

**Upper Mississippi River - Illinois Waterway System Navigation Study**

Mississippi Valley Division

Gary Loss, Project Manager



**What Do We Want to Accomplish Tonight?**

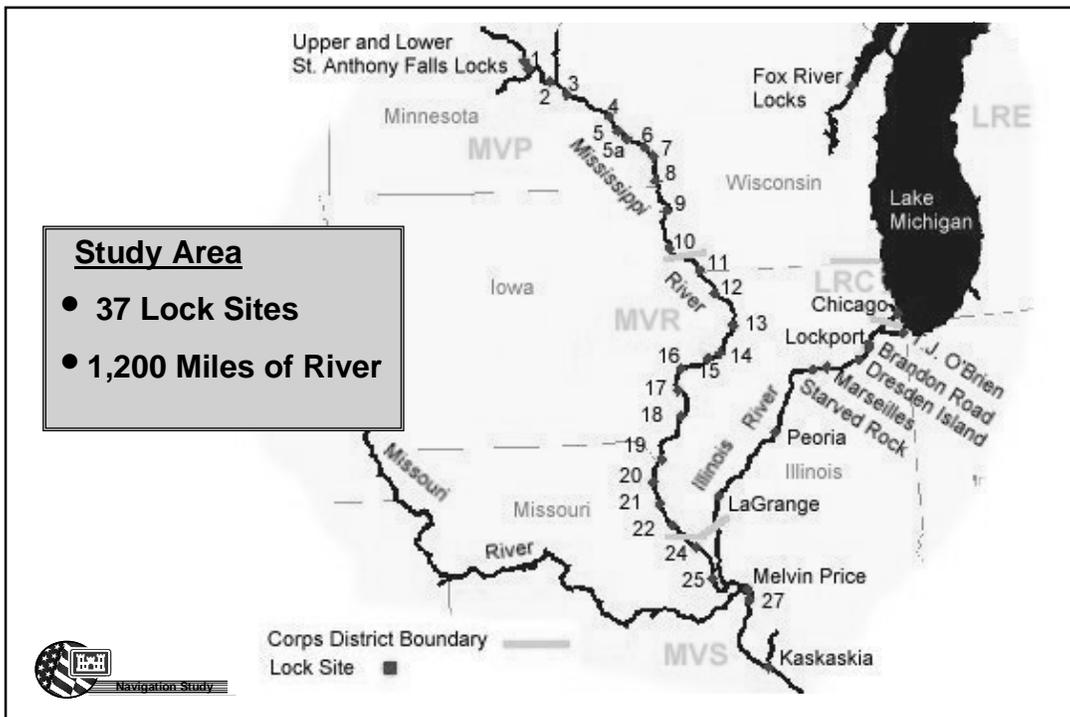
- Share What We Have Learned
- Hear Your Questions and Concerns
- Address Where We Go From Here



# Public Workshops Summer 1999



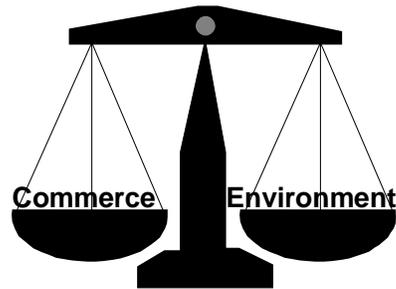
- July 26 - St. Louis, MO
- July 27 - Quincy, IL
- July 28 - Peoria, IL
- July 29 - Bettendorf, IA
- Aug 3 - Des Moines, IA
- Aug 4 - La Crosse, WI
- Aug 5 - St. Paul, MN



## National Significance of Upper Mississippi River System



Congress Has Recognized the System  
“As a Nationally Significant Ecosystem  
And a Nationally Significant Commercial Navigation System”



## What Have We Done?



- Forecast Traffic and Delay
- Identified Potential Measures
- Gathered Environmental Data and Developed Evaluation Models
- Sought Input From
  - Coordinating Committees
  - Public Meetings



## What Have We Learned?



- **Environmental**
  - Collection of New and Existing Data
  - Developed Tools for System Evaluation
- **Economics**
  - Improved System Model
- **Engineering**
  - Identified Lower Cost Construction Methods
- **Public Input**
  - Much Concern Over the Future of Our Rivers



## Remaining Measures



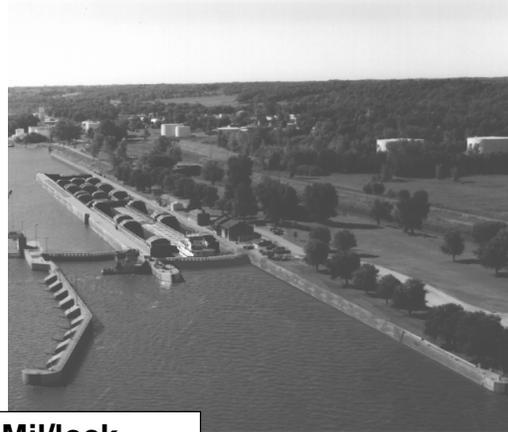
- **1,200 Foot Locks**
- **1,200 Foot Guidewall Extensions With Powered Kevels**
- **Mooring Buoys/cells**



