish and wildlife
- 44. No suspected beneficial user can be identified
- 45. Poor access to the site
- 46. Within 2 miles of cut (barely within reach of hydraulic dredges)
- 47. Land or easement acquisition required
- 48. Equipment choice limited to just a few options
- 49. More costly than dredging to most of the other sites
- 50. Severe erosion potential
- 51. (Unused)
- 52. Diking required
- 53. Suspected water quality concerns
- 54. Some aesthetic problems
- 55. Potential market for beneficial use suspected but not identified
- 56. Sufficient capacity on site with removal by identified users

- 61. Severe adverse impacts on recreation use
- 62. Placement would cause suspected constriction on flood flows
- 63. Severe adverse impacts on fish and wildlife
- 64. No potential for identifying beneficial user
- 65. No access to the site
- 66. Beyond 2 miles from cut (cannot be reached directly by cutterhead dredges)
- 67. Land or easement acquisition required but does not seem likely
- 68. Severe restrictions on choice of equipment
- 69. Most costly to dredge
- 70. Severe erosion potential with severe consequences if failure occurs
- 71. Special construction required to use the site
- 72. Berming or diking required with severe consequences if failure occurs
- 73. Known water quality concerns
- 74. Adverse aesthetic impacts
- 75. No potential market for beneficial use
- 76. Sufficient capacity on site only if potential beneficial use, not now identified, develops



POOL 1

CHANNEL MAINTENANCE PLAN SUMMARY

POOL 1

Dredge Cut	MPFWG CY @ 1985-0225	Selected Site	NED Site	EQ Site	RFPF Site	MPFWG CY @ 1985-2025	Temporary Site
1. Upper Approach to L/D 1	287,500	1.01	1.01	1.01	-	312,500	1.02
2. Below St. Paul Daymark	65,500	1.01	1.01	1.01	-	74,000	-
3. Below Lake Street Bridge	391,500	1.01	1.01	1.01	-	431,000	1.03
4. Above Lake Street Bridge	569,000	1.01	1.01	1.01	-	617,500	1.03
5. Below Franklin Ave Bridge	489,000	1.01	1.01	1.01	-	537,500	1.07
6. Above Franklin Ave Bridge	589,000	1.01	1.01	1.01	-	639,000	-
7. Below Lower St. Anthony Falls	642,500	1.01	1.01	1.01	-	698,000	-
	3,034,000					3,309,000	

SELECTED PLAN SUMMARY

Total Volume Dredged (cy)	-	3,034,000
Beneficial Use (cy) Potential from Selected Sites	-	3,034,000
Total Area (acres)	-	3.5
No. of sites with:		
Recreation Enhancement	-	0
Cultural Resources Impacts	-	0
Wetlands Affected:		
Types 1, 2 (acres)	-	0
Types 3, 4, 5 (acres)	-	0

Table 2
Pool 1 Dredging Volumes

Item	Cut 1			Cut 2			Cut 3			Cut 4			Cut 5		
	With GREAT	Without GREAT		With GREAT	Without GREAT		With GREAT	Without GREAT		With GREAT	Without GREAT		With GREAT	Without GREAT	
Cut Name	Upper Approach L/D 1			Below St. Paul Daymark			Below Lake St. Bridge			Above Lake St. Bridge			Below Franklin Ave. Bridge		
1955 - 1974 average annual dredging volume	9,700	9,700		2,600	2,600		15,300	15,300		19,200	19,200		19,100	19,100	
Bend width changes (percent)	—	—		—	—		—	—		—	—		—	—	
Adjusted average annual volume	9,700	9,700		2,600	2,600		15,300	15,300		19,200	19,200		19,100	19,100	
Change for 1986 - 2000 (percent)	-24(1)	-9(1)		-34	-19		-34	-19		-24(1)	-9(1)		-34	-19	
Adjusted average annual volume	7,400	8,800		1,700	2,100		10,100	12,400		14,600	17,500		12,600	15,500	
Total volume dredged, 1986 - 2000	110,000	132,000		25,500	31,500		151,500	186,000		219,000	262,500		189,000	232,500	
Change for 2001 - 2025 (percent)	-27(1)	-26(1)		-37	-36		-37	-36		-27(1)	-26(1)		-37	-36	
Adjusted average annual volume	7,100	7,200		1,600	1,700		9,600	9,800		14,000	14,200		12,000	12,200	
Total volume dredged, 2001 - 2025	177,500	180,000		40,000	42,500		240,000	245,000		350,000	355,000		300,000	305,000	
Total volume dredged, 1986 - 2025	287,500	312,000		65,500	74,000		391,500	431,000		569,000	617,500		489,000	537,500	
Frequency of dredging (percent)	30	30		20	20		55	55		50	50		45	45	
Expected number of dredging jobs (1986 - 2025)	12	12		8	8		22	22		20	20		18	18	
Average dredging volume per job	24,000	26,000		8,300	9,200		17,800	19,600		28,400	30,900		27,200	29,900	

(1) Cut at approach to rigid structure

Note: All volumes in Cubic Yards

Table 2-- (cont.)
Pool _____ Dredging Volumes

Item	Cut 6		Cut 7	
	With GREAT	Without GREAT	With GREAT	Without GREAT
Cut Name	Above Franklin Avenue Bridge		Below LSAF L/D	
1955 - 1974 average annual dredging volume	19,900	19,900	21,700	21,700
Bend width changes (percent)	-	-	-	-
Adjusted average annual volume	19,900	19,900	21,700	21,700
Changes for 1986 - 2000 (percent) ⁽¹⁾	-24	-9	-24	-9
Adjusted average annual volume	15,100	18,100	16,500	19,700
Total volume dredged, 1986 - 2000	226,500	271,500	247,500	295,500
Change for 2001 - 2025 (percent) ⁽¹⁾	-27	-26	-27	-26
Adjusted average annual volume	14,500	14,700	15,800	16,100
Total volume dredged, 2001 - 2025	362,500	367,500	395,000	402,500
Total volume dredged, 1986 - 2025	589,000	639,000	642,500	698,000
Frequency of dredging (percent)	55	55	90	90
Expected number of dredging jobs (1986 - 2025)	22	22	36	36
Average dredging volume per job	26,800	29,000	17,800	19,400

Note: All volumes in Cubic Yards
(1) Cut at Approach to Rigid Structure

DREDGED MATERIAL PLACEMENT SITE

EXISTING CONDITIONS DESCRIPTION

POOL: 1
CUT: 1
SITE: 1.01

SITE: 1.01

Page 1 of 3

CUT LOCATION: 847.7 - 848.4 (Upper Approach L/D 1)

PLACEMENT SITE LOCATION: RM 853.1 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 740' (approx)
100-year flood: 739.8'
5-year flood: 735.6'
Flat pool: 725.1'

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: greater than 2 miles
Residence: 3,000'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Minimal weeds and shrubs.

SITE OWNER: City of Minneapolis

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: None
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Stockpile site for dredged material for sanding streets.

Adjacent land use: Bridge, highways, railroads and University campus.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 1
CUT: 1
SITE: 1.01

Page 2 of 3

SITE: 1.01

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards):	140,000
Area at base (acres):	3.5
Height (feet):	25
Length (feet):	500
Width (feet):	300
Side slope (ratio):	4:1
Final elevation (feet):	740 (material removed after placement)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged:	12/40
Volume dredged per job (cubic yards):	24,000
Beneficial use demand (cubic yards):	All Material
Beneficial Use by:	City of Minneapolis
Other cuts using sites:	All in pool

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):	87%
Silt (%):	13%
Other (%):	
Contaminants:	Minor Pesticides
Contaminant Source:	Twin Cities, Agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry):	X
Hydraulic (in slurry):	No (possible for rehandling)

EROSION CONTROL NEEDED:

Riprap:	None
Revegetation:	None
Other:	None
Areas and features protected by erosion control:	N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL:1

CUT:1

SITE:1.01

Page 3 of 3

SITE: 1.01

SPECIAL CONDITIONS FOR SITE USE: Material must be removed annually to retain site capacity.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	3.5	Previously used site.
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☐

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Upper Approach (L/D) 1

POOL: 1
CUT: 1
SITE: 1.01

Frequency: 30%

12/40 yrs

Volume per job: 24,000 cy

TYPES OF DREDGES

PIPELINE	MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.
				350 H.P.
				700 H.P.
				Clamshell 700 H.P.

Basic Dredging Operation	\$ -	\$ -	\$ -	\$ 122,000*	\$ 135,000*	\$ 143,000*	\$ 146,000*
Berming Costs	-	-	-	-	-	-	-
Diking Costs	-	-	-	-	-	-	-
Riprapping Costs	-	-	-	42,000	42,000	42,000	42,000
Seasonal Removal/	-	-	-	-	-	-	-
Special Construction	-	-	-	0	0	0	0
Land Acquisition	-	-	-	0	0	0	0
Total of GREAT recommended Actions	-	-	-	122,000	135,000	143,000	146,000
Average Annual Costs				36,600	40,500	42,900	43,800

*GREAT recommended actions

1/ by city of Minneapolis for street sanding.

DREDGED MATERIAL PLACEMENT SITE

POOL: 1

EXISTING CONDITIONS DESCRIPTION

CUT: 1

SITE: 1.02

SITE: 1.02

Page 1 of 3

CUT LOCATION: 847.7 - 848.4 (Upper Approach L/D 1)

PLACEMENT SITE LOCATION: 848.3 LB

TYPE OF PLACEMENT SITE: Permanent _____ Temporary X

ELEVATIONS AT SITE:

Site (1980): 730' (approx)
100-year flood: 735.2'
5-year flood: (10 year flood) = 731.6'
Flat pool: 725.1'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 100
% Wetland:
% Open water:

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: 2 Miles
Residence: 500'
Beneficial Use Site: 5 miles
Other:

VEGETATION CHARACTER: Sparse grasses and shrubs.

SITE OWNER: ?

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Recreation beach

Adjacent land use: Main channel, residential

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 1
CUT: 1
SITE: 1.02

Page 2 of 3

SITE: 1.02

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 60,000
Area at base (acres): 4.5
Height (feet): 10
Length (feet): 1,000
Width (feet): 200
Side slope (ratio):
Final elevation (feet): 730 (Material periodically removed from site.)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 12/40
Volume dredged per job (cubic yards): 24,000
Beneficial use demand (cubic yards): 0
Beneficial Use by: Possible recreation site
Other cuts using sites:

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 87%
Silt (%): 13%
Other (%):
Contaminants: Minor Pesticides
Contaminant Source: Twin Cities, Agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other:
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 1
CUT: 1
SITE: 1.02
Page 3 of 3

SITE: 1.02

SPECIAL CONDITIONS FOR SITE USE: Material to be removed from site before next seasonal high water.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	5.5	beach frontage
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:	0	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Channel Maintenance Plan Costs

Cost figures were not calculated for this site because it is a temporary placement site. Material placed at this site must either be immediately removed to another site or removed to another site after material from several dredging jobs has been placed at the site. Cost for rehandling the material will vary according to demand for material, equipment available for removing the material, how much material must be removed during one rehandling operation, and where the material is ultimately placed.

Due to the number of variables affecting the cost of using this temporary site, calculation of cost estimates would not be meaningful for comparing with placement costs at other sites or with other methods.

DREDGED MATERIAL PLACEMENT SITE

EXISTING CONDITIONS DESCRIPTION

POOL: 1
CUT: 2
SITE: 1.01

SITE: 1.01

Page 1 of 3

CUT LOCATION: 848.5 - 848.9 (Below St. Paul Daymark)

PLACEMENT SITE LOCATION: RM 853.1 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 740' (approx)
100-year flood: 739.8'
5-year flood: 735.6'
Flat pool: 725.1'

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: greater than 2 miles
Residence: 3,000'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Minimal weeds and shrubs.

SITE OWNER: City of Minneapolis

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: None
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Stockpile site for dredged material for sanding streets.

Adjacent land use: Bridge, highways, railroads and University campus.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 1
CUT: 2
SITE: 1.01

Page 2 of 3

SITE: 1.01

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 140,000
Area at base (acres): 3.5
Height (feet): 25
Length (feet): 500
Width (feet): 300
Side slope (ratio): 4:1
Final elevation (feet): 740 (Material removed after placement.)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 8/40
Volume dredged per job (cubic yards): 8,300
Beneficial use demand (cubic yards): All Material
Beneficial Use by: City of Minneapolis
Other cuts using sites: All in pool

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 95%
Silt (%): 5%
Other (%):
Contaminants: Minor Pesticides PCB's
Contaminant Source: Twin Cities, Agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): No (possible for rehandling)

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 1
CUT: 2
SITE: 1.01

Page 3 of 3

SITE: 1.01

SPECIAL CONDITIONS FOR SITE USE: Material must be removed annually to retain site capacity.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	3.5	Previously used site.
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☐

Below St. Paul Daymark

POOL: 1
CUT: 2
SITE: 1.01

Frequency: 20⁷_{8/40 yrs}
Volume per job: 8,300 cy

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

	TYPES OF DREDGES					
	PIPELINE			MECHANICAL		
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	Clamshell 350 H.P. 700 H.P.
Basic Dredging Operation	\$ -	\$ -	\$ -	\$ 369,000*	\$ 378,000*	\$ 389,000* \$ 396,000*
Berming Costs	-	-	-	-	-	-
Diking Costs	-	-	-	-	-	-
Riprapping Costs	-	-	-	42,000	42,000	42,000
Seasonal Removal 1/	-	-	-	-	-	-
Special Construction	-	-	-	0	0	0
Land Acquisition	-	-	-	0	0	0
Total of GREAT recommended Actions	-	-	-	369,000	378,000	389,000 396,000
Average Annual Costs	-	-	-	73,800	75,600	77,800 79,200

*GREAT recommended actions

1/ by the city of Minneapolis for street sanding

DREDGED MATERIAL PLACEMENT SITE

POOL: 1
CUT: 3
SITE: 1.01

EXISTING CONDITIONS DESCRIPTION

SITE: 1.01

Page 1 of 3

CUT LOCATION: 848.9 - 849.9 (Below Lake Street Bridge)

PLACEMENT SITE LOCATION: RM 853.1

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 740' (approx)
100-year flood: 739.8'
5-year flood: 735.6'
Flat pool: 725.1'

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: greater than 2 miles
Residence: 3,000'
Beneficial Use Site: 0'
Other: Near industrial sites and University campus.

VEGETATION CHARACTER: Minimal weeds and shrubs.

SITE OWNER: City of Minneapolis.

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: None
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Stockpile site for dredged material for sanding streets.

Adjacent land use: Bridge, highways, railroads, and University campus.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 1
CUT: 3
SITE: 1.01

Page 2 of 3

SITE: 1.01

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards):	140,000
Area at base (acres):	3.5
Height (feet):	25
Length (feet):	500
Width (feet):	300
Side slope (ratio):	4:1
Final elevation (feet):	740 (Material removed after placement)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged:	22/40
Volume dredged per job (cubic yards):	17,800
Beneficial use demand (cubic yards):	All Material
Beneficial Use by:	City of Minneapolis
Other cuts using sites:	All in pool

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):
Silt (%):
Other (%): No Analysis Done
Contaminants:
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): No (possible for rehandling)

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

POOL: 1

CUT: 3

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

SITE: 1.01

Page 3 of 3

SITE: 1.01

SPECIAL CONDITIONS FOR SITE USE: Material must be removed annually to
retain site capacity.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	3.5	Previously used site
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☒
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Below Lake St. Bridge

POOL: 1

CUT: 3

SITE: 1.01

Frequency: 55%

22/40 yrs

Volume per job: 17,800 cy

TYPES OF DREDGES

PIPELINE	MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.
				700 H.P.
				Clamshell 700 H.P.

