

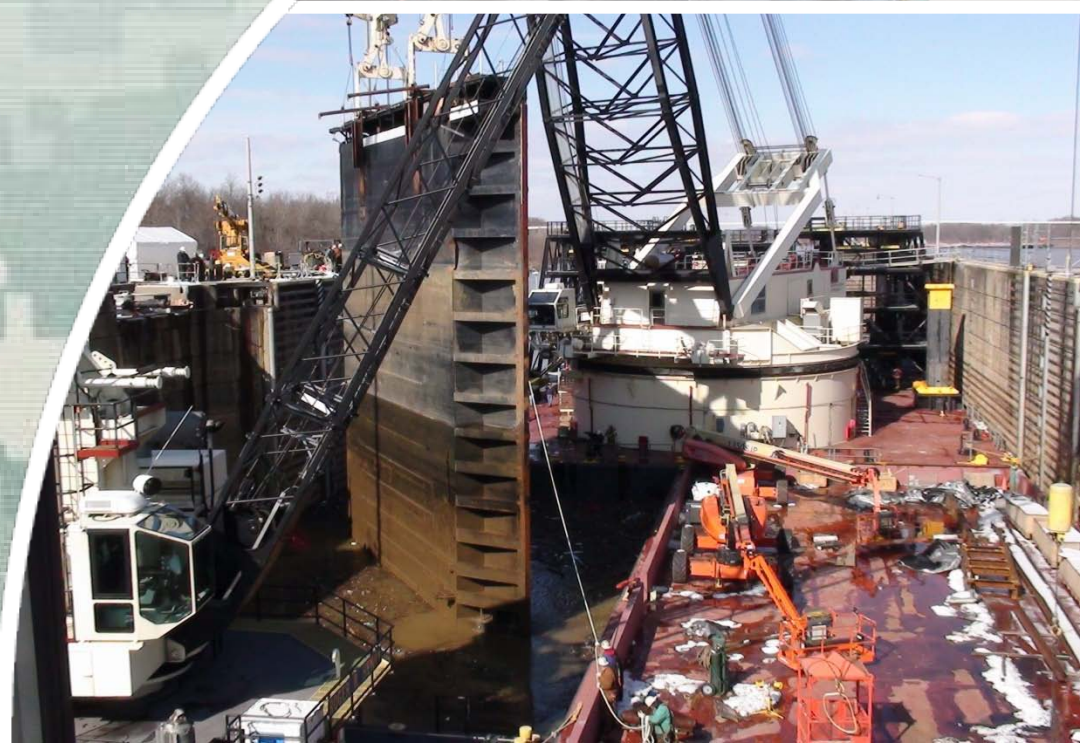
LRD's Lock Gate Replacement Program

Briefing to Inland Waterways User Board, 20 Oct 2010

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US Army Corps of Engineers
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Key Points

- Founded on life-cycle Asset Management and Risk-based Principles
- Formal assessment process w/Engineering analysis (OCA)
- Achieves Acceptable Level of Risk
- Proactive maintenance control measures to extend gate life
- Proposed strategy