## Extension of Existing Lock



*Existing*



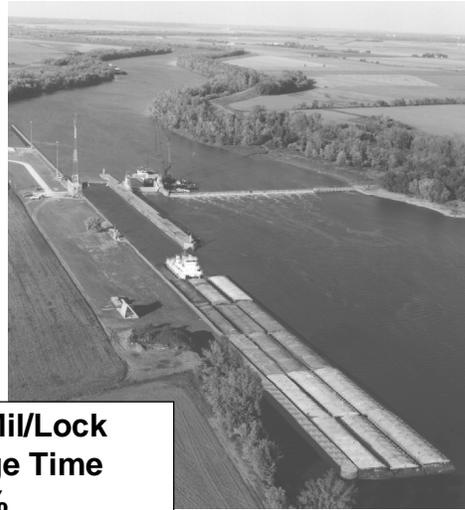
*With Lock Extension*

**Cost: \$95-125 Mil/lock**  
**Benefit: Lockage Time**  
**Reduced Roughly 50%**

## Extension of Guidewalls



*Existing*



*With Guidewall Extension*

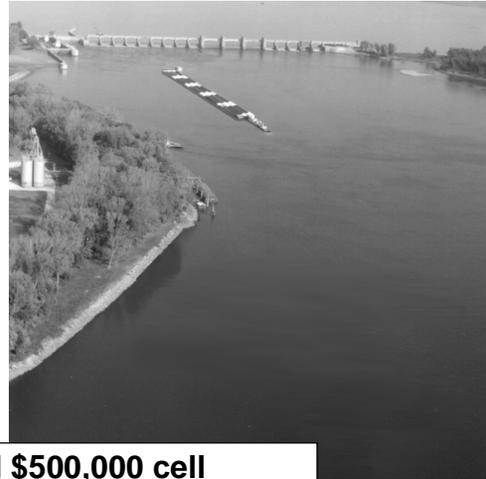
**Cost: \$30-\$40 Mil/Lock**  
**Benefit: Lockage Time**  
**Reduced 20-25%**

## Adjacent Moorings



Cost: \$50,000 buoy and \$500,000 cell  
Benefit: Lockage Time Reduced 5-15%

*Existing*



*With Mooring Buoy*

## Alternatives Under Consideration



- **Alternative Plans - Combinations of the 3 Remaining Measures**
- **System Traffic Leads to Grouping of Improvements**



## Matrix of Alternatives

(Costs in \$1,000s)

Alternative Plan	Date in Place	Total Costs	Annual Costs	Annual Benefits	Annual Net Benefits
No Action	-	-	-	-	-
<b>A</b> Mooring Buoys/Cells (Locks 12,18,20,22,24)	2004	\$700	\$200	\$1,800	\$1,600
<b>B</b> 1200' Guidewalls (Locks 20-25) and Mooring Buoys/Cells (Locks 12,18,20,22,24)	2008	\$190,000	\$24,800	\$37,700	\$12,900
<b>C</b> 1200' Locks (20-25)	2013	\$542,000	\$46,900	\$54,600	\$7,700
<b>D</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18)	2013	\$705,000	\$63,000	\$74,900	\$11,900
<b>E</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$706,000	\$63,200	\$78,500	\$15,300
<b>F</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18, Peoria, LaGrange) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$765,000	\$68,800	\$84,100	\$15,300
<b>G</b> 1200' Locks (14-18 and 20-25)	2017	\$1,077,000	\$83,700	\$91,200	\$7,500
<b>H</b> 1200' Locks (20-25, Peoria, LaGrange) and 1200' Guidewalls (Locks 14-18)	2015	\$1,066,000	\$89,500	\$93,300	\$3,800

## Matrix of Alternatives

(Costs in \$1,000s)

Alternative Plan	Date in Place	Total Costs	Annual Costs	Annual Benefits	Annual Net Benefits
No Action	-	-	-	-	-
<b>A</b> Mooring Buoys/Cells (Locks 12,18,20,22,24)	2004	\$700	\$200	\$1,800	\$1,600
<b>B</b> 1200' Guidewalls (Locks 20-25) and Mooring Buoys/Cells (Locks 12,18,20,22,24)	2008	\$190,000	\$24,800	\$37,700	\$12,900
<b>C</b> 1200' Locks (20-25)	2013	\$542,000	\$46,900	\$54,600	\$7,700
<b>D</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18)	2013	\$705,000	\$63,000	\$74,900	\$11,900
<b>E</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$706,000	\$63,200	\$78,500	\$15,300
<b>F</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18, Peoria, LaGrange) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$765,000	\$68,800	\$84,100	\$15,300
<b>G</b> 1200' Locks (14-18 and 20-25)	2017	\$1,077,000	\$83,700	\$91,200	\$7,500
<b>H</b> 1200' Locks (20-25, Peoria, LaGrange) and 1200' Guidewalls (Locks 14-18)	2015	\$1,066,000	\$89,500	\$93,300	\$3,800

## Matrix of Alternatives

(Costs in \$1,000s)

Alternative Plan	Date in Place	Total Costs	Annual Costs	Annual Benefits	Annual Net Benefits
No Action	-	-	-	-	-
<b>A</b> Mooring Buoys/Cells (Locks 12,18,20,22,24)	2004	\$700	\$200	\$1,800	\$1,600
<b>B</b> 1200' Guidewalls (Locks 20-25) and Mooring Buoys/Cells (Locks 12,18,20,22,24)	2008	\$190,000	\$24,800	\$37,700	\$12,900
<b>C</b> 1200' Locks (20-25)	2013	\$542,000	\$46,900	\$54,600	\$7,700
<b>D</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18)	2013	\$705,000	\$63,000	\$74,900	\$11,900
<b>E</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$706,000	\$63,200	\$78,500	\$15,300
<b>F</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18, Peoria, LaGrange) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$765,000	\$68,800	\$84,100	\$15,300
<b>G</b> 1200' Locks (14-18 and 20-25)	2017	\$1,077,000	\$83,700	\$91,200	\$7,500
<b>H</b> 1200' Locks (20-25, Peoria, LaGrange) and 1200' Guidewalls (Locks 14-18)	2015	\$1,066,000	\$89,500	\$93,300	\$3,800