Basic Dredging Operation	\$ -	\$ -	\$ -	\$ 99,000*	\$ 100,000*	\$ 118,000*	\$ 120,000*
Berming Costs	-	-	-	-	-	-	-
Diking Costs	-	-	-	-	-	-	-
Riprapping Costs	-	-	-	42,000	42,000	42,000	42,000
Seasonal Removal *	-	-	-	-	-	-	-
Special Construction	-	-	-	0	0	0	0
Land Acquisition	-	-	-	0	0	0	0
Total of GREAT recommended Actions	-	-	-	99,000	100,000	118,000	120,000
Average Annual Costs				54,500	55,000	64,900	66,000

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: 1

EXISTING CONDITIONS DESCRIPTION

CUT: 3

SITE: 1.03

SITE: 1.03

Page 1 of 3

CUT LOCATION: 848.9 - 849.9 (Below Lake Street Bridge)

PLACEMENT SITE LOCATION: RM 849.5 RB

TYPE OF PLACEMENT SITE: Permanent _____ Temporary X

ELEVATIONS AT SITE:

Site (1980): 730'
100-year flood: 735.5'
5-year flood: (10 year flood) = 732'
Flat pool: 725.1'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 100
% Wetland:
% Open water:

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: 3 miles
Residence: 500 ft.
Beneficial Use Site: 4 miles
Other:

VEGETATION CHARACTER: Sparse grasses and shrubs

SITE OWNER: City of Minneapolis

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Recreation beach

Adjacent land use: Main channel, city park.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 1
CUT: 3
SITE: 1.03

Page 2 of 3

SITE: 1.03

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 80,000
Area at base (acres): 6
Height (feet): 10
Length (feet): 1,150
Width (feet): 230
Side slope (ratio):
Final elevation (feet): 730 (Material to be removed periodically)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 22/40
Volume dredged per job (cubic yards): 17,800
Beneficial use demand (cubic yards): 0
Beneficial Use by: recreation beach
Other cuts using sites: 0

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):
Silt (%):
Other (%): No Analysis Done
Contaminants:
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: No
Revegetation: No
Other: Material to be removed before the next seasonal high water.
Areas and features protected by erosion control: Effort primarily to maintain capacity at site.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 1
CUT: 3
SITE: 1.03

Page 3 of 3

SITE: 1.03

SPECIAL CONDITIONS FOR SITE USE: Material to be removed from site before
the next seasonal high water.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	6	recreation beach
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:		

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Channel Maintenance Plan Costs

Cost figures were not calculated for this site because it is a temporary placement site. Material placed at this site must either be immediately removed to another site or removed to another site after material from several dredging jobs has been placed at the site. Cost for rehandling the material will vary according to demand for material, equipment available for removing the material, how much material must be removed during one rehandling operation, and where the material is ultimately placed.

Due to the number of variables affecting the cost of using this temporary site, calculation of cost estimates would not be meaningful for comparing with placement costs at other sites or with other methods.

DREDGED MATERIAL PLACEMENT SITE

POOL: 1

EXISTING CONDITIONS DESCRIPTION

CUT: 4

SITE: 1.01

SITE: 1.01

Page 1 of 3

CUT LOCATION: 849.9 - 850.5 (Above Lake Street Bridge)

PLACEMENT SITE LOCATION: RM 853.1 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 740 (approx)
100-year flood: 739.8
5-year flood: 735.6
Flat pool: 725.1

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: greater than 2 miles
Residence: 3,000'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Minimal weeds and shrubs

SITE OWNER: City of Minneapolis

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: None
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Stockpile site for dredged material for sanding streets.

Adjacent land use: Bridge, highways, railroads and University campus.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 1
CUT: 4
SITE: 1.01

Page 2 of 3

SITE: 1.01

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards):	140,000
Area at base (acres):	3.5
Height (feet):	25
Length (feet):	500
Width (feet):	300
Side slope (ratio):	4:1
Final elevation (feet):	740 (material removed after placement)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged:	20/40
Volume dredged per job (cubic yards):	28,400
Beneficial use demand (cubic yards):	All Material
Beneficial Use by:	City of Minneapolis
Other cuts using sites:	All in pool

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):	89% fine - Medium sand
Silt (%):	11%
Other (%):	
Contaminants:	Minor COD, Nutrients & Pesticides
Contaminant Source:	Twin Cities, Agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry):	X
Hydraulic (in slurry):	No (possible for rehandling)

EROSION CONTROL NEEDED:

Riprap:	None
Revegetation:	None
Other:	None
Areas and features protected by erosion control:	N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 1
CUT: 4
SITE: 1.01

Page 3 of 3

SITE: 1.01

SPECIAL CONDITIONS FOR SITE USE: Material must be removed annually to retain site capacity.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	3.5	Previously used site
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☐

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Above Lake St. Bridge
POOL: 1
CUT: 4
SITE: 1.01
Frequency: 50 %
20/40 yrs
Volume per job: 28,400 cy

	TYPES OF DREDGES					
	PIPELINE	MECHANICAL				
		Backhoe 350 H.P.	700 H.P.	350 H.P.	700 H.P.	
	20 inch	16 inch	12 inch			
Basic Dredging Operation	\$ -	\$ -	\$ -	\$ 139,000*	\$ 153,000*	\$ 154,000* \$ 169,000*
Berming Costs	-	-	-	-	-	-
Diking Costs	-	-	-	-	-	-
Riprapping Costs	-	-	-	42,000	42,000	42,000
Seasonal Removal 1/	-	-	-	-	-	-
Special Construction	-	-	-	0	0	0
Land Acquisition	-	-	-	0	0	0
Total of GREAT recommended Actions	-	-	-	139,000	153,000	154,000 169,000
Average Annual Costs				69,500	76,500	77,000 84,500

*GREAT recommended actions

1/ by the city of Minneapolis for street sanding.

DREDGED MATERIAL PLACEMENT SITE

POOL: 1

EXISTING CONDITIONS DESCRIPTION

CUT: 4

SITE: 1.03

SITE: 1.03

Page 1 of 3

CUT LOCATION: 849.9 - 850.5 (Above Lake Street Bridge)

PLACEMENT SITE LOCATION: RM 849.5

TYPE OF PLACEMENT SITE: Permanent _____ Temporary X

ELEVATIONS AT SITE:

Site (1980): 730'
100-year flood: 735.5'
5-year flood:(10 year flood) = 732'
Flat pool: 725.1'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: 3 miles
Residence: 500 ft.
Beneficial Use Site: 4 miles
Other:

VEGETATION CHARACTER: Sparse grasses and shrubs

SITE OWNER: City of Minneapolis

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Minimal
Socioeconomic: Recreation beach
Adjacent land use: Main channel, city park

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 1
CUT: 4
SITE: 1.03

Page 2 of 3

SITE: 1.03

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 80,000
Area at base (acres): 6
Height (feet): 10
Length (feet): 1,150
Width (feet): 230
Side slope (ratio):
Final elevation (feet): 730 (material to be removed periodically)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 20/40
Volume dredged per job (cubic yards): 28,400
Beneficial use demand (cubic yards): 0
Beneficial Use by: recreation beach
Other cuts using sites: 0

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 89% fine - medium sand
Silt (%): 11%
Other (%):
Contaminants: Minor COD, Nutrients & Pesticides
Contaminant Source: Twin Cities, Agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: No
Revegetation: No
Other:
Areas and features protected by erosion control: Effort primarily to maintain capacity at site.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 1
CUT: 4
SITE: 1.03

Page 3 of 3

SITE: 1.03

SPECIAL CONDITIONS FOR SITE USE: Material to be removed from the site before
the next seasonal high water.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	6	Recreational beach
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:		

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Channel Maintenance Plan Costs

Cost figures were not calculated for this site because it is a temporary placement site. Material placed at this site must either be immediately removed to another site or removed to another site after material from several dredging jobs has been placed at the site. Cost for rehandling the material will vary according to demand for material, equipment available for removing the material, how much material must be removed during one rehandling operation, and where the material is ultimately placed.

Due to the number of variables affecting the cost of using this temporary site, calculation of cost estimates would not be meaningful for comparing with placement costs at other sites or with other methods.

DREDGED MATERIAL PLACEMENT SITE

EXISTING CONDITIONS DESCRIPTION

POOL: 1
CUT: 5
SITE: 1.01

SITE: 1.01

Page 1 of 3

CUT LOCATION: 850.7 - 851.4 (Below Franklin Avenue Bridge)

PLACEMENT SITE LOCATION: RM 853.1 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 740 (approx)
100-year flood: 739.8
5-year flood: 735.6
Flat pool: 725.1

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: greater than 2 miles
Residence: 3,000'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Minimal weeds and shrubs.

SITE OWNER: City of Minneapolis

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: None
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Stockpile site for dredged material for sanding streets.

Adjacent land use: Bridges, highways, railroads and University campus.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 1
CUT: 5
SITE: 1.01

Page 2 of 3

SITE: 1.01

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards):	140,000
Area at base (acres):	3.5
Height (feet):	25
Length (feet):	500
Width (feet):	300
Side slope (ratio):	4:1
Final elevation (feet):	740 (material removed after placement)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged:	18/40
Volume dredged per job (cubic yards):	27,200
Beneficial use demand (cubic yards):	All Material
Beneficial Use by:	City of Minneapolis
Other cuts using sites:	All in pool

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):	
Silt (%):	
Other (%):	No Analysis Done
Contaminants:	
Contaminant Source:	

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry):	X
Hydraulic (in slurry):	No (possible for rehandling)

EROSION CONTROL NEEDED:

Riprap:	None
Revegetation:	None
Other:	None
Areas and features protected by erosion control:	N/A

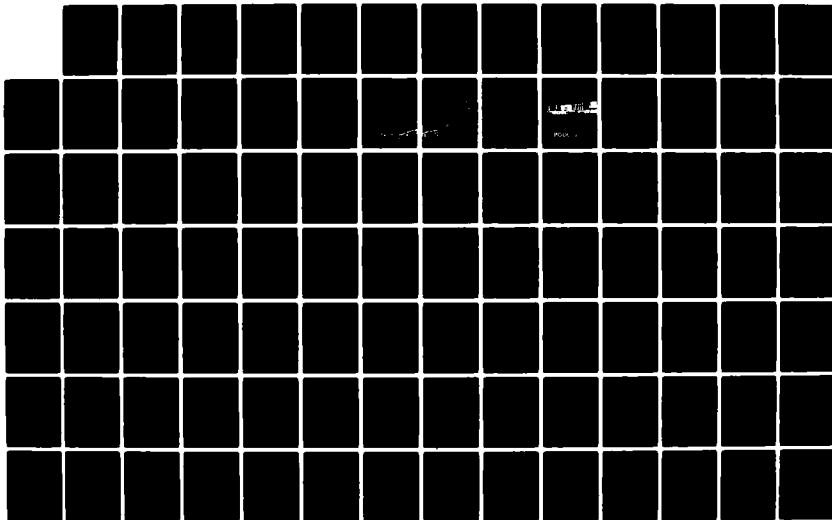
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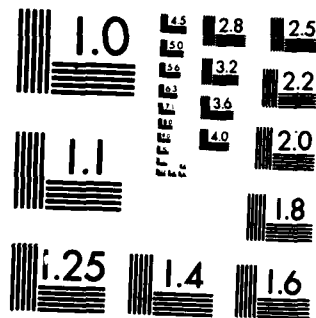
GREAT I STUDY OF THE UPPER MISSISSIPPI RIVER TECHNICAL
APPENDIXES VOLUME 8..(U) GREAT RIVER ENVIRONMENTAL
ACTION TEAM SEP 80

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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 1
CUT: 5
SITE: 1.01

Page 3 of 3

SITE: 1.01

SPECIAL CONDITIONS FOR SITE USE: Material must be removed annually to retain site capacity.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	3.5	Previously used site
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☐

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Below Franklin Avenue Bridge

POOL: 1

CUT: 5

SITE: 1.01

Frequency: 45 %

18/40 yrs

Volume per job: 27,200^cy

TYPES OF DREDGES				
PIPELINE			MECHANICAL	
20 inch	16 inch	12 inch	Backhoe 350 H.P.	Clamshell 350 H.P. 700 H.P.

Basic Dredging Operation	\$ 511,000*	\$ -	\$ -	\$ 134,000*	\$ 128,000*	\$ 150,000*	\$ 164,000*
Berming Costs	10,000	-	-	-	-	-	-
Diking Costs	7,000	-	-	-	-	-	-
Riprapping Costs	42,000	-	-	42,000	42,000	42,000	42,000
Seasonal Removal	-	-	-	-	-	-	-
Special Constuction	0	-	-	0	0	0	0
Land Acquisition	0	-	-	0	0	0	0
Total of GREAT recommended Actions	511,000	-	-	134,000	128,000	150,000	164,000
Average Annual Costs	230,000	-	-	60,300	57,600	67,500	73,800

*GREAT recommended actions

1/ by the city of Minneapolis for street sanding.

DREDGED MATERIAL PLACEMENT SITE

POOL: 1

EXISTING CONDITIONS DESCRIPTION

CUT: 5

SITE: 1.07

SITE: 1.07

Page 1 of 3

CUT LOCATION: 850.7 - 851.4 (Below Franklin Avenue Bridge)

PLACEMENT SITE LOCATION: RM 851.2 LB

TYPE OF PLACEMENT SITE: Permanent _____ Temporary X _____

ELEVATIONS AT SITE:

Site (1980): 730 (approx)
100-year flood: 737.0
5-year flood: 733.2
Flat pool: 725.1

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 100
% Wetland:
% Open water:

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: 3 miles
Residence: 500 ft.
Beneficial Use Site: 2 miles
Other:

VEGETATION CHARACTER: Sparse grasses and shrubs

SITE OWNER: ?

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Recreational beach

Adjacent land use: Main channel, city park

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 1
CUT: 5
SITE: 1.07

Page 2 of 3

SITE: 1.07

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 200,000
Area at base (acres): 11.5
Height (feet): 15
Length (feet): 1,500
Width (feet): 300
Side slope (ratio):
Final elevation (feet): 730 (material periodically removed)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 18/40
Volume dredged per job (cubic yards): 27,200
Beneficial use demand (cubic yards): 0
Beneficial Use by: recreational beach
Other cuts using sites: 0

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):
Silt (%):
Other (%): No Analysis Done
Contaminants:
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: No
Revegetation: No
Other:
Areas and features protected by erosion control: Effort primarily to maintain capacity at site.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 1
CUT: 5
SITE: 1.07

Page 3 of 3

SITE: 1.07

SPECIAL CONDITIONS FOR SITE USE: Material to be removed before next seasonal
high water

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	11.5	recreational beach
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:	0	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Channel Maintenance Plan Costs

Cost figures were not calculated for this site because it is a temporary placement site. Material placed at this site must either be immediately removed to another site or removed to another site after material from several dredging jobs has been placed at the site. Cost for rehandling the material will vary according to demand for material, equipment available for removing the material, how much material must be removed during one rehandling operation, and where the material is ultimately placed.

Due to the number of variables affecting the cost of using this temporary site, calculation of cost estimates would not be meaningful for comparing with placement costs at other sites or with other methods.

DREDGED MATERIAL PLACEMENT SITE

POOL: 1

EXISTING CONDITIONS DESCRIPTION

CUT: 6

SITE: 1.01

SITE: 1.01

Page 1 of 3

CUT LOCATION: 851.7 - 852.4 (Above Franklin Ave. Bridge)

PLACEMENT SITE LOCATION: RM 853.1 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 740 (approx)
100-year flood: 739.8
5-year flood: 735.6
Flat pool: 725.1

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: adjacent
Wetland: greater than 2 miles
Residence: 3,000'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Minimal weeds and shrubs

SITE OWNER: City of Minneapolis

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: None
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Stockpile site for dredged material for sanding streets.

Adjacent land use: Bridges, highways, railroads and University campus.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 1
CUT: 6
SITE: 1.01

Page 2 of 3

SITE: 1.01

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 140,000
Area at base (acres): 3.5
Height (feet): 25
Length (feet): 500
Width (feet): 300
Side slope (ratio): 4:1
Final elevation (feet): 740 (material removed after placement)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 22/40
Volume dredged per job (cubic yards): 26,800
Beneficial use demand (cubic yards): All Material
Beneficial Use by: City of Minneapolis
Other cuts using sites: All in pool

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 98%
Silt (%): 2%
Other (%):
Contaminants: Very Mild
Contaminant Source: Twin Cities, Agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes
Hydraulic (in slurry): Yes

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 1
CUT: 6
SITE: 1.01

Page 3 of 3

SITE: 1.01

SPECIAL CONDITIONS FOR SITE USE: Material must be removed annually to
retain site capacity.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	3.5	Previously used site
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☒
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☐

Above Franklin Avenue Bridge

POOL: 1
CUT: 6
SITE: 1.01

Frequency: 55%
22/40 Yrs
Volume per job: 26,800 cy

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

TYPES OF DREDGES

PIPELINE	MECHANICAL				
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	Clamshell 700 H.P.

	\$ 206,000*	\$ 233,000*	\$ 250,000*	\$ 114,000*	\$ 124,000*	\$ 145,000*	\$ 145,000*
Basic Dredging Operation							
Berming Costs	6,000	8,000	10,000	-	-	-	-
Diking Costs	7,000	7,000	5,000	-	-	-	-
Ripraping Costs	42,000	42,000	42,000	42,000	42,000	42,000	42,000
Seasonal Removal	-	-	-	-	-	-	-
Special Construction	0	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0	0

Total of GREAT recommended Actions	206,000	233,000	250,000	114,000	124,000	145,000	145,000
Average Annual Costs	113,300	128,200	137,500	62,700	68,200	79,800	79,800

*GREAT recommended actions

1/ by the city of Minneapolis for street sanding.