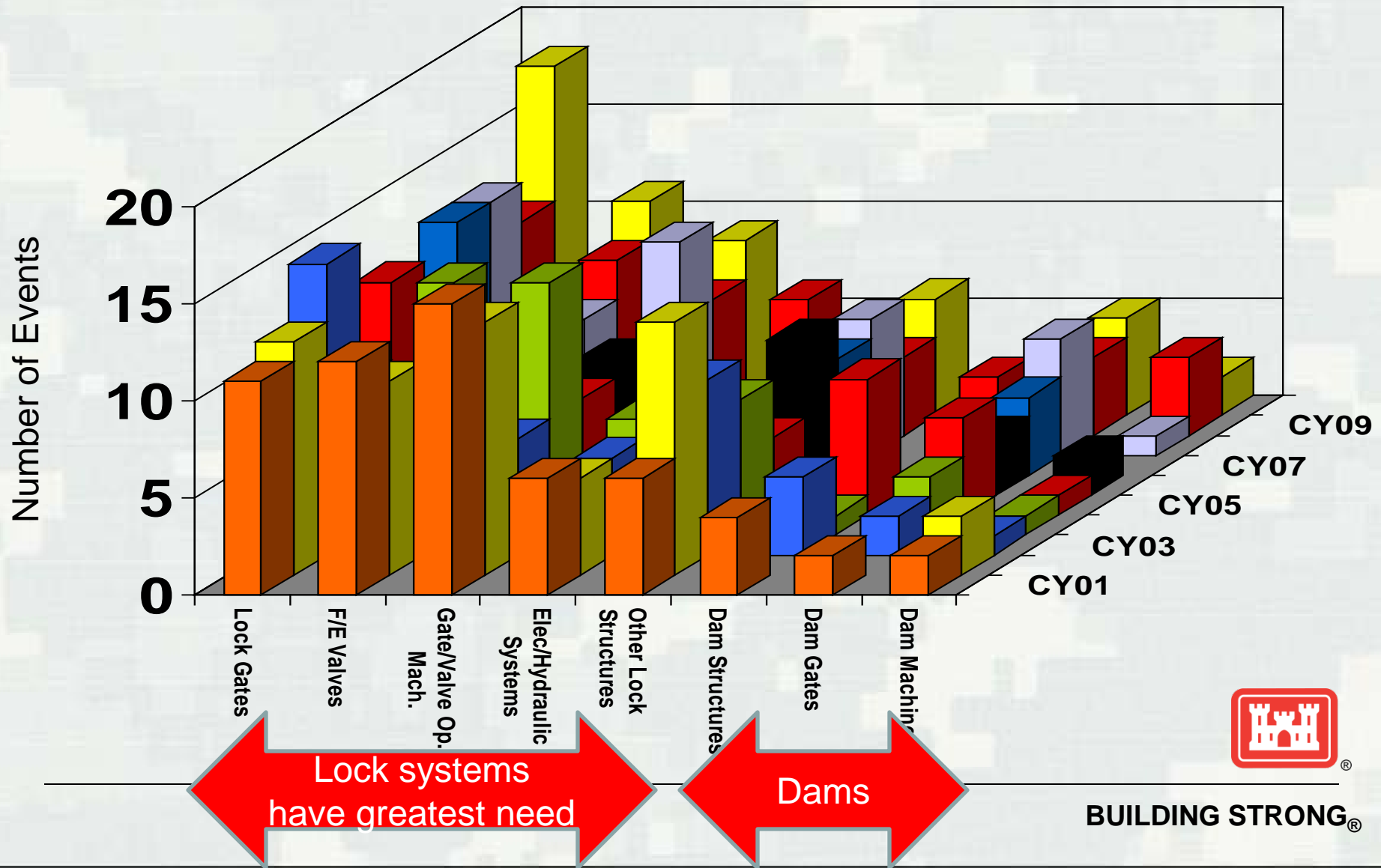
Current Lock Infrastructure Conditions

OHIO RIVER MAINSTEM						
OVERALL LOCK CHAMBERS*						
CONDITION	PERCENT OF CRITICAL INFRASTRUCTURE IN CONDITION RATING (MAR 2010)					
	Lock Structures	Lock Gates	Fill/Empty Valves	Lock Operating Machinery	Lock Gate & Valve Controls	Primary Electric & Hydraulic Operating Systems
A	7%	7%	7%	7%	7%	7%
B	62%	62%	86%	40%	62%	40%
C	19%	17%	5%	38%	31%	38%
D	12%	12%	2%	14%	0%	14%
F	0%	2%	0%	0%	0%	0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
* 42 Total Constructed (Main and Auxiliary) Chambers, (40 Active)						