## Matrix of Alternatives

(Costs in \$1,000s)

Alternative Plan	Date in Place	Total Costs	Annual Costs	Annual Benefits	Annual Net Benefits
No Action	-	-	-	-	-
<b>A</b> Mooring Buoys/Cells (Locks 12,18,20,22,24)	2004	\$700	\$200	\$1,800	\$1,600
<b>B</b> 1200' Guidewalls (Locks 20-25) and Mooring Buoys/Cells (Locks 12,18,20,22,24)	2008	\$190,000	\$24,800	\$37,700	\$12,900
<b>C</b> 1200' Locks (20-25)	2013	\$542,000	\$46,900	\$54,600	\$7,700
<b>D</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18)	2013	\$705,000	\$63,000	\$74,900	\$11,900
<b>E</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$706,000	\$63,200	\$78,500	\$15,300
<b>F</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18, Peoria, LaGrange) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$765,000	\$68,800	\$84,100	\$15,300
<b>G</b> 1200' Locks (14-18 and 20-25)	2017	\$1,077,000	\$83,700	\$91,200	\$7,500
<b>H</b> 1200' Locks (20-25, Peoria, LaGrange) and 1200' Guidewalls (Locks 14-18)	2015	\$1,066,000	\$89,500	\$93,300	\$3,800

## Matrix of Alternatives

(Costs in \$1,000s)

Alternative Plan	Date in Place	Total Costs	Annual Costs	Annual Benefits	Annual Net Benefits
No Action	-	-	-	-	-
<b>A</b> Mooring Buoys/Cells (Locks 12,18,20,22,24)	2004	\$700	\$200	\$1,800	\$1,600
<b>B</b> 1200' Guidewalls (Locks 20-25) and Mooring Buoys/Cells (Locks 12,18,20,22,24)	2008	\$190,000	\$24,800	\$37,700	\$12,900
<b>C</b> 1200' Locks (20-25)	2013	\$542,000	\$46,900	\$54,600	\$7,700
<b>D</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18)	2013	\$705,000	\$63,000	\$74,900	\$11,900
<b>E</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$706,000	\$63,200	\$78,500	\$15,300
<b>F</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18, Peoria, LaGrange) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$765,000	\$68,800	\$84,100	\$15,300
<b>G</b> 1200' Locks (14-18 and 20-25)	2017	\$1,077,000	\$83,700	\$91,200	\$7,500
<b>H</b> 1200' Locks (20-25, Peoria, LaGrange) and 1200' Guidewalls (Locks 14-18)	2015	\$1,066,000	\$89,500	\$93,300	\$3,800

## Matrix of Alternatives

(Costs in \$1,000s)

Alternative Plan	Date in Place	Total Costs	Annual Costs	Annual Benefits	Annual Net Benefits
No Action	-	-	-	-	-
<b>A</b> Mooring Buoys/Cells (Locks 12,18,20,22,24)	2004	\$700	\$200	\$1,800	\$1,600
<b>B</b> 1200' Guidewalls (Locks 20-25) and Mooring Buoys/Cells (Locks 12,18,20,22,24)	2008	\$190,000	\$24,800	\$37,700	\$12,900
<b>C</b> 1200' Locks (20-25)	2013	\$542,000	\$46,900	\$54,600	\$7,700
<b>D</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18)	2013	\$705,000	\$63,000	\$74,900	\$11,900
<b>E</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$706,000	\$63,200	\$78,500	\$15,300
<b>F</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18, Peoria, LaGrange) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$765,000	\$68,800	\$84,100	\$15,300
<b>G</b> 1200' Locks (14-18 and 20-25)	2017	\$1,077,000	\$83,700	\$91,200	\$7,500
<b>H</b> 1200' Locks (20-25, Peoria, LaGrange) and 1200' Guidewalls (Locks 14-18)	2015	\$1,066,000	\$89,500	\$93,300	\$3,800

## Matrix of Alternatives

(Costs in \$1,000s)

Alternative Plan	Date in Place	Total Costs	Annual Costs	Annual Benefits	Annual Net Benefits
No Action	-	-	-	-	-
<b>A</b> Mooring Buoys/Cells (Locks 12,18,20,22,24)	2004	\$700	\$200	\$1,800	\$1,600
<b>B</b> 1200' Guidewalls (Locks 20-25) and Mooring Buoys/Cells (Locks 12,18,20,22,24)	2008	\$190,000	\$24,800	\$37,700	\$12,900
<b>C</b> 1200' Locks (20-25)	2013	\$542,000	\$46,900	\$54,600	\$7,700
<b>D</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18)	2013	\$705,000	\$63,000	\$74,900	\$11,900
<b>E</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$706,000	\$63,200	\$78,500	\$15,300
<b>F</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18, Peoria, LaGrange) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$765,000	\$68,800	\$84,100	\$15,300
<b>G</b> 1200' Locks (14-18 and 20-25)	2017	\$1,077,000	\$83,700	\$91,200	\$7,500
<b>H</b> 1200' Locks (20-25, Peoria, LaGrange) and 1200' Guidewalls (Locks 14-18)	2015	\$1,066,000	\$89,500	\$93,300	\$3,800