DREDGED MATERIAL PLACEMENT SITE

POOL: 1

EXISTING CONDITIONS DESCRIPTION

CUT: 7

SITE: 1.01

SITE: 1.01

Page 1 of 3

CUT LOCATION: 852.6 - 853.4 (Below Lower St. Anthony Falls)

PLACEMENT SITE LOCATION: RM 853.1 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 740 (approx)
100-year flood: 739.8
5-year flood: 735.6
Flat pool: 725.1

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: greater than 2 miles
Residence: 3,000'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Minimal weeds and shrubs

SITE OWNER: City of Minneapolis

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: None
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Stockpile site for dredged material for sanding streets

Adjacent land use: Bridges, highways, railroads and University campus

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 1
CUT: 7
SITE: 1.01

Page 2 of 3

SITE: 1.01

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 140,000
Area at base (acres): 3.5
Height (feet): 25
Length (feet): 500
Width (feet): 300
Side slope (ratio): 4:1
Final elevation (feet): 740 (material removed after placement)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 36/40
Volume dredged per job (cubic yards): 17,800
Beneficial use demand (cubic yards): All Material
Beneficial Use by: City of Minneapolis
Other cuts using sites: All in pool

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):
Silt (%):
Other (%): No Analysis Done
Contaminants:
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes
Hydraulic (in slurry): Yes

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 1
CUT: 7
SITE: 1.01

Page 3 of 3

SITE: 1.01

SPECIAL CONDITIONS FOR SITE USE: Material must be removed annually to
retain site capacity.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	3.5	Previously used site
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☒
Historical/Archeological survey not made: ☐

Below Lower St. Anthony Falls (L/D)

POOL: 1
CUT: 7
SITE: 1.01

Frequency: 90 %
36/40 yrs

Volume per job: 17,800 cy

	TYPES OF DREDGES						
	PIPELINE			MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$ 100,000*	\$ 99,000*	\$ 79,000*	\$ 80,000*	\$ 92,000*	\$ 95,000*	\$ 97,000*
Berming Costs	3,000	4,000	4,000	-	-	-	-
Diking Costs	8,000	6,000	4,000	-	-	-	-
Riprapping Costs	42,000	42,000	42,000	42,000	42,000	42,000	42,000
Seasonal Removal	-	-	-	-	-	-	-
Special Construction	0	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0	0
Total of GREAT recommended Actions	100,000	99,000	79,000	80,000	92,000	95,000	97,000
Average Annual Costs	90,000	89,100	71,100	72,000	82,800	85,500	87,300

***GREAT recommended actions**

1/ By the city of Minneapolis for street sanding.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 1 Cut 1,2,3,4,5,6,7

Alternative Plan ⁽²⁾	All plans		MPFW/OG ⁽⁶⁾		
Placement Site No.	1.01	1.07 ⁽³⁾	1.03 ⁽⁴⁾	1.02 ⁽⁵⁾	
Site Capacity (cy)	140,000	200,000	80,000	60,000	
Site Acreage	3.5	11.5	6	4.5	
Site Height (ft)	25	15	10	10	
Potential Beneficial use removal (cy)	All material	-	-	-	
Conditions ¹ favoring use of site	21 2 23 4 5 6 (for cut 7) 27 8 (for cut 7) 9 (for cut 7) 30 11 12 33 35	1 6 (for cut 5) 26 (for cuts 4 and 6) 27 28 (for cuts 4-6) 29 (for cuts 4-6) 30 11 32 33	1 6 (for cut 3) 26 (for cuts 2 and 4) 27 28 (for cuts 2-4) 29 (for cuts 2-4) 30 11 32 33	1 26 (for cuts 1 and 2) 27 8 (for cuts 1 and 2) 9 (for cuts 1 and 2) 30 11 32 33	
Conditions ¹ adverse to use of site	46 (for cut 6) 66 (for cuts 1-5) 48 (for cuts 1-6) 49 (for cuts 1-6) 54 56	42 43 44 65 66 (for cuts 1-3, 7) 48 (for cuts 1-3, 7) 49 (for cuts 1-3, 7) 54 75 56	42 43 44 65 66 (for cuts 1, 5-7) 48 (for cuts 1, 5-7) 49 (for cuts 1, 5-7) 54 75 56	42 43 44 65 66 (for cuts 3-7) 48 (for cuts 3-7) 49 (for cuts 3-7) 54 75 56	
¹ Code numbers in columns represent conditions listed on pages ____. (2) RFFP sites were not chosen. (3) Temporary site for cut 5. (4) Temporary site for cuts 3 and 4. (5) Temporary site for cut 1. (6) For cuts 2 and 3					

Key to Conditions Used in Site Comparisons

1. Recreation enhancement
 2. Remove from floodplain
 3. Fish and wildlife enhancement
 4. Beneficial use identified
 5. Existing road access
 6. Adjacent to cut
 7. No land acquisition required
 8. Provides flexibility of equipment
 9. Least cost to dredge
 10. No erosion potential
 11. No special construction required
 12. No diking of berming
 13. No water quality concerns
 14. Aesthetic enhancement
 15. Beneficial use on the site
 16. Sufficient capacity on the site
-
21. No adverse impacts on recreation use
 22. Potential for removal from floodplain
 23. No adverse fish and wildlife impacts
 24. Potential for identifying a beneficial user
 25. Road access can be constructed
 26. Within $\frac{1}{2}$ mile of cut (easy reach of cutterhead dredges)
 27. No apparent problem in acquiring land or easement
 28. Slight limitation on equipment choice
 29. Less costly than dredging to most other sites
 30. Some erosion potential
 31. (Unused)
 32. Berming required
 33. No water quality concern expected
 34. (Unused)
 35. Know of area where material can be put to beneficial use
 36. Sufficient capacity site but less impact if beneficial use demand is developed

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41. Some adverse impacts on recreation use
42. In floodplain - no effect on flood flows
43. Some adverse impacts on fish and wildlife
44. No suspected beneficial user can be identified
45. Poor access to the site
46. Within 2 miles of cut (barely within reach of hydraulic dredges)
47. Land or easement acquisition required
48. Equipment choice limited to just a few options
49. More costly than dredging to most of the other sites
50. Severe erosion potential
51. (Unused)
52. Diking required
53. Suspected water quality concerns
54. Some aesthetic problems
55. Potential market for beneficial use suspected but not identified
56. Sufficient capacity on site with removal by identified users

61. Severe adverse impacts on recreation use
62. Placement would cause suspected constriction on flood flows
63. Severe adverse impacts on fish and wildlife
64. No potential for identifying beneficial user
65. No access to the site
66. Beyond 2 miles from cut (cannot be reached directly by cutterhead dredges)
67. Land or easement acquisition required but does not seem likely
68. Severe restrictions on choice of equipment
69. Most costly to dredge
70. Severe erosion potential with severe consequences if failure occurs
71. Special construction required to use the site
72. Berming or diking required with severe consequences if failure occurs
73. Known water quality concerns
74. Adverse aesthetic impacts
75. No potential market for beneficial use
76. Sufficient capacity on site only if potential beneficial use, not now identified, develops

LEGEND

RECOMMENDED CHANNEL MAINTENANCE PLAN

5 •

—



409 •

345 •

Alternative placement site

Site number

Site number

Site number

Site number

Site number

ALTERNATIVE MATERIAL PLACEMENT PLANS



409 •

Alternative placement site

Site number

POOL 1 & USAF

DREDGE CUT	ALTERNATIVE PLACEMENT PLANS			
	MPFW/OG	NED	EQ	RFFP
1	U.01	U.01	U.02	U.03
2	U.01	U.01	U.02	U.03
3	U.01	U.01	U.02	U.03
1	1.01	1.01	1.01	-
2	1.03	1.01	1.01	-
3	1.03	1.01	1.01	-
4	1.01	1.01	1.01	-
5	1.01	1.01	1.01	-
6	1.01	1.01	1.01	-
7	1.01	1.01	1.01	-

M = Most probable future without GREAT

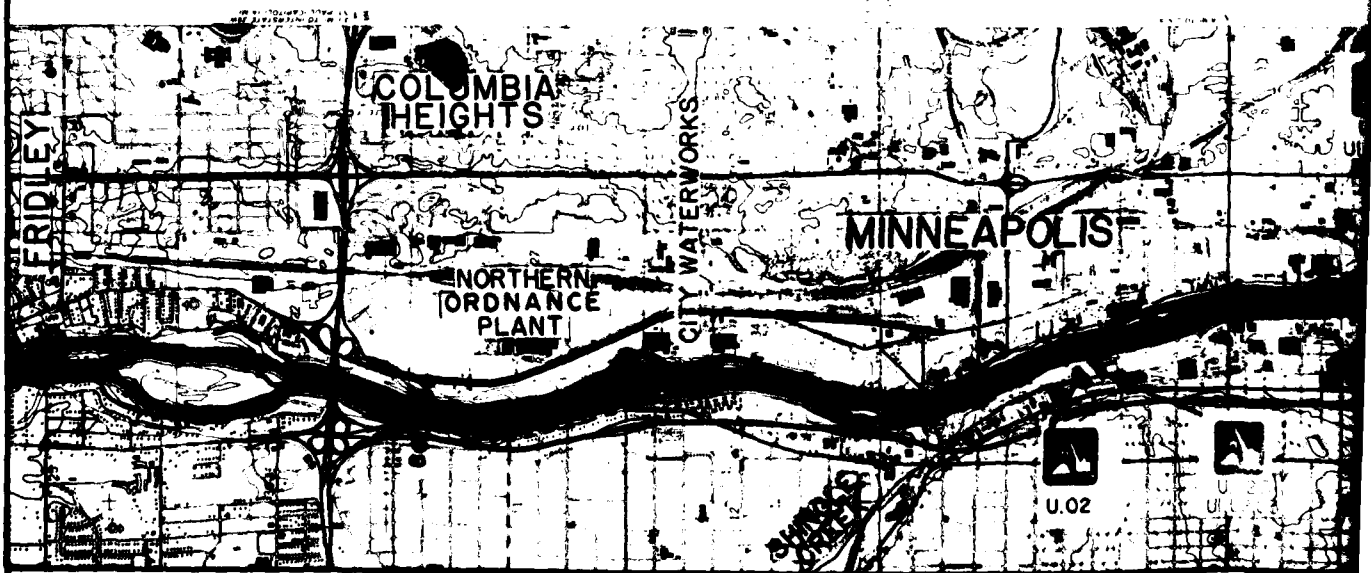
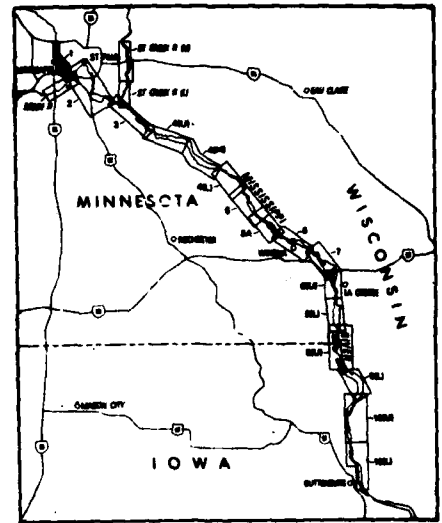
N = National economic development

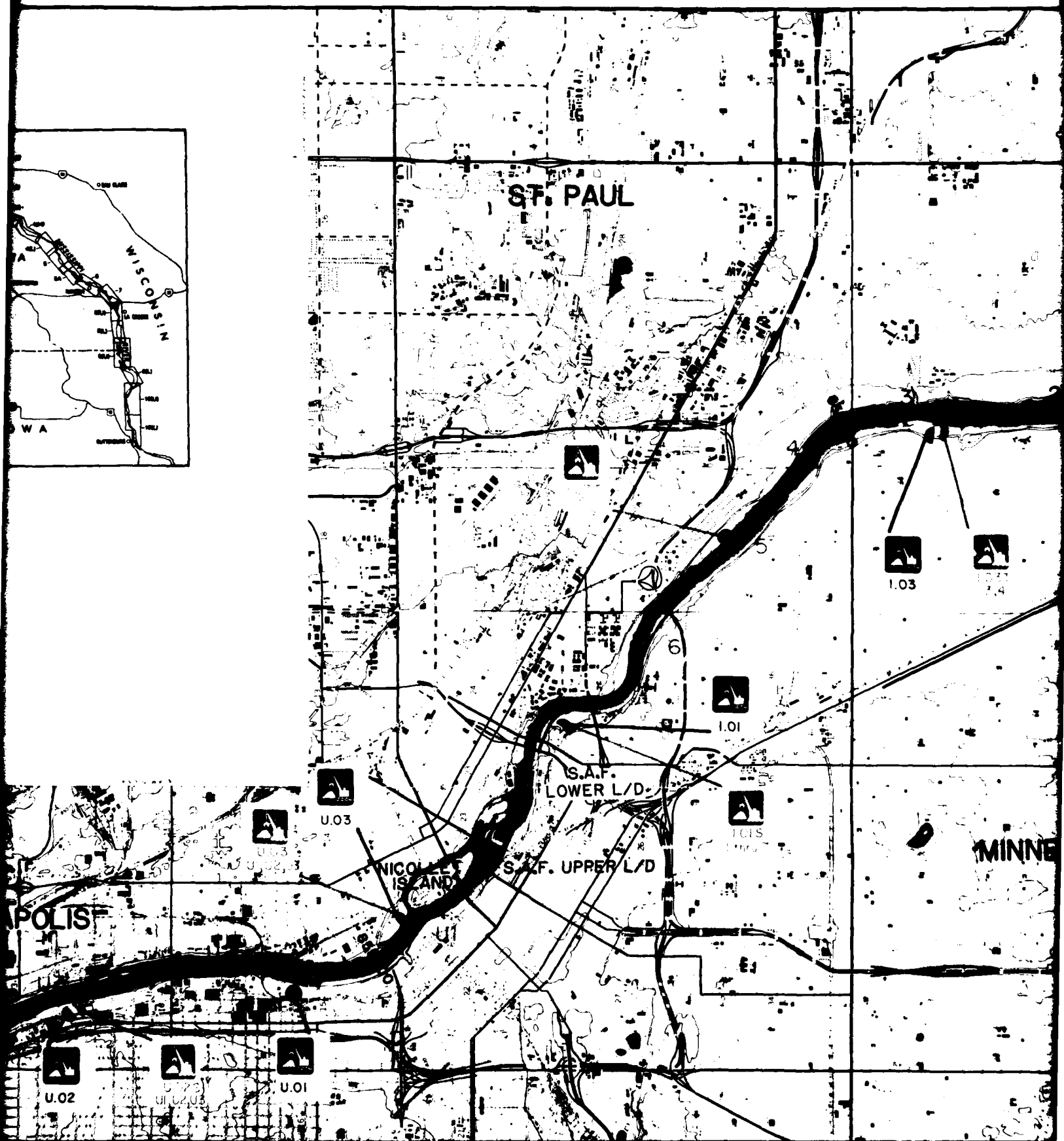
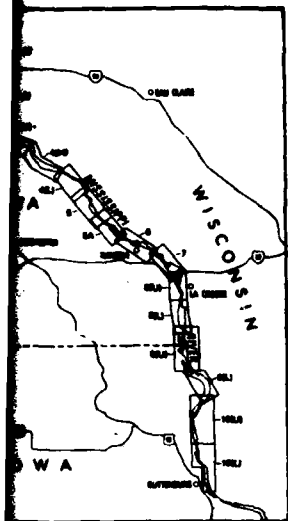
E = Environmental quality