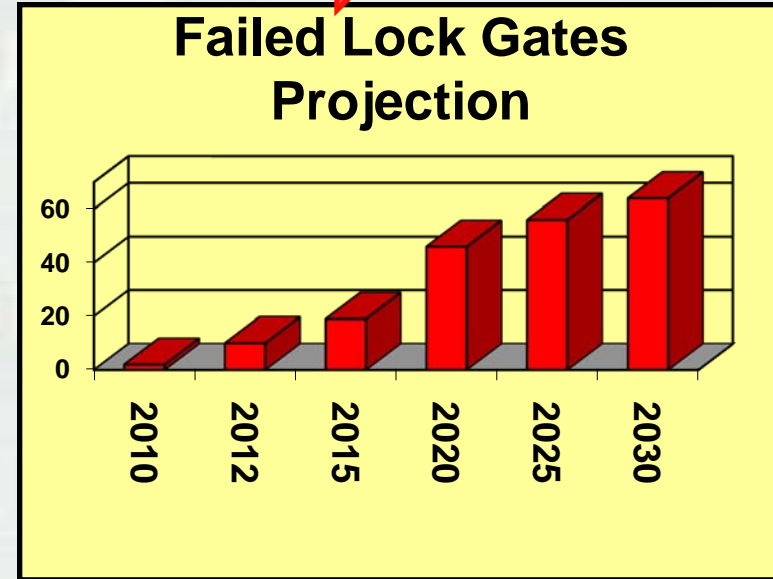
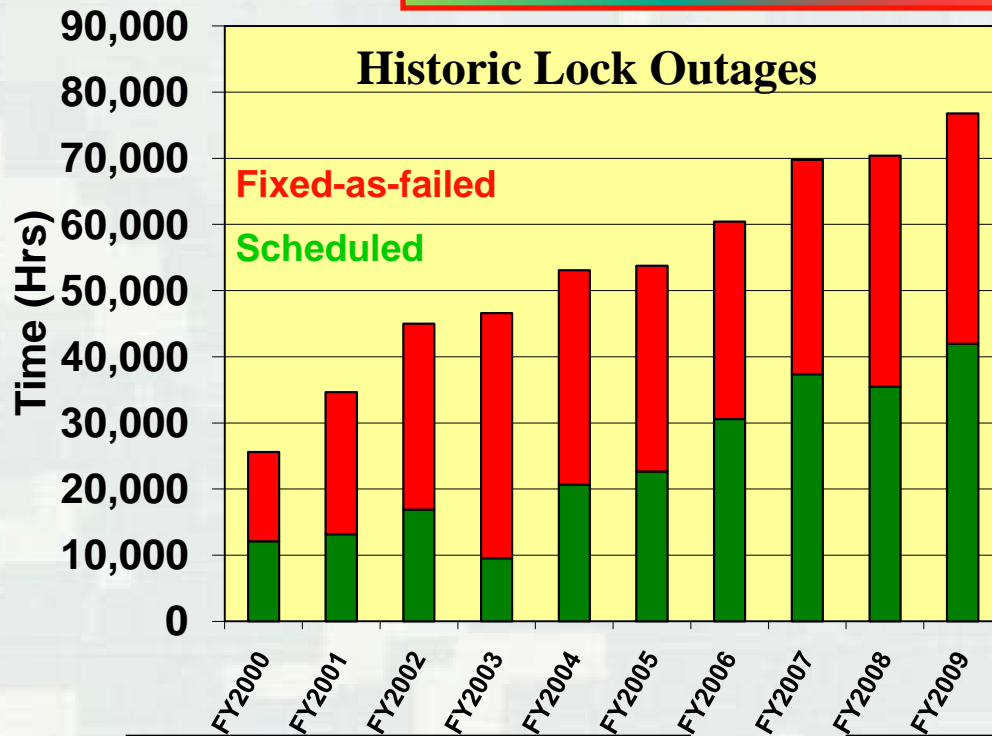
- Key system nodes have surpassed design life
 - Average age is ~ 50yrs, some are (90 yrs old)
- Lock Gates are most immediate critical infrastructure component
- Degrading to failed condition rapidly