## No Action



- **Without Project Condition  
(Assumes No Improvements Made As a Result of Study)**
  - Traffic Continues to Increase Somewhat
  - Delays Continue to Grow
  - System Is Unable to Transport Much of Projected Additional Demand



### Alternative Plan A



- Mooring Buoys/Cells (Locks 12,18,20,22,24)

<u>Earliest Date in Place</u>	<u>Total Cost</u>	<u>(Costs in \$1,000s)</u>		
		<u>Annual Cost</u>	<u>Annual Benefits</u>	<u>Ann Net Benefits</u>
2004	\$700	200	1,800	1,600

	LaCrosse, WI	Rock Island, IL	Quincy, IL	Winfield, MO	Peoria, IL
For the year 2030	L/D 8	L/D 15	L/D21	L/D 25	Peoria
Avg tows/day without project	5.8	11.8	14.4	14.8	14.8
Avg added tows/day with Alt. A	0.0	0.1	0.1	0.0	0.0
Site Specific Habitat Replacement	\$0	\$0	\$0	\$0	\$0



### Alternative Plan B



- 1,200' Guidewalls (Locks 20 - 25)
- Mooring Buoys/Cells (Locks 12,18,20,22,24)

<u>Earliest Date in Place</u>	<u>Total Cost</u>	<u>(Costs in \$1,000s)</u>		
		<u>Annual Cost</u>	<u>Annual Benefits</u>	<u>Ann Net Benefits</u>
2008	\$190,000	24,800	37,700	12,900

	LaCrosse, WI	Rock Island, IL	Quincy, IL	Winfield, MO	Peoria, IL
For the year 2030	L/D 8	L/D 15	L/D21	L/D 25	Peoria
Avg tows/day without project	5.8	11.8	14.4	14.8	14.8
Avg added tows/day with Alt. B	0.8	1.4	1.8	1.9	0.0
Site Specific Habitat Replacement	\$0	\$0	\$925	\$560	\$0



### Alternative Plan C



- 1,200' Locks (Locks 20 - 25)

<u>Earliest Date in Place</u>	<u>Total Cost</u>	<b>(Costs in \$1,000s)</b>		
		<u>Annual Cost</u>	<u>Annual Benefits</u>	<u>Ann Net Benefits</u>
2013	\$542,000	46,900	54,600	7,700

	LaCrosse, WI	Rock Island, IL	Quincy, IL	Winfield, MO	Peoria, IL
<b>For the year 2030</b>	L/D 8	L/D 15	L/D21	L/D 25	Peoria
Avg tows/day without project	5.8	11.8	14.4	14.8	14.8
Avg added tows/day with Alt. C	1.2	1.9	2.9	3.0	0.0
Site Specific Habitat Replacement	\$0	\$0	\$2,715	\$635	\$0



### Alternative Plan D



- 1,200' Locks (Locks 20 - 25)
- 1,200' Guidewalls (Locks 14-18)

<u>Earliest Date in Place</u>	<u>Total Cost</u>	<b>(Costs in \$1,000s)</b>		
		<u>Annual Cost</u>	<u>Annual Benefits</u>	<u>Ann Net Benefits</u>
2013	\$705,000	63,000	74,900	11,900

	LaCrosse, WI	Rock Island, IL	Quincy, IL	Winfield, MO	Peoria, IL
<b>For the year 2030</b>	L/D 8	L/D 15	L/D21	L/D 25	Peoria
Avg tows/day without project	5.8	11.8	14.4	14.8	14.8
Avg added tows/day with Alt. D	1.9	3.4	4.3	4.5	0.0
Site Specific Habitat Replacement	\$0	\$70	\$2,715	\$635	\$0



### Alternative Plan E

- 1,200' Locks (Locks 20 - 25)
- 1,200' Guidewalls (Locks 14-18)
- Mooring Buoys/Cells (Locks 12,18,20,22,24)



(Costs in \$1,000s)

<u>Earliest Date in Place</u>	<u>Total Cost</u>	<u>Annual Cost</u>	<u>Annual Benefits</u>	<u>Ann Net Benefits</u>
2013	\$706,000	63,200	78,500	15,300

	LaCrosse, WI	Rock Island, IL	Quincy, IL	Winfield, MO	Peoria, IL
For the year 2030	L/D 8	L/D 15	L/D21	L/D 25	Peoria
Avg tows/day without project	5.8	11.8	14.4	14.8	14.8
Avg added tows/day with Alt. E	1.9	3.5	4.4	4.6	0.0
Site Specific Habitat Replacement	\$0	\$70	\$2,715	\$635	\$0



### Alternative Plan F

- 1,200' Locks (Locks 20 - 25)
- 1,200' Guidewalls (Locks 14 - 18, LaGrange, Peoria)
- Mooring Buoys/Cells (Locks 12,18,20,22,24)



(Costs in \$1,000s)

<u>Earliest Date in Place</u>	<u>Total Cost</u>	<u>Annual Cost</u>	<u>Annual Benefits</u>	<u>Ann Net Benefits</u>
2013	\$765,000	68,800	84,100	15,300