R = Removal from floodplain

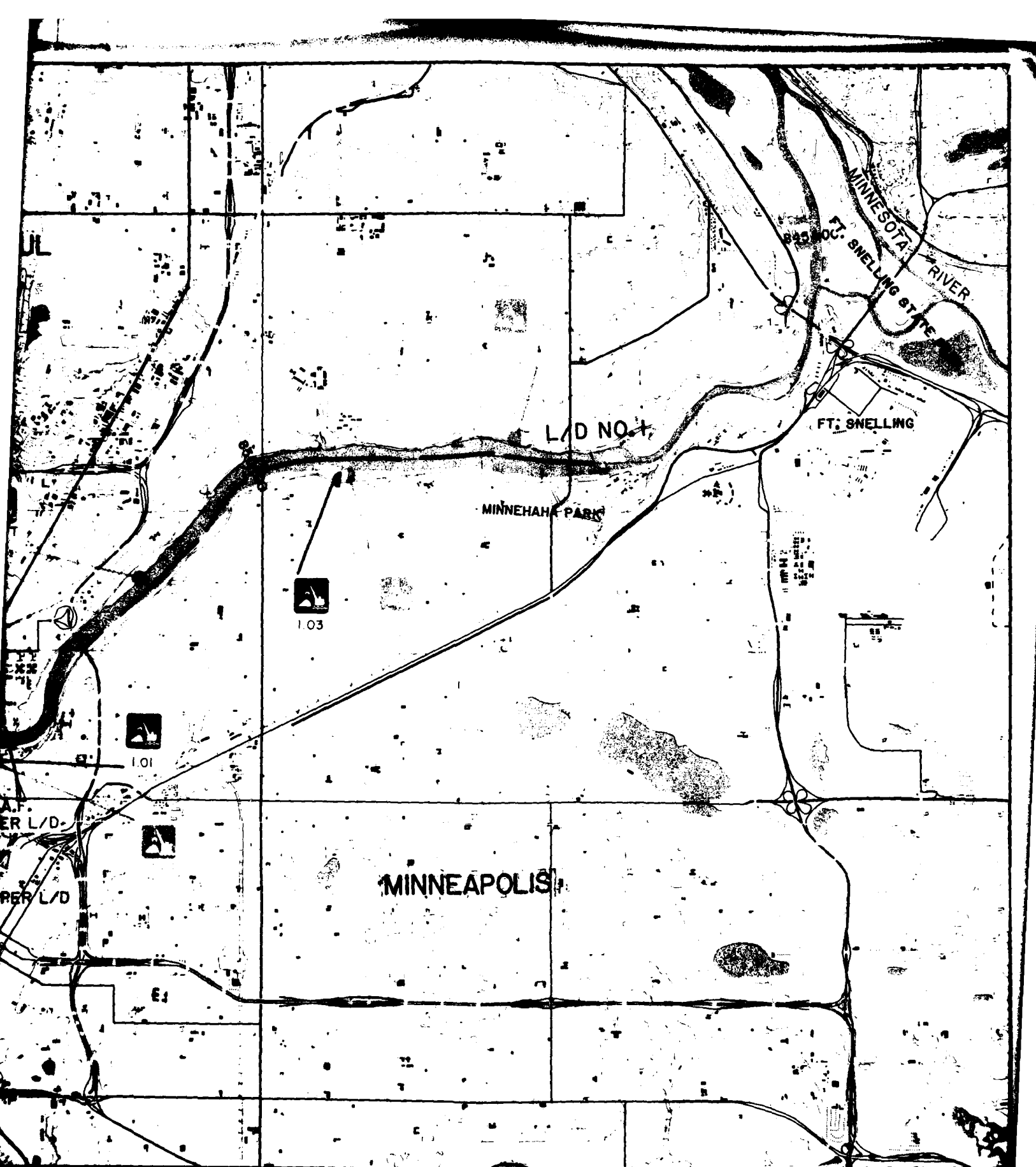
SCALE: 1" = 4,000'

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

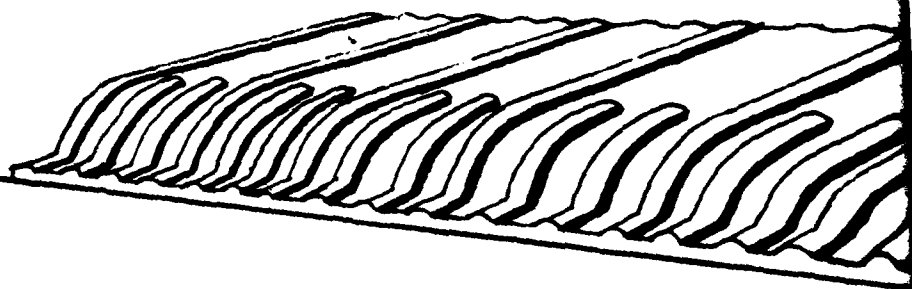




GREAT R



GREAT RIVER ENVIRONMENTAL ACTION TEAM
UPPER MISSISSIPPI RIVER
(POOL 1-MILE 845 TO MILE 860)



POOL 2

CHANNEL MAINTENANCE PLAN SUMMARY

POOL 2

Dredge Cut	MPFNG CY @ 1985-0225	Selected Site	NED Site	EQ Site	RFFP Site	MPFNG Site	MPFNG CY @ 1985-2025	Temporary Site
1. Upper Approach to L/D 2	41,500	2.30	2.30	2.30	2.35	2.30	44,500	-
2. Boulanger Bend Lower Light	240,500	2.35	2.35	2.35	2.35	2.31	312,500	-
3. Boulanger Bend	455,500	2.35	2.35	2.35	2.35	2.31	497,000	-
4. Pine Bend Foot Light	379,500	2.10	2.24/2.25	2.10	2.10	2.24	466,000	-
5. Grey Cloud Slough	282,000	2.10	2.05	2.10	2.10	2.27	308,500	-
6. Below Cudahy	93,500	2.10	2.05	2.10	2.10	2.04	101,000	-
7. St. Paul Barge Terminal	2,028,000	2.14/2.15/2.13/ 2.40/2.02	2.14/2.15/ 2.13/2.02	2.02	2.02	2.13/2.14	2,256,500	-
8. Harriet Island	199,000	2.16	2.16	2.16	2.10	2.16	216,500	-
9. Above and Below Smith Ave Bridge	356,500	2.37	2.37	2.37	2.10	2.16	386,000	-
10. Lower Approach to L/D 1	60,000	2.18	2.18	2.18	2.18	2.29	64,500	-
	4,136,000						4,653,000	

SELECTED PLAN SUMMARY

Total Volume Dredged (cy) - 4,136,000

Beneficial Use (cy) Potential from Selected Sites - 5,473,000

Total Area (acres) - 185

*Site 2.14 is not endorsed for use by the GREAT L. The site is 110 acres of type 3 sandy wetlands.

No. of sites with:

Recreation Enhancement - 1

Cultural Resources Impacts - 0

Wetlands Affected:

Types 1, 2 (acres) - 21.5

Types 3, 4, 5 (acres) - 110*

Table 2
Pool 2 Dredging Volumes

Item	Cut 1		Cut 2		Cut 3		Cut 4		Cut 5	
	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT
Cut Name	Above L/D 2		Boulanger Bend Lower Light		Boulanger Bend		Pine Bend Foot Light		Grey Cloud Slough	
1955 - 1974 average annual dredging volume	1,400	1,400	11,100	11,100	12,100	12,100	16,600	16,600	8,500	8,500
Bend width changes (percent)	—	—	-15	—	+46	+46	—	—	+29	+29
Adjusted average annual volume	1,400	1,400	9,400	11,000	17,700	17,700	16,600	16,600	11,000	11,000
Change for 1986 - 2000 (percent)	-24(1)	-9(1)	-34	-19	-34	-19	-41(2)	-19	-34	-19
Adjusted average annual volume	1,100	1,300	6,200	9,000	11,700	14,300	9,800	13,400	7,300	8,900
Total volume dredged, 1986 - 2000	16,500	19,500	93,000	135,000	175,500	214,500	147,000	201,000	109,500	133,500
Change for 2001 - 2025 (percent)	-27(1)	-26(1)	-37	-36	-34	-36	-44	(2)	-37	-36
Adjusted average annual volume	1,000	1,000	5,900	7,100	11,200	11,300	9,300	10,600	6,900	7,000
Total volume dredged, 2001 - 2025	25,000	25,000	147,500	177,500	280,000	282,500	232,500	265,000	172,500	175,000
Total volume dredged, 1986 - 2025	41,500	44,500	240,500	312,500	455,500	497,000	379,500	466,000	282,000	308,500
Frequency of dredging (percent)	10	10	10	10	10	10	25	25	20	20
Expected number of dredging jobs (1986 - 2025)	4	4	4	4	4	4	10	10	8	8
Average dredging volume per job	10,400	11,100	60,100	78,100	113,900	124,200	38,000	46,600	35,200	38,600

(1) Cut at approach to rigid structure
(2) Cut adjacent to side channel closure

Notes: All volumes in Cubic Yards

Table 2
Pool 2 Dredging Volumes

Item	Cut 6		Cut 7		Cut 8		Cut 9		Cut 10	
	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT
Cut Name	Below Cudahy		St. Paul Barge Terminal		Harriet Island		Above & Below Smith Ave. Bridge		Lower Approach L/D 1	
1955 - 1974 average annual dredging volume	3,600	3,600	79,100	79,100	6,700	6,700	12,000	12,000	2,000	2,000
Bend width changes (percent)	—	—	—	—	—	—	—	—	—	—
Adjusted average annual volume	3,600	3,600	79,100	79,100	6,700	6,700	12,000	12,000	2,000	2,000
Change for 1986 - 2000 (percent)	-34	-19	-34	-19	-24(1)	-9(1)	-24(1)	-9(1)	-24(1)	-9(1)
Adjusted average annual volume	2,400	2,900	52,200	64,100	5,100	6,100	9,100	10,900	1,500	1,800
Total volume dredged, 1986 - 2000	36,000	43,500	783,000	961,500	76,500	91,500	136,500	163,500	22,500	27,000
Change for 2001 - 2025 (percent)	-37	-36	-37	-36	-27(1)	-26(1)	-27(1)	-26(1)	-27(1)	-26(1)
Adjusted average annual volume	2,300	2,300	49,800	50,600	4,900	5,000	8,600	8,900	1,500	1,500
Total volume dredged, 2001 - 2025	57,500	57,500	1,245,000	1,265,000	122,500	125,000	220,000	222,500	37,500	37,500
Total volume dredged, 1986 - 2025	93,500	101,000	2,028,000	2,226,500	199,000	216,500	356,500	386,000	60,000	64,500
Frequency of dredging (percent)	20	20	60	60	40	40	75	75	45	45
Expected number of dredging jobs (1986 - 2025)	8	8	24	24	16	16	30	30	18	18
Average dredging volume per job	11,700	12,600	84,500	92,800	12,400	13,500	11,900	12,900	3,300	3,600

(1) Cut at approach to rigid structure

Note: All volumes in Cubic Yards

DREDGED MATERIAL PLACEMENT SITE

POOL: 2

EXISTING CONDITIONS DESCRIPTION

CUT: 1

SITE: 2.30

SITE: 2.30

Page 1 of 3

CUT LOCATION: 815.5 - 815 9 (Upper Approach L/D 2)

PLACEMENT SITE LOCATION: PM 815.5 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 695.0'
100-year flood: 695.8
5-year flood: 687.5
Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 0
% Wetland: 100
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: 0'
Residence: Greater than 2 miles
Beneficial Use Site: 2 miles
Other: None

VEGETATION CHARACTER: bottomland hardwoods

SITE OWNER: Federal

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: upland game birds, passerine birds, furbearers

Socioeconomic: None

Adjacent land use: Navigation channel, lock and dam #2

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 2
CUT: 1
SITE: 2.30

Page 2 of 3

SITE: 2.30

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 57,000
Area at base (acres): 3.5
Height (feet): 10
Length (feet): 750
Width (feet): 200
Side slope (ratio): 4:1
Final elevation (feet): 705

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 4/40
Volume dredged per job (cubic yards): 10,400
Beneficial use demand (cubic yards): 2,420,000
Beneficial Use by: Hastings, Dakota County
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 100% medium sand
Silt (%):
Other (%):
Contaminants: None
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: Yes
Revegetation: None
Other: None
Areas and features protected by erosion control: adjacent backwaters

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 2
CUT: 1
SITE: 2.30

Page 3 of 3

SITE: 2.30

SPECIAL CONDITIONS FOR SITE USE: Removal for beneficial use necessary in order to provide adequate capacity.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	3.5	1
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	None	
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Above (L/D) 2
POOL: 2
CUT: 1
SITE: 2.30

Frequency: 10%

4/40 yrs

Volume per job: 10,400 cy

TYPES OF DREDGES

PIPELINE	MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.
				700 H.P.
				Clamshell 700 H.P.

Basic Dredging Operation	\$ 108,000*	\$121,000*	\$137,000*	\$ 53,000*	\$ 57,000*	\$ 65,000*	\$67,000*
Berming Costs	3,000	4,000	6,000	-	-	-	-
Diking Costs	17,000*	17,000*	15,000*	-	-	-	-
Riprapping Costs	132,000*	132,000*	132,000*	132,000*	132,000*	132,000*	132,000*
Seasonal Removal	0	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0	0
Total of GREAT recommended Actions	257,000	270,000	284,000	185,000	189,000	197,000	199,000
Average Annual Costs	25,700	27,000	28,400	18,500	18,900	19,700	19,900

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: 2

EXISTING CONDITIONS DESCRIPTION

CUT: 2

SITE: 2.35

SITE: 2.35

Page 1 of 3

CUT LOCATION: 819.0 - 819.8 (Boulangier Bend Lower Light)

PLACEMENT SITE LOCATION: RM 820.4 LB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 696 (Approximately)

100-year flood: 696.0

5-year flood: 689.1'

Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: No

Site within floodway (effective flow area): No

Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100

% Wetland: 0

% Open water: 0

DISTANCE FROM SITE TO:

Open Water: 200ft

Wetland: 3,000'

Residence: 300'

Beneficial Use Site: 0'

Other: None

VEGETATION CHARACTER: Pasture Grasses

SITE OWNER: Private

SPECIAL CONCERNS:

Endangered species habitat: No

Historical or archeological value: Unknown

Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Upland Game birds, furbearers, deer

Socioeconomic: Pasture land, recreation area

Adjacent land use: Summer camp, pasture land, Stone Quarry

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 2
CUT: 2
SITE: 2.35

Page 2 of 3

SITE: 2.35

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 700,000
Area at base (acres): 25
Height (feet): 25
Length (feet): 1000
Width (feet): 1000
Side slope (ratio): 4:1
Final elevation (feet): 719

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 4/40
Volume dredged per job (cubic yards): 60,100
Beneficial use demand (cubic yards): 240,000
Beneficial Use by: Washington County
Other cuts using sites: 3

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 100% medium sand
Silt (%):
Other (%):
Contaminants: None
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes possible
Hydraulic (in slurry): Yes

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 2
CUT: 2
SITE: 2.35

Page 3 of 3

SITE:

SPECIAL CONDITIONS FOR SITE USE:

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	25	upland meadow
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Bou langer Bend Lower Light
POOL: 2
CUT: 2
SITE: 2.35

Frequency: 10%
 4/40 yrs
 Volume per job: 60,000 cy

CHANNEL MAINTENANCE PLAN COSTS
 PER DREDGING JOB

	TYPES OF DREDGES					
	PIPELINE			MECHANICAL		
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$ 509,000*	\$ 442,000*	\$ 539,000*	\$ 356,000*	\$ 383,000*	\$ 377,000* \$ 410,000*
Berming Costs	10,000	14,000	9,000	9,000	9,000	9,000
Diking Costs	88,000*	85,000*	41,000*	41,000*	41,000*	41,000*
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Construction(1)	-	-	41,000*	-	-	-
Land Acquisition	380,000*	380,000*	380,000*	380,000*	380,000*	380,000*
Total of GREAT recommended Actions	977,000	907,000	960,000	777,000	804,000	798,000 830,000
Average Annual Costs	97,700	90,700	96,000	77,700	80,400	79,800 83,100

*GREAT recommended actions

(1) Diking at 2.32

DREDGED MATERIAL PLACEMENT SITE

POOL: 2

CUT: 3

EXISTING CONDITIONS DESCRIPTION

SITE: 2.35

Page 1 of 3

SITE: 2.35

CUT LOCATION: 820.8 - 821.4 (Bolanger Bend)

PLACEMENT SITE LOCATION: RM 820.4 LB

TYPE OF PLACEMENT SITE: Permanent ☒ Temporary ☐

ELEVATIONS AT SITE:

Site (1980): 696 (approximately)

100-year flood: 696.0'

5-year flood: 689.1'

Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: No

Site within floodway (effective flow area): No

Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100

% Wetland: 0

% Open water: 0

DISTANCE FROM SITE TO:

Open Water: 200ft

Wetland: 3000'

Residence: 300ft

Beneficial Use Site: 0'

Other: None

VEGETATION CHARACTER: Pasture grasses

SITE OWNER: Private

SPECIAL CONCERNS:

Endangered species habitat: None

Historical or archeological value: Unknown

Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Upland game birds, furbearers, deer

Socioeconomic: Pasture land, recreation area

Adjacent land use: Summer camp, pasture land, stone quarry

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 2
CUT: 3
SITE: 2.35

Page 2 of 3

SITE: 2.35

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 700,000
Area at base (acres): 25
Height (feet): 25
Length (feet): 1000
Width (feet): 1000
Side slope (ratio): 4:1
Final elevation (feet): 719

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 4/40
Volume dredged per job (cubic yards): 113,900
Beneficial use demand (cubic yards): 240,000
Beneficial Use by: Washington County
Other cuts using sites: 2

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 100% medium sand
Silt (%):
Other (%):
Contaminants: None
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 2
CUT: 3
SITE: 2.35

Page 3 of 3

SITE: 2.35

SPECIAL CONDITIONS FOR SITE USE:

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	25	upland meadow
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS

PER DREDGING JOB

Boulanger Bend
POOL: 2
CUT: 3
SITE: 2.35

Frequency: 10 %
 4/40 yrs
 Volume per job: 113,800 cy

TYPES OF DREDGES

PIPELINE	MECHANICAL				
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$1,263,000	\$1,276,000	\$1,240,000	\$ 688,000	\$ 747,000
Berming Costs	8,000	10,000	11,000	11,000	11,000
Diking Costs	17,000*	24,000*	21,000*	21,000*	21,000*
Riprapping Costs	0	0	0	0	0
Seasonal Removal	0	0	0	0	0
Special Construction					
Land Acquisition	380,000*	380,000*	380,000*	380,000*	380,000*
Total of GREAT recommended Actions	1,660,000	1,680,000	1,641,000	1,088,000	1,148,000
Average Annual Costs	166,000	168,000	164,100	108,900	114,800

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: 2

EXISTING CONDITIONS DESCRIPTION

CUT: 4

SITE: 2.10

SITE: 2.10

Page 1 of 3

CUT LOCATION: 822.7 - 823.7 (Pine Bend Foot Light)

PLACEMENT SITE LOCATION: RM 832.7 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 691.0
100-year flood: 704.5
5-year flood: 695.6
Flat pool: 687.1

FLOOD STAGE FACTORS:

Site within floodplain: No (behind levee)
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: 400'
Wetland: 500'
Residence: 3500'
Beneficial Use Site: 0
Other:

VEGETATION CHARACTER: Weeds (much disturbed former wetland)

SITE OWNER: City of South St. Paul

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Some use by passerine birds, and raptors
Socioeconomic: Abandoned manure storage site
Adjacent land use: Highway, Stockyards, Floodwall

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 2
CUT: 4
SITE: 2.10

Page 2 of 3

SITE: 2.10

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 800,000
Area at base (acres): 25
Height (feet): 25
Length (feet): 1100
Width (feet): 1100
Side slope (ratio): 4:1
Final elevation (feet): 716.0

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 10/40
Volume dredged per job (cubic yards): 38,000
Beneficial use demand (cubic yards): 1,900,000
Beneficial Use by: City of St. Paul, Dakota County
Other cuts using sites: 4,5,6

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 95 medium sand
Silt (%): 5
Other (%):
Contaminants: Minor nutrient level & PCB's
Contaminant Source: Twin Cities and agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes
Hydraulic (in slurry): Yes, as means for rehandling at site

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: Place all material behind floodwall
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 2
CUT: 4
SITE: 2.10

Page 3 of 3

SITE: 2.10

SPECIAL CONDITIONS FOR SITE USE: Method for transferring material from river bank to site necessary to make site useable.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	25	disturbed meadow
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Pine Bend Foot Light
POOL: 2
CUT: 4
SITE: 2.10

Frequency: 40%
16/40 yrs
Volume per job: 38,000 cy

TYPES OF DREDGES

PIPELINE	MECHANICAL				
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$ 398,000	\$ 417,000	\$ 420,000	\$ 196,000	\$ 231,000
Berming Costs (3)	6,000	7,000	8,000	-	-
Diking Costs (3)	53,000*	52,000*	38,000*	-	-
Riprapping Costs	0	0	0	0	0
Seasonal Removal (2)	84,000*	84,000*	84,000*	84,000*	84,000*
Special Construction (1)	60,000*	60,000*	60,000*	60,000*	60,000*
Land Acquisition	0	0	0	0	0
Total of GREAT recommended Actions	595,000	613,000	602,000	354,000	375,000
Average Annual Costs	238,000	245,200	240,800	141,600	150,000

*GREAT recommended actions

(1) Dredging access channel from navigation channel to shore (12-inch dredge, \$5.00/c.y.)

(2) Not removal but trucking from shore to disposal site.

DREDGED MATERIAL PLACEMENT SITE

POOL: 2

EXISTING CONDITIONS DESCRIPTION

CUT: 5

SITE: 2.10

SITE: 2.10

Page 1 of 3

CUT LOCATION: 827.5 - 828.3 (Grey Cloud Slough)

PLACEMENT SITE LOCATION: RM 832.7 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 691.0
100-year flood: 704.5
5-year flood: 895.6
Flat pool: 687.1

FLOOD STAGE FACTORS:

Site within floodplain: No (behind levee)
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: 400'
Wetland: 500'
Residence: 3500'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Weeds (much disturbed former wetland)

SITE OWNER: City of South St. Paul

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Some use by passerine birds, furbearers, and raptors
Socioeconomic: Abandoned manure storage site
Adjacent land use: Highway, Stockyards, Floodwall

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 2
CUT: 5
SITE: 2.10

Page 2 of 3

SITE: 2.10

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 800,000
Area at base (acres): 25
Height (feet): 25
Length (feet): 1100
Width (feet): 1100
Side slope (ratio): 4:1
Final elevation (feet): 716.0

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 8/40
Volume dredged per job (cubic yards): 35,200
Beneficial use demand (cubic yards): 1,900,000
Beneficial Use by: City of St. Paul, Dakota County
Other cuts using sites: 4,5,6

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 98% Coarse Sand
Silt (%): 2%
Other (%):
Contaminants: No appreciable contamination
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes
Hydraulic (in slurry): Yes, as means for rehandling at site.

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: Place all material behind floodwall
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 2
CUT: 5
SITE: 2.10

Page 3 of 3

SITE: 2.10

SPECIAL CONDITIONS FOR SITE USE: Method for transferring material from
river bank to site necessary to make site useable.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	25	disturbed meadow
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Grey Cloud Slough
POOL: 2
CUT: 5
SITE: 2.10

Frequency: 20 %
8/40 yrs
Volume per job: 35,200 cy

	TYPES OF DREDGES						
	PIPELINE 20 inch	16 inch	12 inch	MECHANICAL			Clamshell 700 H.P.
				Backhoe 350 H.P.	700 H.P.	350 H.P.	
Basic Dredging Operation	\$ 445,000*	\$ 508,000*	\$ 479,000*	\$ 172,000*	\$ 184,000*	\$ 205,000*	\$ 215,000*
Berming Costs (3)	7,000	10,000	12,000	-	-	-	-
Diking Costs (3)	53,000*	52,000*	38,000*	-	-	-	-
Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal (2)	76,000*	76,000*	76,000*	76,000*	76,000*	76,000*	76,000*
Special Construction (1)	60,000*	60,000*	60,000*	60,000*	60,000*	60,000*	60,000*
Land Acquisition	0	0	0	0	0	0	0
Total of GREAT recommended Actions	634,000	696,000	653,000	308,000	320,000	341,000	351,000
Average Annual Costs	126,800	139,200	130,600	61,600	64,000	68,200	70,200

*GREAT recommended actions

(1) Dredging access channel from navigation channel to shore (12-inch dredge, \$5.00/c.y.)

(2) Not removal, but trucking from shore to disposal site.

DREDGED MATERIAL PLACEMENT SITE

POOL: 2

EXISTING CONDITIONS DESCRIPTION

CUT: 6

SITE: 2.10

SITE: 2.10

Page 1 of 3

CUT LOCATION: 831.0 - 832.4 (Below Cudahy)

PLACEMENT SITE LOCATION: RM 832.7 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 691.0
100-year flood: 704.5
5-year flood: 695.6
Flat pool: 687.1

FLOOD STAGE FACTORS:

Site within floodplain: No, (behind levee)
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: 400'
Wetland: 500'
Residence: 3500'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Weeds (much disturbed former wetland)

SITE OWNER: City of South St. Paul

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Some use by passerine birds, furbearers, and raptors
Socioeconomic: Abandoned manure storage site
Adjacent land use: Highway, Stockyards, floodwall

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 2
CUT: 6
SITE: 2.10

Page 2 of 3

SITE: 2.10

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 800,000
Area at base (acres): 25
Height (feet): 25
Length (feet): 1100
Width (feet): 1100
Side slope (ratio): 4:1
Final elevation (feet): 716.0

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 8/40
Volume dredged per job (cubic yards): 11,700
Beneficial use demand (cubic yards): 1,900,000
Beneficial Use by: City of St. Paul, Dakota Coutny
Other cuts using sites: 4,5,6

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 100% Coarse Sand
Silt (%):
Other (%):
Contaminants: Moderate nutrients & COD, Some pesticides & PCB's
Contaminant Source: Twin Cities and agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes
Hydraulic (in slurry): Yes

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: Place all material behind floodwall
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 2
CUT: 6
SITE: 2.10

Page 3 of 3

SITE: 2.10

SPECIAL CONDITIONS FOR SITE USE: Method for transferring material from river bank to site necessary to make site useable.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	25	disturbed meadow
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Below Cudahy
POOL: 2
CUT: 6
SITE: 2.10

Frequency: 20 %
8/40 yrs
Volume per job: 11,700 cy

	TYPES OF DREDGES						
	PIPELINE	MECHANICAL					
		20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	Clamshell 350 H.P. 700 H.P.
Basic Dredging Operation	\$ 243,000*	\$ 194,000*	\$ -	\$ -	\$ 60,000*	\$ 66,000*	\$ 74,000* \$ 77,000*
Berming Costs	5,000	6,000	-	-	-	-	-
Diking Costs	21,000*	20,000*	-	-	-	-	-
Riprapping Costs	0	0	-	-	0	0	0
Seasonal Removal (2)	0	0	-	-	27,000*	27,000*	27,000*
Special Construction (1)	0	0	-	-	60,000*	60,000*	60,000*
Land Acquisition	0	0	-	-	0	0	0
Total of GREAT recommended Actions	264,000	214,000	-	-	147,000	153,000	161,000 164,000
Average Annual Costs	52,800	42,800	-	-	29,400	30,600	32,200 32,800

*GREAT recommended actions

(1) Dredging access channel from navigation channel to shore (12-inch dredge, \$5.00/c.y.).

(2) Not removal, but trucking from shore to disposal site.

DREDGED MATERIAL PLACEMENT SITE

POOL: 2

EXISTING CONDITIONS DESCRIPTION

CUT: 7

SITE: 2.14

SITE: 2.14

Page 1 of 3

CUT LOCATION: 836.6 - 837.8 (St. Paul Barge Terminal)

PLACEMENT SITE LOCATION: RM 836.5 RB (Holman Field Runway Project)

TYPE OF PLACEMENT SITE: Permanent X * Temporary _____

*Site approved only if airport runway project approved (this does not indicate GREAT-I approval of the airport expansion)

ELEVATIONS AT SITE:

Site (1980): 695.0
100-year flood: 706.2
5-year flood: 696.6
Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): No
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 0
% Wetland: 100
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: 1000'
Wetland: 0'
Residence: Greater than 1 mile
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: cattails, cutgrass, reed canary grass

SITE OWNER: Metropolitan Airport Commission

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: upland game birds, raptors, herons, egrets, furbearers,
fish spawning, waterfowl feeding
Socioeconomic: None

Adjacent land use: Main channel, Barge Terminal, railroad, airfield

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 2
CUT: 7
SITE: 2.14

Page 2 of 3

SITE: 2.14

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 1,800,000
Area at base (acres): 110
Height (feet): 10
Length (feet): 3400
Width (feet): 1400
Side slope (ratio): 10:1
Final elevation (feet): 705.0'

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 24/40
Volume dredged per job (cubic yards): 84,500
Beneficial use demand (cubic yards): All material - onsite
Beneficial Use by: Metropolitan Airport Commission
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 17 fine sand
Silt (%): 83
Other (%):
Contaminants: high nutrients and COD, Some Pesticides and PCB's
Contaminant Source: Twin Cities and agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: Airport runway asphalt
Areas and features protected by erosion control:

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 2
CUT: 7
SITE: 2.14

Page 3 of 3

SITE: 2.14

SPECIAL CONDITIONS FOR SITE USE: This site is to be used only if runway extension is approved and then only as part of construction

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	80	1 and 2
	30	3 and 4
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	None	
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

St. Paul Barge Terminal-Runway Ext.

POOL: 2

CUT: 7

SITE: 2.14

Frequency: 60%

24/40 yrs

Volume per job: 84,500 cy

	TYPES OF DREDGES						
	PIPELINE			MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$ 616,000*	\$ 545,000*	\$ -	\$ 447,000*	\$ 481,000*	\$ 501,000*	\$ 517,000*
Berming Costs	13,000*	17,000*	-	11,000*	11,000*	11,000*	11,000*
Diking Costs	119,000	92,000	-	45,000	45,000	45,000	45,000
Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0	0
Special Construction							
Land Acquisition	0	0	0	0	0	0	0
Total of GREAT recommended Actions	629,000	562,000	-	458,000	492,000	512,000	528,000
Average Annual Costs	377,400	337,200	-	274,800	295,200	307,200	316,800

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: 2

CUT: 7

EXISTING CONDITIONS DESCRIPTION

SITE: 2.15

SITE: 2.15

Page 1 of 3

CUT LOCATION: 836.6 - 837.8 (St. Paul Barge Terminal)

PLACEMENT SITE LOCATION: RM 838.0 RB (Northport)

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 710 (Approximately)

100-year flood: 706.8

5-year flood: 697.2

Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: No

Site within floodway (effective flow area): No

Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100

% Wetland: 0

% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent

Wetland: Approximately 1 mile

Residence: 1200' Across channel

Beneficial Use Site: 0'

Other:

VEGETATION CHARACTER: Minimal weeds and trees

SITE OWNER: St. Paul Port Authority

SPECIAL CONCERNS:

Endangered species habitat: None

Historical or archeological value: Unknown

Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Commercial development in progress

Adjacent land use: Airport, hydroplane harbor, main channel

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 2
CUT: 7
SITE: 2.15

Page 2 of 3

SITE: 2.15

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 90,000
Area at base (acres): 5.5
Height (feet): 10
Length (feet): 600
Width (feet): 400
Side slope (ratio): 4:1
Final elevation (feet): 720

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 24/40
Volume dredged per job (cubic yards): 84,500
Beneficial use demand (cubic yards): 1,900,000
Beneficial Use by: City of St. Paul, Dakota County
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 17% fine sand
Silt (%): 83%
Other (%):
Contaminants: high nutrients & COD, Some Pesticides & PCB's
Contaminant Source: Twin Cities & agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: All material placed behind floodwall.
Areas and features protected by erosion control:

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 2
CUT: 7
SITE: 2.15

Page 3 of 3

SITE: 2.15

SPECIAL CONDITIONS FOR SITE USE: Owner may limit use to one dredging

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	5.5	distributed meadows
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

St. Paul Barge Terminal-North Port
POOL: 2
CUT: 7
SITE: 2.15

Frequency: 60%
24/40 yrs
Volume per job: 84,500 cy

	TYPES OF DREDGES					
	PIPELINE			MECHANICAL		
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$ 654,000*	\$ 589,000*	\$ -	\$ 312,000*	\$ 354,000*	\$ 423,000*
Berming Costs	13,000	18,000	-	-	-	-
Diking Costs	119,000*	92,000*	-	-	-	-
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	773,000	681,000	-	312,000	354,000	423,000
Average Annual Costs	463,800	408,600	-	187,200	212,400	253,800

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: 2

EXISTING CONDITIONS DESCRIPTION

CUT: 7

SITE: 2.13

SITE: 2.13

Page 1 of 3

CUT LOCATION: 836.6 - 837.8 (St. Paul Barge Terminal)

PLACEMENT SITE LOCATION: RM 836.2 (Southport)

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 696.0
100-year flood: 705.9
5-year flood: 696.4
Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): No
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 0
% Wetland: 100
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: 500'
Wetland: 0'
Residence: Greater than 1000'
Beneficial Use Site: 0
Other: Barge Terminal - adjacent

VEGETATION CHARACTER: Willows

SITE OWNER: Metropolitan Airport Commission

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Passerine birds, furbearers
Socioeconomic: Temporary storage of barge tending equipment
Adjacent land use: Barge terminal, river, open space

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 2
CUT: 7
SITE: 2.13

Page 2 of 3

SITE: 2.13

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 200,000
Area at base (acres): 18
Height (feet): 10
Length (feet): 1300
Width (feet): 600
Side slope (ratio): 4:1
Final elevation (feet): 706.0

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 24/40
Volume dredged per job (cubic yards): 84,500
Beneficial use demand (cubic yards): on site
Beneficial Use by: St. Paul Port Authority
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 17 fine sand
Silt (%): 83
Other (%):
Contaminants: high nutrients & COD, Some Pesticides & PCB's
Contaminant Source: Twin Cities and agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: Stabilize in development of site
Areas and features protected by erosion control: adjacent open water

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 2
CUT: 7
SITE: 2.13

Page 3 of 3

SITE: 2.13

SPECIAL CONDITIONS FOR SITE USE: Plans for development of site have to be approved and ready to implement at time of placement.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	18	1
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	None	
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

St. Paul Barge Terminal-Alter Slip

POOL: 2

CUT: 7

SITE: 2.13

Frequency: 60%

24/40 yrs

Volume per job: 84,500 cy

TYPES OF DREDGES

PIPELINE	MECHANICAL			
	20 inch	16 inch	12 inch	Clamshell

Basic Dredging Operation \$ 701,000* \$ - \$ - \$ 361,000* \$ 354,000* \$ 384,000* \$ 423,000*

Berming Costs 14,000 - - - - -

Diking Costs 119,000* - - - - -

Riprapping Costs 0 0 0 0 0 0 0

Seasonal Removal 0 0 0 0 0 0 0

Special Construction 0 0 0 0 0 0 0

Land Acquisition 0 0 0 0 0 0 0

Total of GREAT recommended Actions 820,000 - - - 361,000 354,000 384,000 423,000

Average Annual Costs 492,000 - - - 216,600 212,400 230,400 253,800

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: 2

EXISTING CONDITIONS DESCRIPTION

CUT: 7

SITE: 2.40

SITE: 2.40

Page 1 of 3

CUT LOCATION: 836.6 - 837.8 (Saint Paul Barge Terminal)

PLACEMENT SITE LOCATION: RM 836.0

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 683 (approx)
100-year flood: 706.0
5-year flood: 696.5
Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: Yes

SITE CHARACTER:

% Upland: 0
% Wetland: 0
% Open water: 100

DISTANCE FROM SITE TO:

Open Water: 0'
Wetland: 1000'
Residence: greater than mile
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER:

Minimal aquatic vegetation

SITE OWNER: State of Minnesota (However, after project, site would become St. Paul Port Authority's property).