Ohio River System Scheduled Work by Component



Lock Failures



Markland Gate Failure 2009



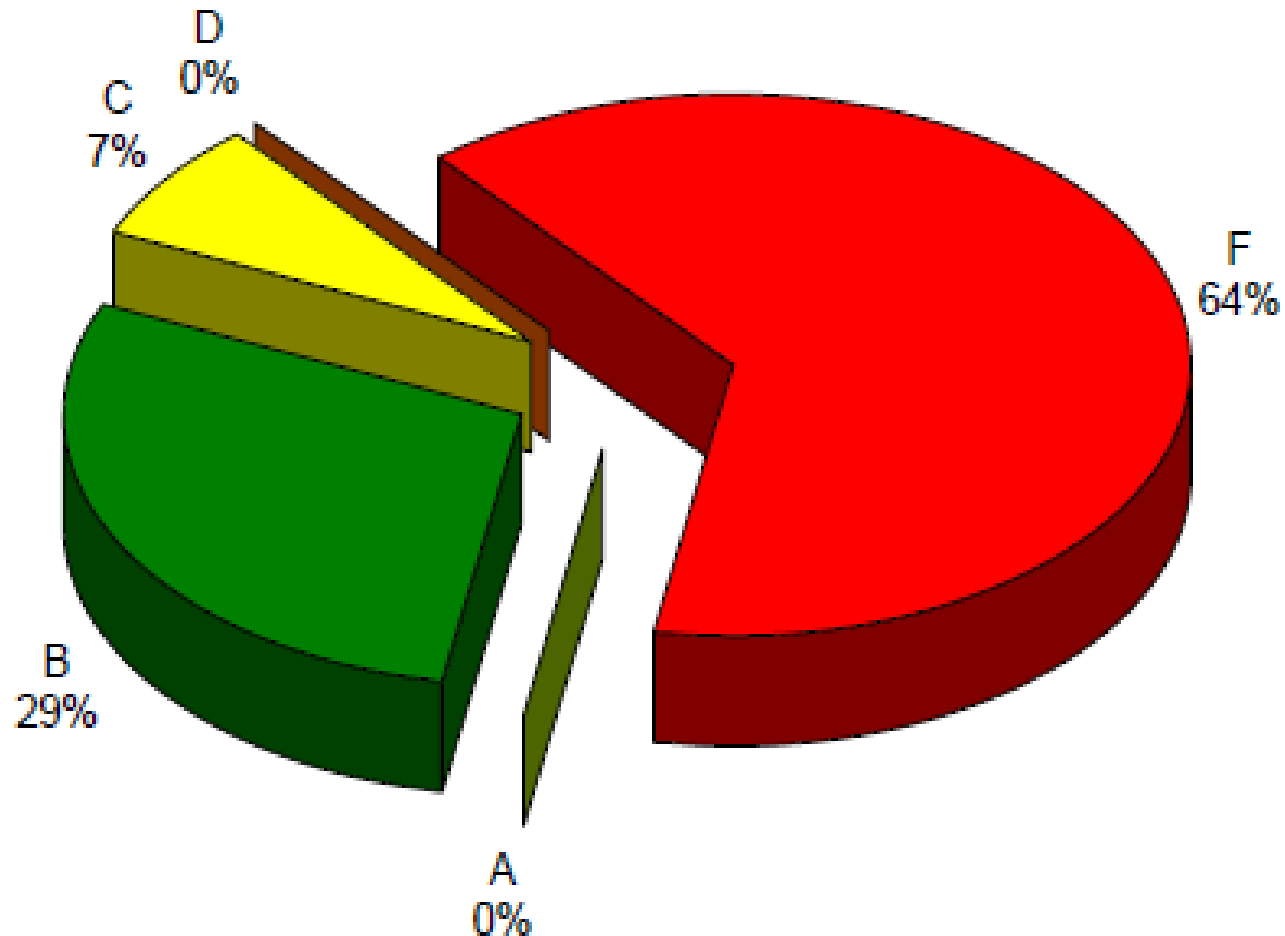
Greenup Failure 2010



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Progressive Lock Gate Deterioration

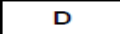
Lock Gates (All Chambers) - 2030



Predicted Failures

Project	2010		2012		2015		2020		2025		2030	
	Primary	Auxiliary	Primary	Auxiliary	Primary	Auxiliary	Primary	Auxiliary	Primary	Auxiliary	Primary	Auxiliary
Emsworth		*		*		*		*		*		*
Dashields		*		*		*		*		*		*
Montgomery		*		*		*		*		*		*
New Cumberland												
Pike Island												
Hannibal												
Willow Island												
Belleville												
Racine												
R.C. Byrd												
Greenup												
Meldahl												
Markland												
McAlpine												
Cannelton												
Newburgh												
J.T. Myers												
Smithland												
Locks 52		*		*		*	D	D	D	D	D	D
Locks 53							D	D	D	D	D	D
Olmsted												

 Maintained in 'GOOD' condition through spare gate replacement program.

 Decommisioned and replaced by Olmsted L/D

Rev -12- July 2010



Ohio River Navigation Reliability Lock Gates Replacement Program



Failing Lock Gates



Replacement Lock Gates



Great Lakes and Ohio River Division

Proposed: Lock Gate Replacement Program



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Proposed Program Strategy

- Exigent gates replaced within the affordable and expected LRD program levels
- Most critical Projects
 - ▶ Markland, McAlpine, Greenup, Meldahl, and Willow Island
- Continue aggressive inspection and affect interim repairs
- Fully realize LRD Heavy Lift Crane “*Henry M. Shreve*” to minimize impact to Navigation
- Investigate replacement options and methods



Proposed Program Strategy

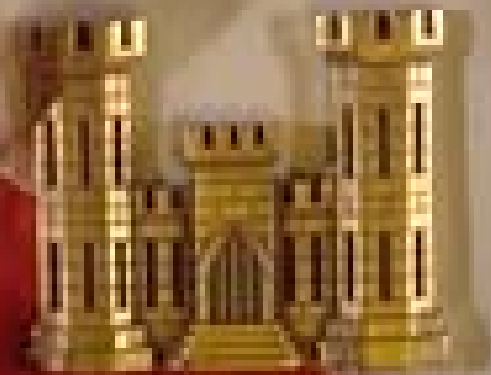
■ Replacement strategy and methods

- ▶ Do Nothing - gates continue to deteriorate. Over \$43B losses in 20 yrs
- ▶ Replacements per Technical Recommendations - average annual cost is \$31.6 million. Completed in 2023
- ▶ 20 yr replacement program - up to \$25 million/yr
- ▶ Replacements in Construction (Major Rehab) – shifts from O&M to Construction. Cost shared 50-50 w/Inland Waterways Trust Fund

■ Move toward optimal and affordable plan



Questions



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