	LaCrosse, WI	Rock Island, IL	Quincy, IL	Winfield, MO	Peoria, IL
For the year 2030	L/D 8	L/D 15	L/D21	L/D 25	Peoria
Avg tows/day without project	5.8	11.8	14.4	14.8	14.8
Avg added tows/day with Alt. F	1.9	3.5	4.4	4.6	0.4
Site Specific Habitat Replacement	\$0	\$70	\$2,715	\$635	\$280



### Alternative Plan G



- 1,200' Locks (Locks 14-18 and 20-25)

(Costs in \$1,000s)

<u>Earliest Date in Place</u>	<u>Total Cost</u>	<u>Annual Cost</u>	<u>Annual Benefits</u>	<u>Ann Net Benefits</u>
2017	\$1,077,000	83,700	91,200	7,500

	LaCrosse, WI	Rock Island, IL	Quincy, IL	Winfield, MO	Peoria, IL
For the year 2030	L/D 8	L/D 15	L/D21	L/D 25	Peoria
Avg tows/day without project	5.8	11.8	14.4	14.8	14.8
Avg added tows/day with Alt. G	2.8	4.8	5.5	5.6	0.0
Site Specific Habitat Replacement	\$0	\$600	\$2,715	\$635	\$0



### Alternative Plan H



- 1,200' Locks (Locks 20 - 25, Peoria, LaGrange)
- 1,200' Guidewalls (Locks 14-18)

(Costs in \$1,000s)

<u>Earliest Date in Place</u>	<u>Total Cost</u>	<u>Annual Cost</u>	<u>Annual Benefits</u>	<u>Ann Net Benefits</u>
2015	\$1,066,000	89,500	93,300	3,800

	LaCrosse, WI	Rock Island, IL	Quincy, IL	Winfield, MO	Peoria, IL
For the year 2030	L/D 8	L/D 15	L/D21	L/D 25	Peoria
Avg tows/day without project	5.8	11.8	14.4	14.8	14.8
Avg added tows/day with Alt. H	1.9	3.4	4.3	4.5	0.5
Site Specific Habitat Replacement	\$0	\$70	\$2,715	\$635	\$645



## Matrix of Alternatives

(Costs in \$1,000s)

Alternative Plan	Date in Place	Total Costs	Annual Costs	Annual Benefits	Annual Net Benefits
No Action	-	-	-	-	-
<b>A</b> Mooring Buoys/Cells (Locks 12,18,20,22,24)	2004	\$700	\$200	\$1,800	\$1,600
<b>B</b> 1200' Guidewalls (Locks 20-25) and Mooring Buoys/Cells (Locks 12,18,20,22,24)	2008	\$190,000	\$24,800	\$37,700	\$12,900
<b>C</b> 1200' Locks (20-25)	2013	\$542,000	\$46,900	\$54,600	\$7,700
<b>D</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18)	2013	\$705,000	\$63,000	\$74,900	\$11,900
<b>E</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$706,000	\$63,200	\$78,500	\$15,300
<b>F</b> 1200' Locks (20-25) and 1200' Guidewalls (Locks 14-18, Peoria, LaGrange) Mooring Buoys/Cells (Locks 12,18,20,22,24)	2013	\$765,000	\$68,800	\$84,100	\$15,300
<b>G</b> 1200' Locks (14-18 and 20-25)	2017	\$1,077,000	\$83,700	\$91,200	\$7,500
<b>H</b> 1200' Locks (20-25, Peoria, LaGrange) and 1200' Guidewalls (Locks 14-18)	2015	\$1,066,000	\$89,500	\$93,300	\$3,800

## Regional Economic Analysis



### Total Construction Impacts Employment Work-Years

	Alt B	Alt E	Alt H
Illinois	1,319	4,897	7,310
Iowa	59	1,213	1,266
Minnesota	70	336	408
Missouri	1,256	3,698	3,783
Wisconsin	105	412	540
Total US	5,163	19,282	24,240



## Regional Economic Analysis



### Annual Transportation Savings Impacts Employment Work-Years

	Alt B	Alt E	Alt H
Illinois	302	708	885
Iowa	104	247	282
Minnesota	136	321	369
Missouri	122	282	340
Wisconsin	26	62	75
Total US	2,036	4,786	5,606