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Some fish feeding & waterfowl feeding

Socioeconomic: potential development site

Adjacent land use: main channel, airport

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 2
CUT: 7
SITE: 2.40

Page 2 of 3

SITE: 2.40

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 1,333,000
Area at base (acres): 28
Height (feet): 30
Length (feet): 4000
Width (feet): 300
Side slope (ratio): Vertical (sheet pile)
Final elevation (feet): 713

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 24/40
Volume dredged per job (cubic yards): 84,500
Beneficial use demand (cubic yards): 1,333,000 on site, 1,900,000 off-site
Beneficial Use by: St. Paul Port Authority (on site); Dakota County, St. Paul
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 17 - fine sand
Silt (%): 83
Other (%):
Contaminants: high nutrients and COD, some pesticides and PCB's
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: No
Revegetation: No
Other: Sheet piling to contain material
Areas and features protected by erosion control: Sheet piling primarily
to hold material in place for project development and for water quality
measure.

DREDGED MATERIAL PLACEMENT SITE

POOL: 2

CUT: 7

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

SITE: 2.40

(Continued from previous page)

Page 3 of 3

SITE: 2.40

SPECIAL CONDITIONS FOR SITE USE: Sheet piling containment required to use site.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	28	settling area
Upland altered:	0	
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:		

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS

St. Paul Barge Terminal-Sheet Pile Basin

PER DREDGING JOB

POOL: 2

CUT: 7

SITE: 2.40

Frequency: 60%

24/40 yrs

Volume per job: 84,500 cy

TYPES OF DREDGES

PIPELINE	MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.
				700 H.P.
				Clamshell 700 H.P.

Basic Dredging Operation	\$ 291,000*	\$ 295,000*	\$ 258,000*	\$ 305,000*	\$ 348,000*	\$ 375,000*	\$ 368,000*
Berming Costs	9,000	11,000	12,000	-	-	-	-
Diking Costs	119,000	92,000	45,000	-	-	-	-
Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0	0
Special Construction(1)	-	-	-	-	-	-	-
Land Acquisition	0	0	0	0	0	0	0

Total of GREAT

recommended Actions

Average Annual Costs

	291,000	295,000	258,000	305,000	348,000	375,000	368,000
	174,600	177,000	154,800	183,000	208,800	225,000	220,800

*GREAT recommended actions

- (1) Construct a sheet Pile basin on inside of bend. Cost not included here see discussion on Special Features in the CMP.

DREDGED MATERIAL PLACEMENT SITE

EXISTING CONDITIONS DESCRIPTION

POOL: 2
CUT: 7
SITE: 2.02

SITE: 2.02

Page 1 of 3

CUT LOCATION: 836.6 - 837.8 (St. Paul Barge Terminal)

PLACEMENT SITE LOCATION: RM 836.5

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 709.0'
100-year flood: 706.2'
5-year flood: 696.6'
Flat pool: 687.2'

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: 1,000'
Wetland: 1,000'
Residence: Over 1 mile
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Weeds and some small trees.

SITE OWNER: Burlington Northern R.R. (leased to City of St. Paul)

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Passerine birds, furbearers, raptors
Socioeconomic: Open space, abandoned landfill
Adjacent land use: Access road to treatment plant, wetlands, railroad.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 2
CUT: 7
SITE: 2.02

Page 2 of 3

SITE: 2.02

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 2,200,000
Area at base (acres): 69
Height (feet): 20
Length (feet): 1,750
Width (feet): 1,750
Side slope (ratio):
Final elevation (feet): 729

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 24/40
Volume dredged per job (cubic yards): 84,500
Beneficial use demand (cubic yards): 200,000
Beneficial Use by: St. Paul
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 17 - fine sand
Silt (%): 83
Other (%):
Contaminants: High nutrients and COD, some pesticides and PCB's
Contaminant Source: Twin Cities and agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): No
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 2
CUT: 7
SITE: 2.02

Page 3 of 3

SITE: 2.02

SPECIAL CONDITIONS FOR SITE USE: Access for hydraulic pipes to site is necessary to use site.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	69	Disturbed meadow
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

St. Paul Terminal-Pig's Eye Landfill

POOL: 2

CUT: 7

SITE: 2.02

Frequency: 60%

24/40 yrs

Volume per job: 84,500cy

PIPELINE	TYPES OF DREDGES				
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	MECHANICAL Clamshell 700 H.P. 350 H.P. 700 H.P.

Basic Dredging Operation	\$ 357,000*	\$ 421,000	\$ 453,000*	\$465,000	\$517,000	\$ 520,000	\$535,000
Berming Costs	11,000	15,000	18,000	18,000	18,000	18,000	18,000
Diking Costs	119,000*	92,000*	45,000*	45,000	45,000	45,000	45,000
Riprapping Costs	0	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0	0
Special Construction(1)	20,000*	20,000*	20,000*	20,000*	20,000*	20,000*	20,000*
Land Acquisition	0	0	0	0	0	0	0

Total of GREAT recommended Actions	496,000	533,000	518,000	485,000	537,000	540,000	555,000
Average Annual Costs	297,600	319,800	310,800	281,000	322,200	324,000	333,000

*GREAT recommended actions

(1) Crossing roads and railroads

DREDGED MATERIAL PLACEMENT SITE

POOL: 2
CUT: 8
SITE: 2.16

EXISTING CONDITIONS DESCRIPTION

SITE: 2.16

Page 1 of 3

CUT LOCATION: 838.4 - 839.7 (Harriet Island)

PLACEMENT SITE LOCATION: RM 840.4 RB

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 688
100-year flood: 709.7
5-year flood: 698.8
Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: 2 miles
Residence: 800'
Beneficial Use Site: 0'
Other: Marina 300'

VEGETATION CHARACTER:

Some sparse trees and grasses

SITE OWNER: Saint Paul Parks Department

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Stockpile site for sand and dredged material site

Adjacent land use: City small boat harbor, county road, main channel,
barge repair facility.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 2
CUT: 8
SITE: 2.16

Page 2 of 3

SITE: 2.16

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 138,000
Area at base (acres): 3.4
Height (feet): 25
Length (feet): 600
Width (feet): 250
Side slope (ratio): 4:1
Final elevation (feet): 688

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 16/40
Volume dredged per job (cubic yards): 12,400
Beneficial use demand (cubic yards): 200,000; to 1980 all material has
Beneficial Use by: City of St. Paul been used each year.
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 50% coarse sands
Silt (%): 50%
Other (%):
Contaminants: high COD nutrients, some pesticides, PCB's
Contaminant Source: Twin Cities and agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: No
Revegetation: No
Other: Material removed prior to next seasonal high water.
Areas and features protected by erosion control: Material removed from
site primarily for flood stage reasons.

DREDGED MATERIAL PLACEMENT SITE

POOL: 2

CUT: 8

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

SITE: 2.16

Page 3 of 3

SITE: 2.16

SPECIAL CONDITIONS FOR SITE USE: Material must be removed prior to next seasonal high water.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	3.4	previously filled wetlands
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Harriet Island
POOL: 2
CUT: 8
SITE: 2.16

Frequency: 40%
16/40 yrs
Volume per job: 12,900cy

	TYPES OF DREDGES					
	PIPELINE			MECHANICAL		
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	Clamshell 350 H.P. 700 H.P.
Basic Dredging Operation	\$ 321,000*	\$ 263,000*	\$ 214,000*	\$ 73,000*	\$ 72,000*	\$ 89,000*
Berming Costs(1)	-	6,000*	6,000*	-	-	-
Diking Costs	-	20,000	18,000	-	-	-
Riprapping Costs	21,000*	21,000*	21,000*	21,000*	21,000*	21,000*
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	342,000	290,000	241,000	94,000	93,000	110,000
Average Annual Costs	136,800	116,000	96,400	37,600	37,200	44,000

*GREAT recommended actions

(1) at 2.15

DREDGED MATERIAL PLACEMENT SITE

POOL: 2

EXISTING CONDITIONS DESCRIPTION

CUT: 9

SITE: 2.37

SITE: 2.37

Page 1 of 3

CUT LOCATION: 840.1 - 841.4 (Above and Below Smith Ave. Bridge)

PLACEMENT SITE LOCATION: RM 841.3

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 707 (approx)

100-year flood: 711.0

5-year flood: 699.2

Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: Yes

Site within floodway (effective flow area): No

Site below ordinary high water mark:

SITE CHARACTER:

% Upland: 100

% Wetland: 0

% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent

Wetland: 700'

Residence: 1000'

Beneficial Use Site: 0'

Other: None

VEGETATION CHARACTER:

Weeds

SITE OWNER: Northern States Power Co.

SPECIAL CONCERNS:

Endangered species habitat: None

Historical or archeological value: Unknown

Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Some passerine birds

Socioeconomic: flyash pit

Adjacent land use: Electrical generating plant, state highway, main channel river

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 2
CUT: 9
SITE: 2:37

Page 2 of 3

SITE: 2.37

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 237,000
Area at base (acres): 7
Height (feet): 20
Length (feet): 760
Width (feet): 400
Side slope (ratio): 4:1
Final elevation (feet): 714

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 30/40
Volume dredged per job (cubic yards): 11,900
Beneficial use demand (cubic yards): 200,000
Beneficial Use by: Saint Paul
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 97% coarse sand
Silt (%): 3%
Other (%):
Contaminants: low level pesticides and PCB's
Contaminant Source: Twin Cities and agricultural

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 2
CFT: 9
S. 2.37

Page 3 of 3

SITE: 2.37

SPECIAL CONDITIONS FOR SITE USE: Material must be removed periodically to retain site capacity.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None *	
Open water filled:	None	
Upland altered:	7	greatly disturbed meadow
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

* Abandoned fly ash pit which occasionally holds water.

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Above and Below Smith Ave Bridge

POOL: 2
CUT: 9
SITE: 2.37

Frequency: 75%
30/40 yrs
Volume per job: 11,900 cy

PIPELINE	TYPES OF DREDGES				
	MECHANICAL			CLAMSHHELL	
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	Clamshell 700 H.P.

Basic Dredging Operation	\$ 247,000*	\$ 196,000*	\$ -	\$ 61,000*	\$ 68,000*	\$ 74,000*	\$ 77,000*
Berming Costs	5,000	6,000	-	-	-	-	-
Diking Costs	21,000*	20,000*	-	-	-	-	-
Riprapping Costs	7,000	7,000	7,000	7,000	7,000	7,000	7,000
Seasonal Removal	0	0	0	0	0	0	0
Special Construction							
Land Acquisition	80,000*	80,000*	80,000*	81,000*	80,000*	80,000*	80,000*
Total of GREAT recommended Actions	348,000	296,000	80,000	141,000	148,000	154,000	157,000
Average Annual Costs	261,000	222,000	60,000	105,800	111,000	115,500	117,800

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: 2
CUT: 10
SITE: 2.18

EXISTING CONDITIONS DESCRIPTION

SITE: 2.18

Page 1 of 3

CUT LOCATION: 847.7 - 848.4 (Lower Approach L/D 1)

PLACEMENT SITE LOCATION: RM 843.4

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 740 (approx)
100-year flood: 712.5
5-year flood: 701.2
Flat pool: 687.2

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: 500'
Wetland: 1200' Across channel
Residence: 1200'
Beneficial Use Site: 0'
Other: None

VEGETATION CHARACTER:

No vegetation (gravel pit operation)

SITE OWNER: J. L. Shiely Co. (Sand and gravel company)

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Stockpile and distribution point for sand and gravel products
Adjacent land use: Highway, railroad, open space

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 2
CUT: 10
SITE: 2.18

Page 2 of 3

SITE: 2.18

MAXIMUM SITE DEVELOPMENT DIMENSIONS:*

Volume capacity (cubic yards):
Area at base (acres):
Height (feet):
Length (feet):
Width (feet):
Side slope (ratio):
Final elevation (feet):

N/A

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 18/40
Volume dredged per job (cubic yards): 3,300
Beneficial use demand (cubic yards): All
Beneficial Use by: J.L. Shiely
Other cuts using sites: Minnesota River, cut 1

DREDGED MATERIAL CHARACTERISTICS:

Sand (%):
Silt (%):
Other (%): No Analysis done
Contaminants:
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): No

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

* Land owner has offered to unload barges with his own equipment
and stockpile it on the site with his own conveyor equipment.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 2
CUT: 10
SITE: 2.18

Page 3 of 3

SITE: 2.18

SPECIAL CONDITIONS FOR SITE USE: Mechanical unloading with landowner's equipment

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	None	
Wetlands altered:	None	
Open water filled:	None	
Upland altered:	None	
Endangered Species habitat lost:	None	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS

PER DREDGING JOB

POOL: 2
CUT: 10
SITE: 2.18

Frequency: 45 %
18/40 yrs
Volume per job: 3,300 cy

	TYPES OF DREDGES					
	PIPELINE				MECHANICAL	
		20 inch	16 inch	12 inch	Backhoe 350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$ 96,000	\$ 96,000	\$ 81,000	\$ 29,000*	\$ 31,000*	\$ 29,000*
Berming Costs	-	-	-	-	-	-
Diking Costs	-	-	-	-	-	-
Riprapping Costs	-	-	-	-	-	-
Seasonal Removal	-	-	-	-	-	-
Special Construction	-	-	-	-	-	-
Land Acquisition	-	-	-	-	-	-
Total of GREAT recommended Actions	-	-	-	29,000	31,000	29,000
Average Annual Costs	-	-	-	13,050	13,950	13,050

*GREAT recommended actions

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 2 Cut 1

Alternative Plan	Selected, EQ NED, MPEW/OG	RFFP			
Placement Site No.	2.30	2.35			
Site Capacity (cy)	57,000	1,500,000			
Site Acreage	3.5	39			
Site Height (ft)	10	25			
Potential Beneficial use removal (cy)	2.420,000	240,000			
Conditions ¹ favoring use of site	24 25 26 7 8 29 11	2 24 5 30 11 32 16			
Conditions ¹ adverse to use of site	41 42 43 50 72 73 54 55 76	41 43 66 47 48 49 73 74 55			
¹ Code numbers in columns represent conditions listed on pages ____.					
263					

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 2 Cut 2

Alternative Plan	Selected, NED EQ, RFFP	MPFW/OG			
Placement Site No.	2.35	2.31			
Site Capacity (cy)	1,500,000	140,000			
Site Acreage	39	3.4			
Site Height (ft)	25	25			
Potential Beneficial use removal (cy)	240,000	-			
Conditions ¹ favoring use of site	2 24 5 30 11 32 16	1 7 11			
Conditions ¹ adverse to use of site	41 43 46 47 48 49 73 74 55	62 63 64 65 46 48 49 70 72 73 54 75 76*			

*unless site is
further into open water.