## Environmental Impacts



- Site Specific Impacts
- Cumulative Effects
- System Impacts



# Site-Specific Impacts



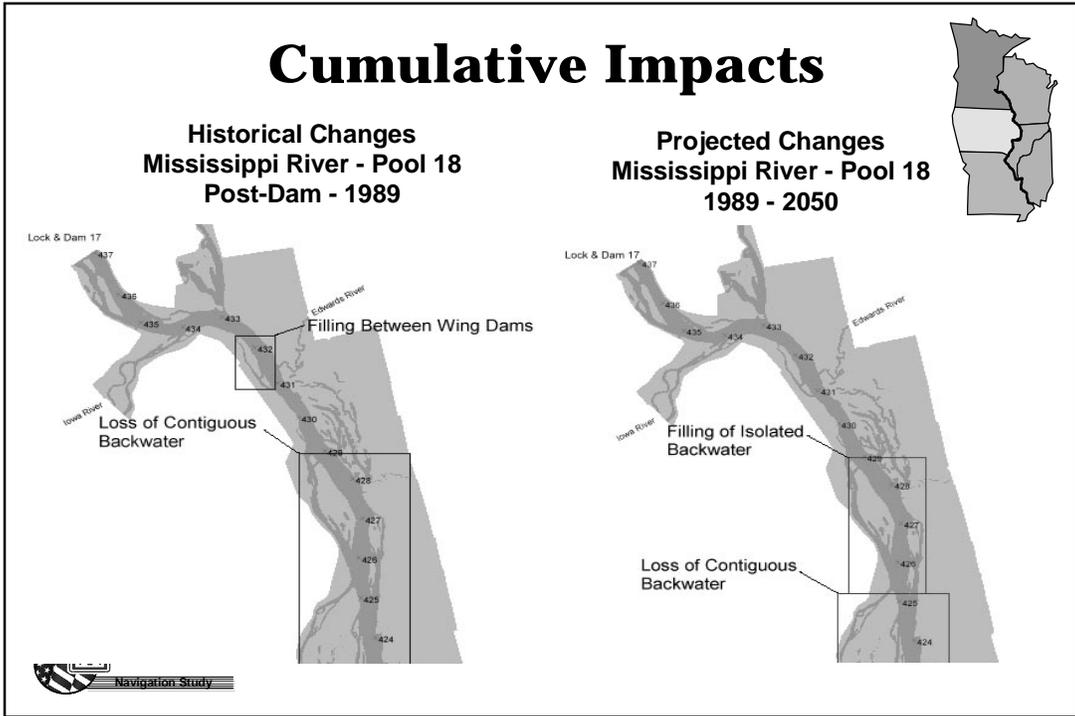
## Site Specific Impacts of Lock Extensions (Costs in \$1,000s)



Habitat Impacts	Lock 21	Lock 25	Peoria
Bottomland Forest	\$2,500 – \$5,400	\$285	\$505
Main Channel Border	\$70	\$350	\$140

Resource Impacts	Lock 21	Lock 25	Peoria
Mussels	Potential beds right bank upstream and downstream	Mussel bed is avoidable	No known concentration
Threatened and Endangered Species	Bald eagle, Indiana Bat	Potentially avoid impacts	Indiana Bat, Decurrent false aster

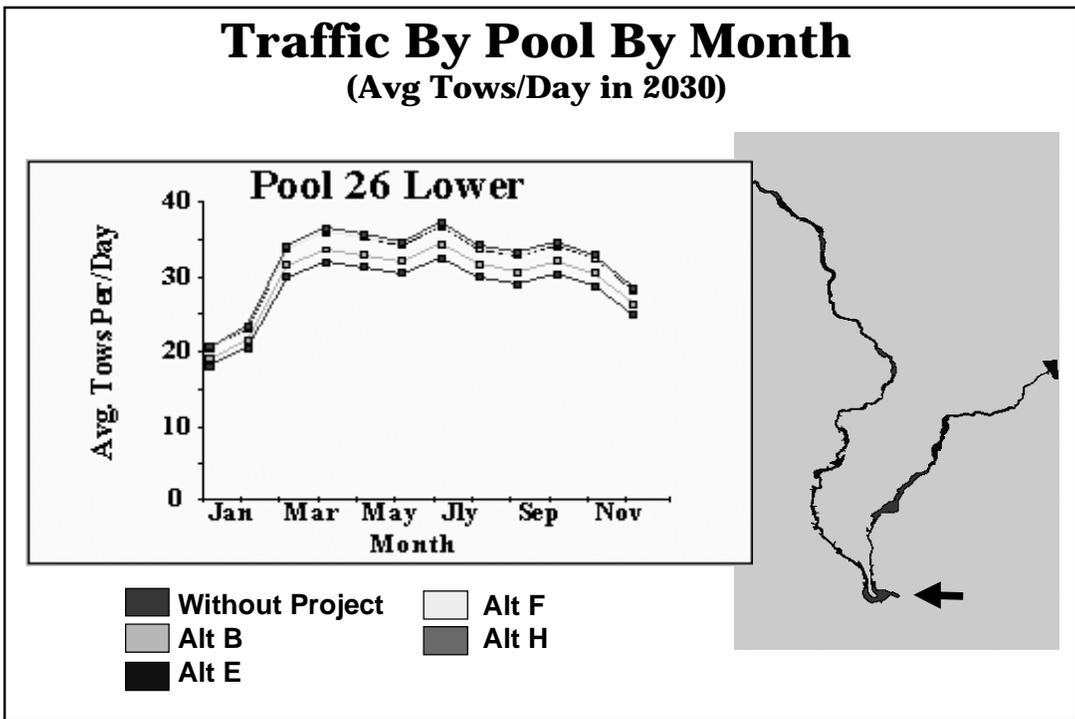
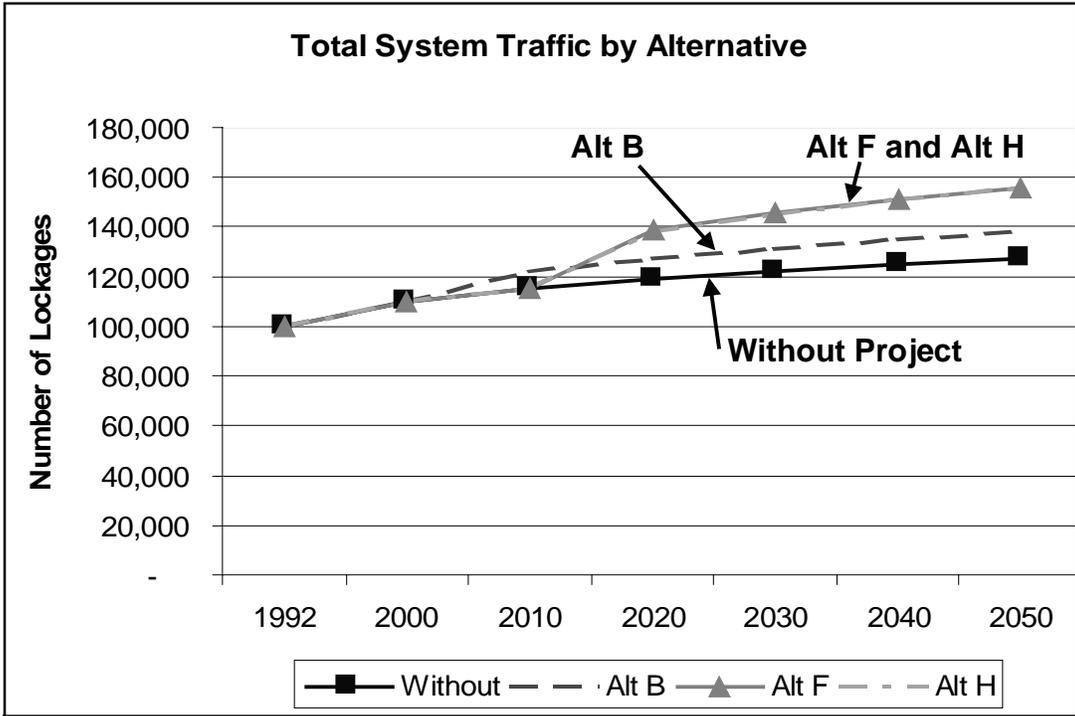