¹ Code numbers in columns represent
conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 2 Cut 3

Alternative Plan	Selected, NED EQ, REEP	MPFW/OG			
Placement Site No.	2.35	2.31			
Site Capacity (cy)	1,500,000	140,000			
Site Acreage	39	3.4			
Site Height (ft)	25	25			
Potential Beneficial use removal (cy)	240,000	-			
Conditions ¹ favoring use of site	2 24 5 30 11 32 16	1 6 7 8 9 11			
Conditions ¹ adverse to use of site	41 43 46 47 48 49 73 74 55	62 63 64 65 70 72 73 74 75 76* *unless site is expanded further into open water			
¹ Code numbers in columns represent conditions listed on pages _____.					
		265			

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 2 Cut 4

Alternative Plan	Selected, EQ REFP	NED, MPFW/OG	NED		
Placement Site No.	2.10	2.24	2.25		
Site Capacity (cy)	800,000	360,000	220,000		
Site Acreage	25	15	9		
Site Height (ft)	25	15	15		
Potential Beneficial use removal (cy)	1,900,000	-	-		
Conditions ¹ favoring use of site	21 2 23 4 5 10 32 35 16	1 24 6 7 8 9 11 35	1 6 7 8 9 11		
Conditions ¹ adverse to use of site	66 47 48 69 71 73 54	62 63 65 70 52 73 74 76	62 63 64 65 70 52 73 74 75 76		

¹ Code numbers in columns represent
conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 2 Cut 5

Alternative Plan	Selected, EQ REFP	NED	MPFW/OG		
Placement Site No.	2.10	2.05	2.27		
Site Capacity (cy)	800,000	1,370,000	20,000		
Site Acreage	25	43	2.75		
Site Height (ft)	25	25	5		
Potential Beneficial use removal (cy)	1,900,000	-	-		
Conditions ¹ favoring use of site	21 2 23 4 5 10 32 35 16	21 22 4 5 27 11 32 15 16	1 42 24 25 6 8 9 11 32 35		
Conditions ¹ adverse to use of site	66 47 48 49 71 73 54	63 66 48 49 50 73 54	63 64 47 50 73 74 56		

¹ Code numbers in columns represent
conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 2 Cut 6

Alternative Plan	Selected, EQ REFP	NED	MPFW/OG		
Placement Site No.	2.10	2.05	2.04		
Site Capacity (cy)	800,000	1,370,000	1,100,000		
Site Acreage	25	43	36		
Site Height (ft)	25	25	20		
Potential Beneficial use removal (cy)	1,900,000	-	-		
Conditions ¹ favoring use of site	21 2 23 4 5 26 28 9 10 32 35 16	21 22 4 5 27 28 29 11 32 35 16	21 22 24 5 27 10 11 32 15 16		
Conditions ¹ adverse to use of site	47 71 73 54	63 46 50 73 54	63 46 48 49 50 73 54		

Code numbers in columns represent
conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 2 Cut 7

Alternative Plan	Selected, NED MPFW/OG	Selected, NED	Selected, NED MPFW/OG	Selected	Selected, NED EQ, RFFP
Placement Site No.	2.14	2.15	2.13	2.40	2.02
Site Capacity (cy)	1,800,000	90,000	200,000	1,333,000	2,200,000
Site Acreage	18	5.5	13	28	69
Site Height (ft)	10	10	10	30	20
Potential Beneficial use removal (cy)	1,800,000	1,900,000	1,900,000	3,233,000	-
Conditions ¹ favoring use of site	21 4 5 26 27 28 9 30 11 15 16	21 23 24 5 26 27 28 29 11 15/35	21 4 25 27 28 30 15	21 4 25 6 27 8 29 30 12 15	21 2 4 25 26 10 32 35 16
Conditions ¹ adverse to use of site	42 63 72 73 54	62 50 52 73 74 76	42 43 56 49 71 52 73 54 56	62 43 71 73 74 56	43 47 68 49 71 73 54

¹ Code numbers in columns represent conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 2 Cut 8

Alternative Plan	Selected, NED EQ, MPFW/OG	RFFP			
Placement Site No.	2.16	2.10			
Site Capacity (cy)	138,000	800,000			
Site Acreage	8.5	25			
Site Height (ft)	25	25			
Potential Beneficial use removal (cy)	-	1,900,000			
Conditions ¹ favoring use of site	21 22 23 4 5 27 28 29 30 11 12 33 35	21 2 23 4 5 10 32 33 35 16			
Conditions ¹ adverse to use of site	46 54 56	66 47 48 69 71 54			

¹ Code numbers in columns represent
conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 2 Cut 9

Alternative Plan	Selected, NED EQ	REFP	MPFW/OG		
Placement Site No.	2.37	2.10	2.16		
Site Capacity (cy)	237,000	800,000	135,000		
Site Acreage	7	25	8.5		
Site Height (ft)	20	25	25		
Potential Beneficial use removal (cy)	200,000	1,900,000	-		
Conditions ¹ favoring use of site	21 22 23 4 5 6 8 29 30 11 32 33 35	21 2 23 4 5 10 32 33 35 16	21 22 23 4 5 6 27 8 9 30 11 12 33 35		
Conditions ¹ adverse to use of site	47 54 56	66 47 48 69 71 54	54 56		
¹ Code numbers in columns represent conditions listed on pages ____.					

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 1 Cut 10

Alternative Plan	Selected, NEP EQ. RFP	MPFW/OG			
Placement Site No.	2.18	2.29			
Site Capacity (cy)	Unlimited	60,000			
Site Acreage		1.75			
Site Height (ft)		22			
Potential Beneficial use removal (cy)	All material	-			
Conditions ¹ favoring use of site	21 2 23 4 5 27 10 11 12 33 35 16	1 6 7 8 9 11 32 33 16			
Conditions ¹ adverse to use of site	66 68 69 54	42 43 64 65 50 54 75			
¹ Code numbers in columns represent conditions listed on pages _____.					

Key to Conditions Used in Site Comparisons

1. Recreation enhancement
 2. Remove from floodplain
 3. Fish and wildlife enhancement
 4. Beneficial use identified
 5. Existing road access
 6. Adjacent to cut
 7. No land acquisition required
 8. Provides flexibility of equipment
 9. Least cost to dredge
 10. No erosion potential
 11. No special construction required
 12. No diking of berming
 13. No water quality concerns
 14. Aesthetic enhancement
 15. Beneficial use on the site
 16. Sufficient capacity on the site
-
21. No adverse impacts on recreation use
 22. Potential for removal from floodplain
 23. No adverse fish and wildlife impacts
 24. Potential for identifying a beneficial user
 25. Road access can be constructed
 26. Within $\frac{1}{2}$ mile of cut (easy reach of cutterhead dredges)
 27. No apparent problem in acquiring land or easement
 28. Slight limitation on equipment choice
 29. Less costly than dredging to most other sites
 30. Some erosion potential
 31. (Unused)
 32. Berming required
 33. No water quality concern expected
 34. (Unused)
 35. Know of area where material can be put to beneficial use
 36. Sufficient capacity site but less impact if beneficial use demand is developed

41. Some adverse impacts on recreation use
42. In floodplain - no effect on flood flows
43. Some adverse impacts on fish and wildlife
44. No suspected beneficial user can be identified
45. Poor access to the site
46. Within 2 miles of cut (barely within reach of hydraulic dredges)
47. Land or easement acquisition required
48. Equipment choice limited to just a few options
49. More costly than dredging to most of the other sites
50. Severe erosion potential
51. (Unused)
52. Diking required
53. Suspected water quality concerns
54. Some aesthetic problems
55. Potential market for beneficial use suspected but not identified
56. Sufficient capacity on site with removal by identified users

61. Severe adverse impacts on recreation use
62. Placement would cause suspected constriction on flood flows
63. Severe adverse impacts on fish and wildlife
64. No potential for identifying beneficial user
65. No access to the site
66. Beyond 2 miles from cut (cannot be reached directly by cutterhead dredges)
67. Land or easement acquisition required but does not seem likely
68. Severe restrictions on choice of equipment
69. Most costly to dredge
70. Severe erosion potential with severe consequences if failure occurs
71. Special construction required to use the site
72. Berming or diking required with severe consequences if failure occurs
73. Known water quality concerns
74. Adverse aesthetic impacts
75. No potential market for beneficial use
76. Sufficient capacity on site only if potential beneficial use, not now identified, develops

LEGEND

RECOMMENDED CHANNEL MAINTENANCE PLAN

5 ———— Proposed channel

————— Existing channel



————— Alternative placement site

409 ———— Site number

ALTERNATIVE MATERIAL PLACEMENT PLANS



————— Alternative placement site

409 ———— Site number

POOL 2

DREDGE CUT	ALTERNATIVE PLACEMENT PLANS			
	MPFW/OG	NED	EQ	RFFP
1	2.30	2.30	2.30	2.35
2	2.31	2.35	2.35	2.35
3	2.31	2.35	2.35	2.35
4	2.24	2.24/2.25	2.10	2.10
5	2.27	2.05	2.10	2.10
6	2.04	2.05	2.10	2.10
7	2.13/2.14	2.13/2.15	2.02	2.02
8	2.16	2.16	2.16	2.10
9	2.16	2.37	2.37	2.10
10	2.29	2.18	2.18	2.18

M = Most probable future without GREAT

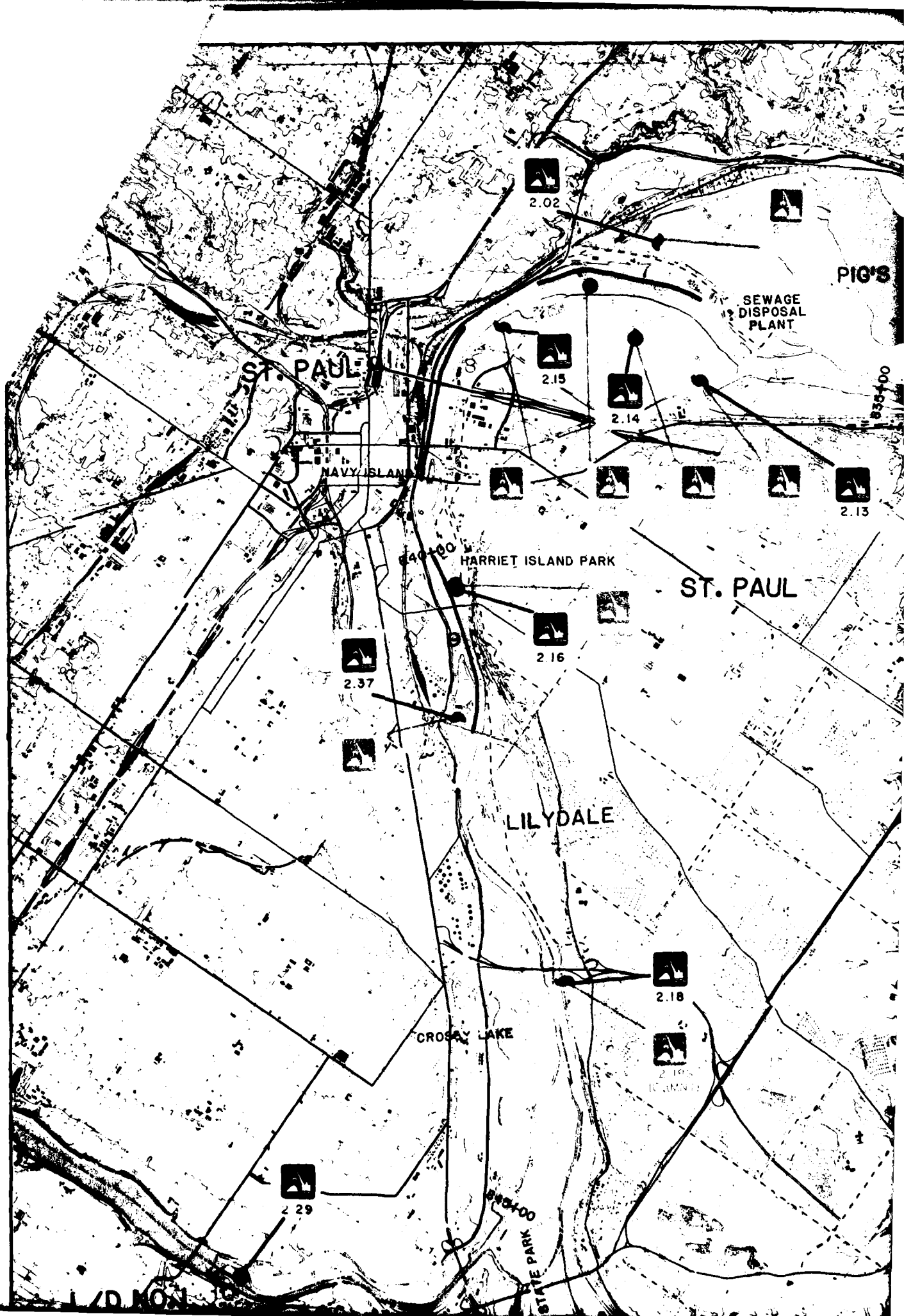
N = National economic development

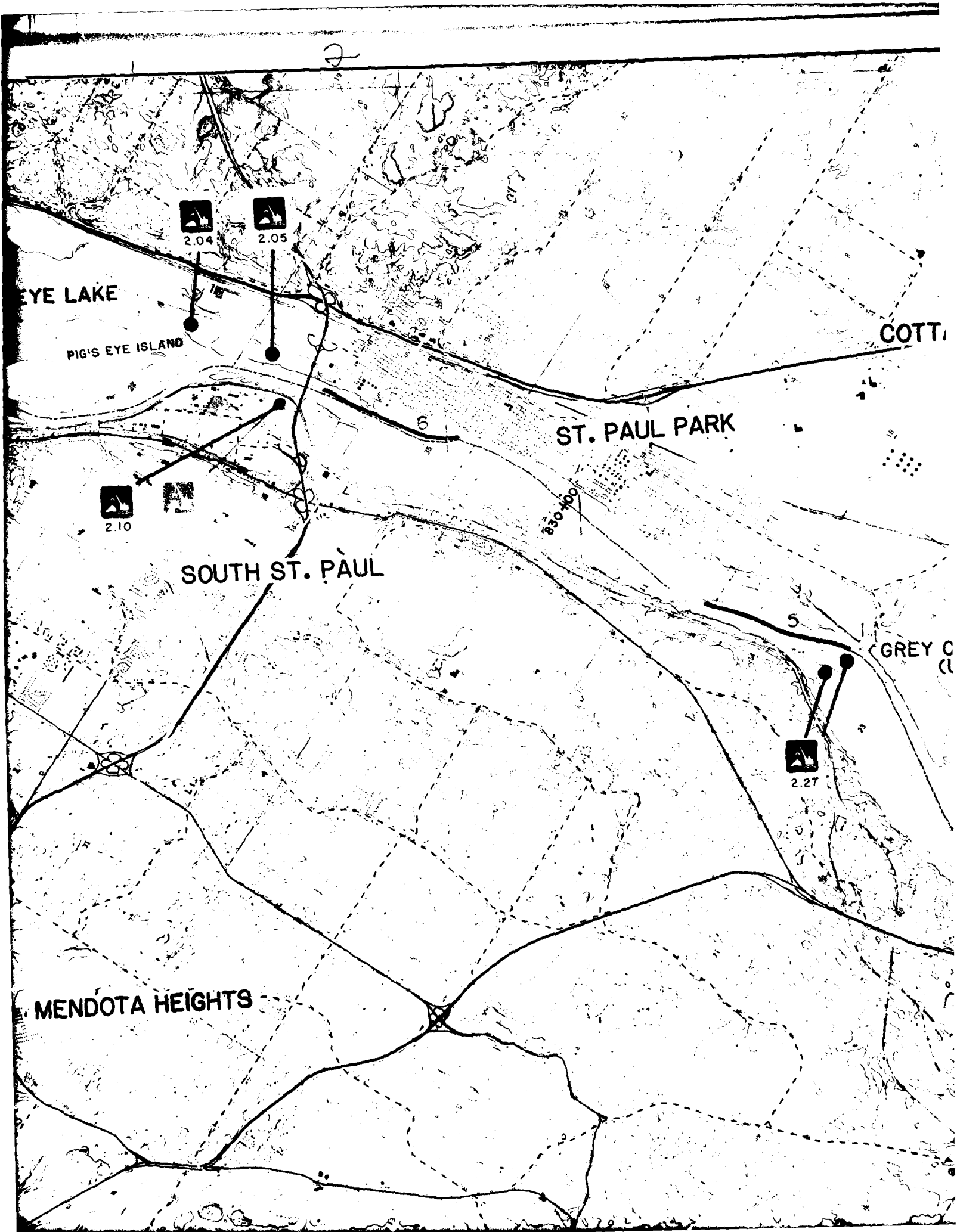
E = Environmental quality

R = Removal from floodplain

SCALE: 1" = 4,000'