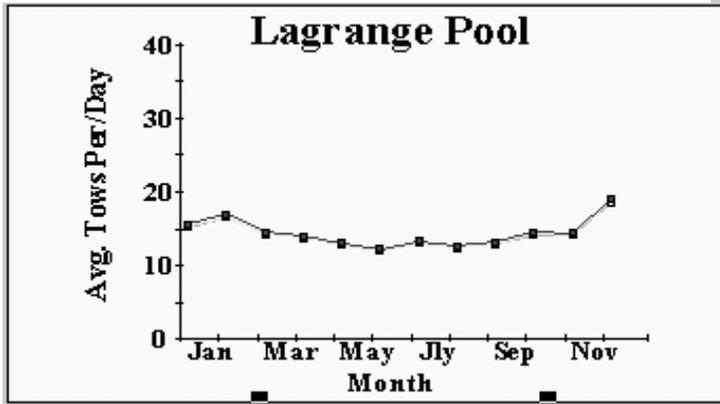
# System Impacts

Navigation Study

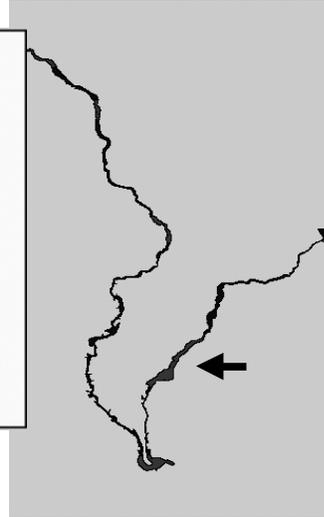
- Fish
- Plants
- Mussels
- Bank Erosion
- Backwater Sediment



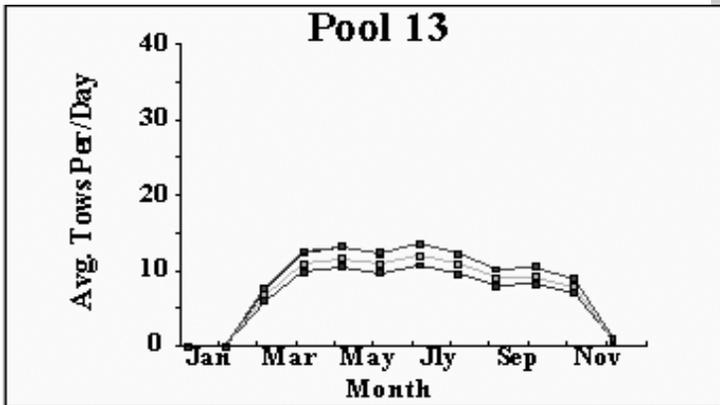
## Traffic By Pool By Month (Avg Tows/Day in 2030)



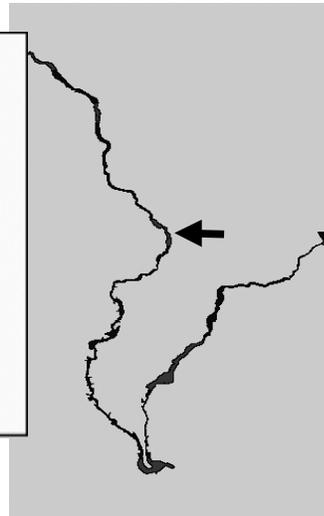
- Without Project
- Alt B
- Alt E
- Alt F
- Alt H

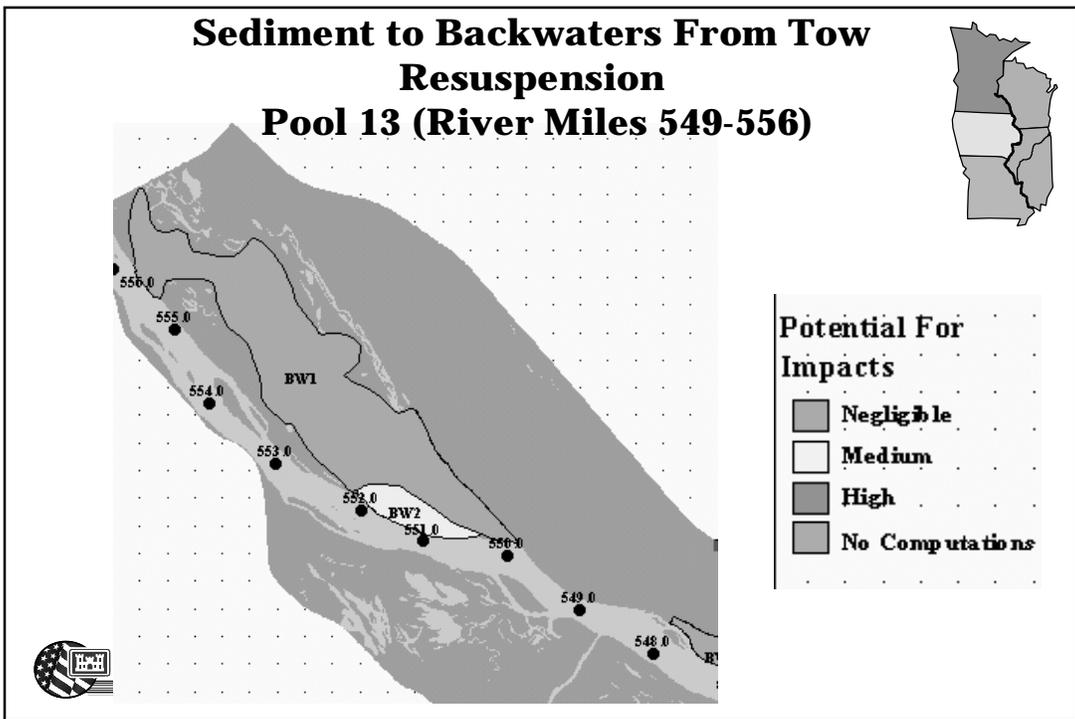


## Traffic By Pool By Month (Avg Tows/Day in 2030)



- Without Project
- Alt B
- Alt E
- Alt F
- Alt H



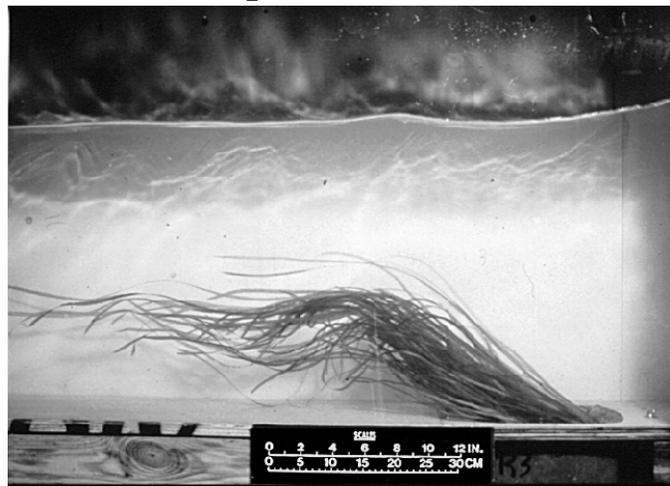


## Impacts to Fish Pool 13 - Alternative F (Percent Change in Larval Fish Mortality)

- Freshwater drum 2.4
- Emerald shiner 2.3
- Gizzard shad 2.2
- Channel catfish 2.0
- Walleye 1.9
- Mooneye 0.3



## Direct Effects Studies Aquatic Plants



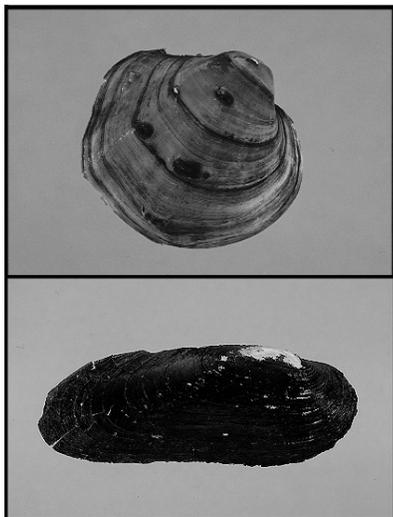
## Impacts to Aquatic Plants Pool 13 - Alternative F (Percent Reduction in Growth)



- **Wild Celery**  
0-12%
- **Sago Pondweed**  
0-4%



## Impacts to Mussels



- **No direct mortality due to tow passage**
- **Further investigation on:**
  - Growth
  - Reproduction

## What's Next



- **Adding Public Input to the Plan Formulation Process**
- **Completing the System Environmental Analysis**
- **Identifying the National Economic Development (NED) Plan and Initial Recommended Plan**



## Study Schedule



- **Initial Recommended Plan is scheduled for release this Fall**
- **Draft Report is scheduled for release in June 2000**
- **Public Meetings on Draft Report and Draft Environmental Impact Statement in Summer 2000**
- **Final Report to Washington Dec 2000**



## For More Information



- **Toll Free Telephone Number:**  
800/872-8822
- **Newsletters**
- **Internet Homepage Address:**  
[www.mvr.usace.army.mil/pdw/nav\\_study](http://www.mvr.usace.army.mil/pdw/nav_study)