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC DATUM OF 1929





EYE LAKE

PIG'S EYE ISLAND

2.04

2.05

2.10

SOUTH ST. PAUL

ST. PAUL PARK

COTT

GREY C

2.27

MENDOTA HEIGHTS

AD-A127 095

GREAT I STUDY OF THE UPPER MISSISSIPPI RIVER TECHNICAL
APPENDIXES VOLUME 8..(U) GREAT RIVER ENVIRONMENTAL
ACTION TEAM SEP 80

4/4

UNCLASSIFIED

F/G 13/2 . NL



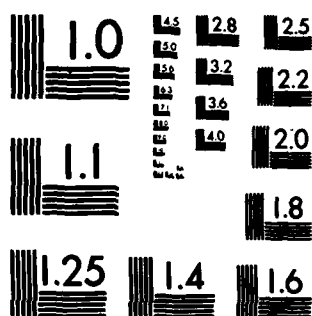
END

DATE

FILED

5 83

DTIC



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

1

3

L/D NO. 2

COTTAGE GROVE

2.30

2.30

2.35

GREY CLOUD ISLAND (UPPER)

2.35

GREY CLOUD ISLAND (LOWER)

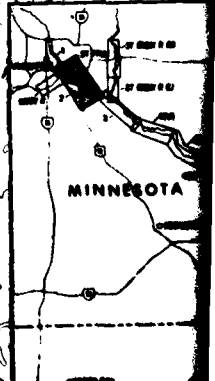
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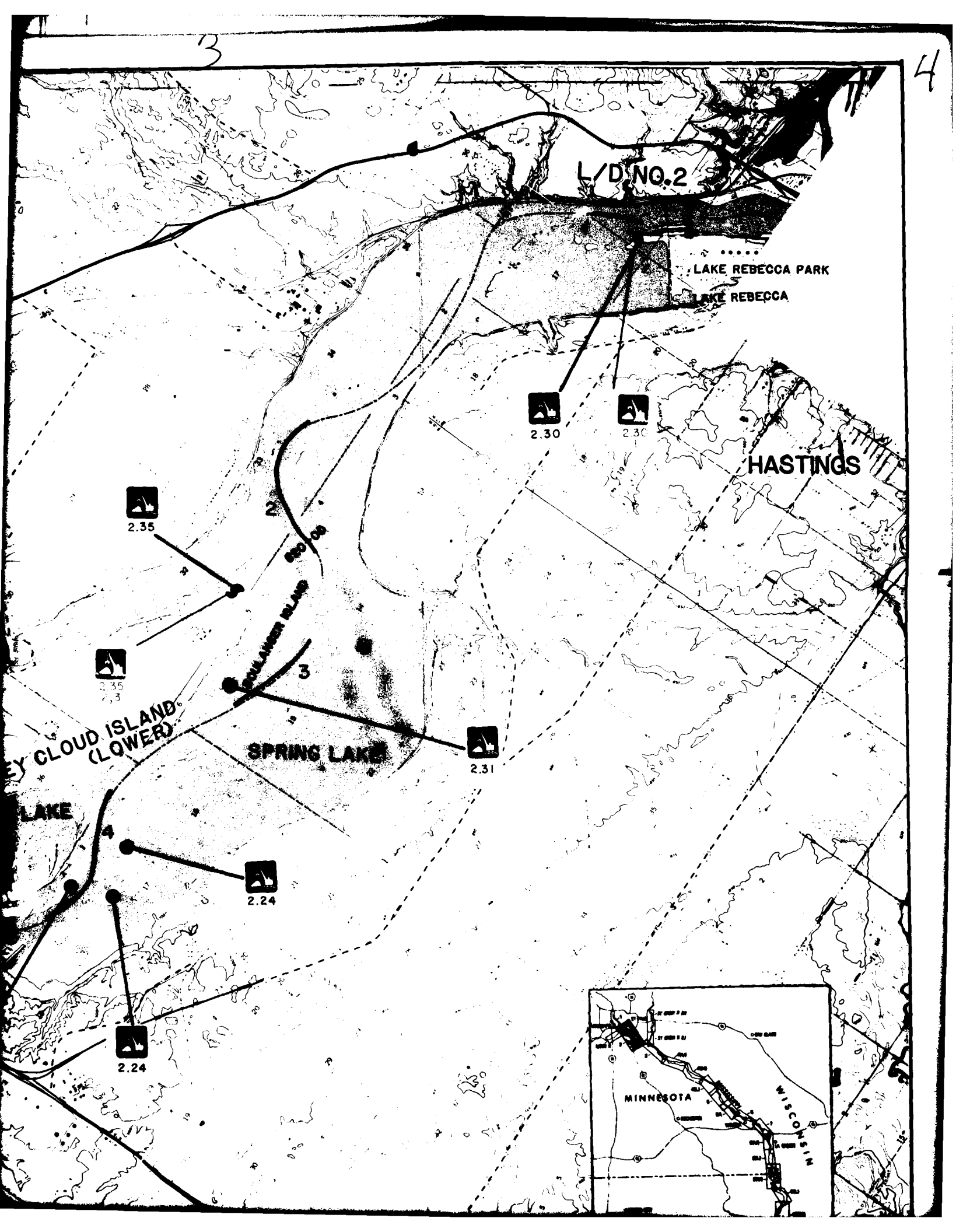
PINE BEND

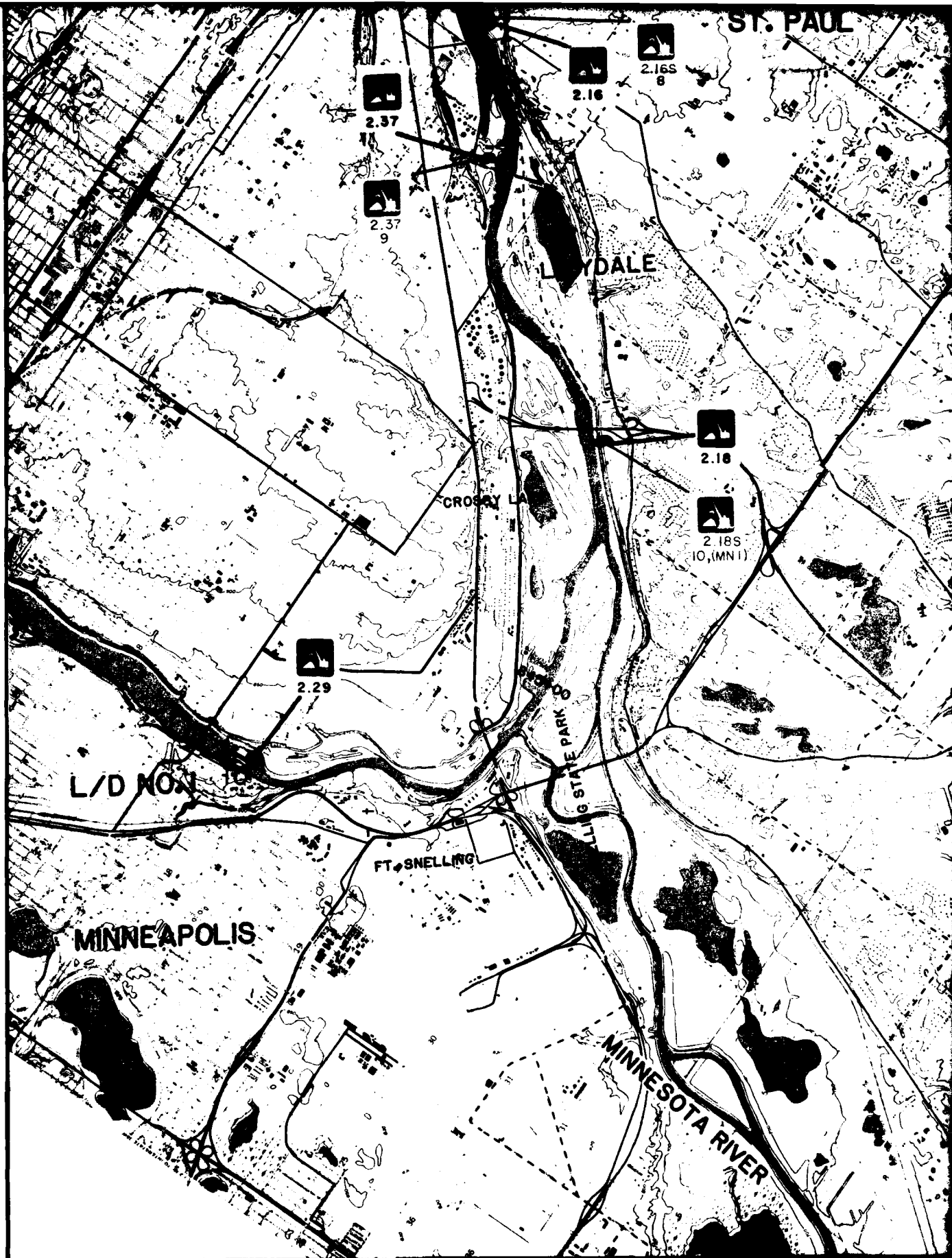
2.24

2.25

2.24







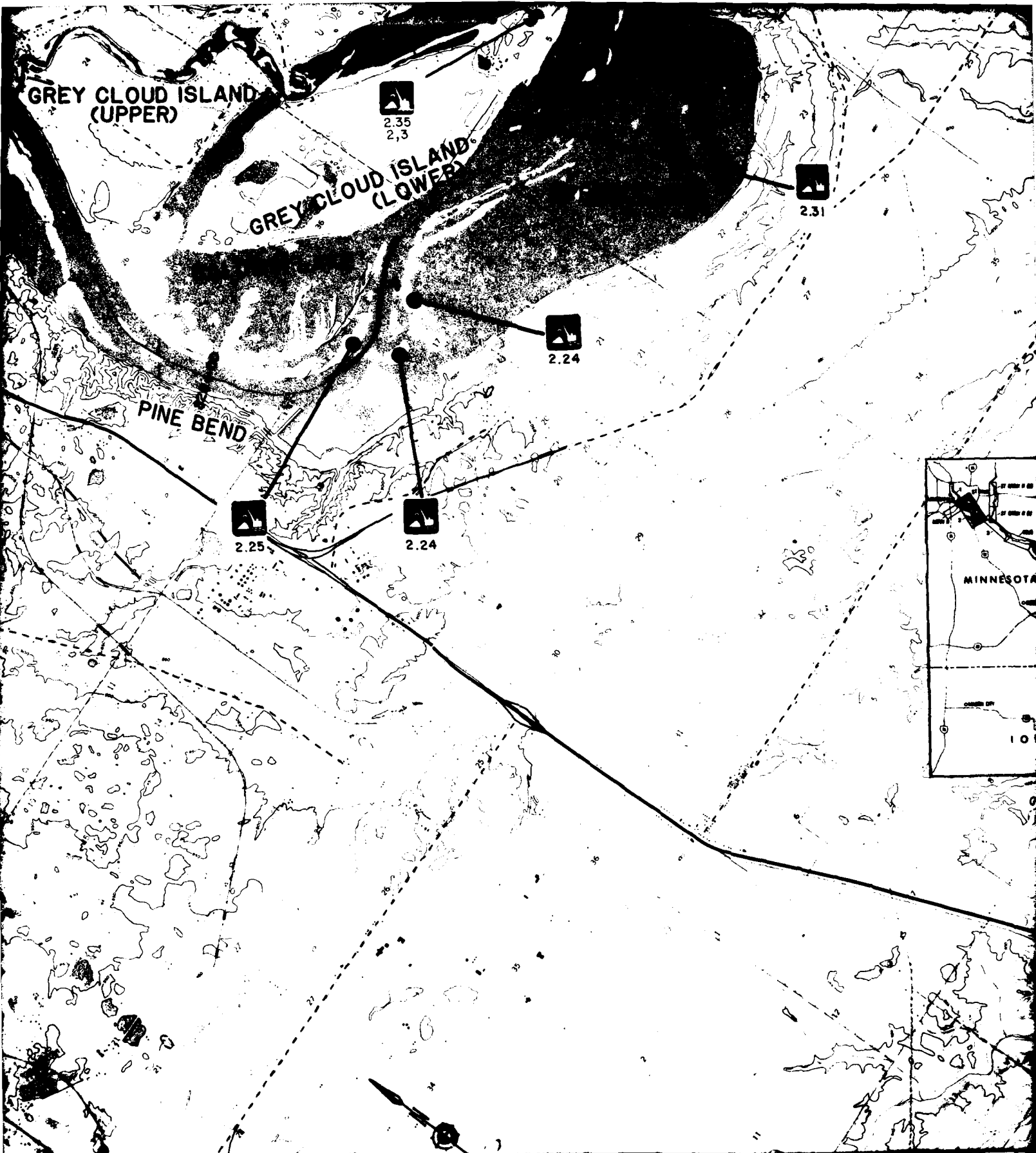
SOUTH ST. PAUL

2.27

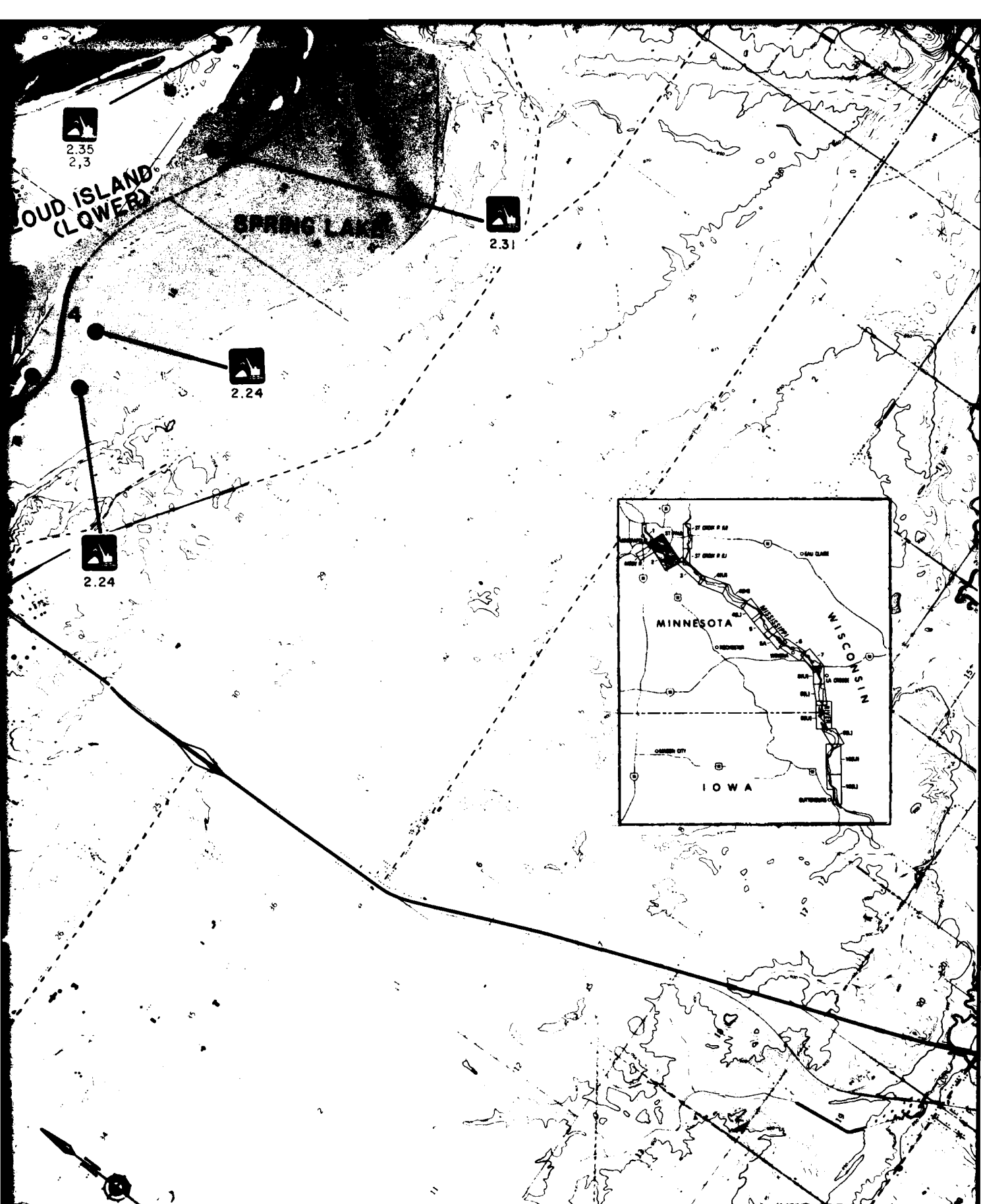
MENDOTA HEIGHTS

EAGAN

6



GREAT RIVER ENVIRONMENT
UPPER MISSISSIPPI
(POOL 2-MILE 815 TO M)



GREAT RIVER ENVIRONMENTAL ACTION TEAM
UPPER MISSISSIPPI RIVER
(POOL 2-MILE 815 TO MILE 848)

8