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Asset Management for "O&M"



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Update for the Inland Waterways Users Board
31 JULY 2007



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PURPOSE

- ◆ Update IWUB Members on progress in implementing Asset Management in O&M since last briefing in November 2007



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BACKGROUND

WHY ASSET MANAGEMENT?

- Because of deteriorating Physical Condition at all our Facilities there are more Emergencies and more Unscheduled Outages.
- Congress, OMB and the Public believe we (USACE) have not been doing a good job of spending our money where the need is greatest



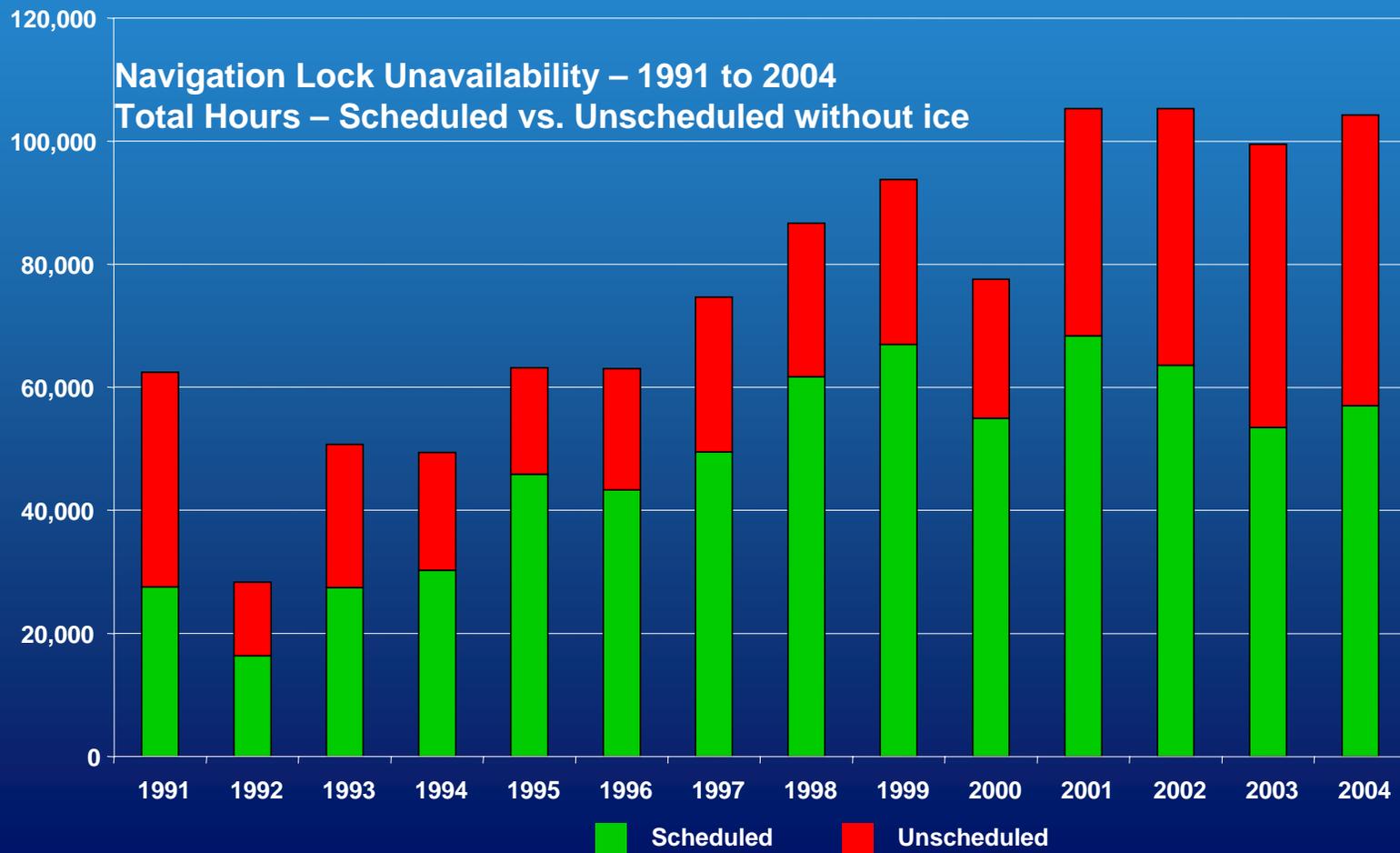
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BACKGROUND

WHY ASSET MANAGEMENT?

Unscheduled outages have become more frequent





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BACKGROUND

WHY ASSET MANAGEMENT?

We have become **REACTIVE**

The River is dictating the point of
engagement

Physical Condition is dictating the
scope of that engagement



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BACKGROUND

WHY ASSET MANAGEMENT?

Regain initiative through ASSET MANAGEMENT

“**ASSET MANAGEMENT** is the business and decision-making process for the operation, maintenance, repair, rehabilitation and replacement or disposal of assets that allows managers to maximize the asset productivity and manage the related risks and costs.”



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End State

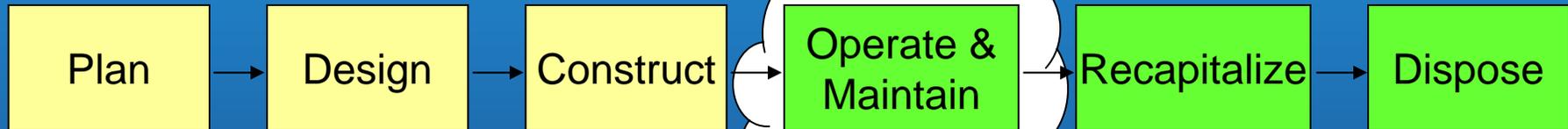
- ◆ Operate all facilities at or above Minimum Acceptable Service Level
- ◆ Provide a **needs, risk and contribution based** process for informed communication and cost-effective investment decisions in our physical assets.
- ◆ Develop confidence both internally and externally that LRD has a quantifiable, systematic approach that allows us to manage our program and utilize resources for the highest priority needs.
- ◆ Drive regionalization and interdependence



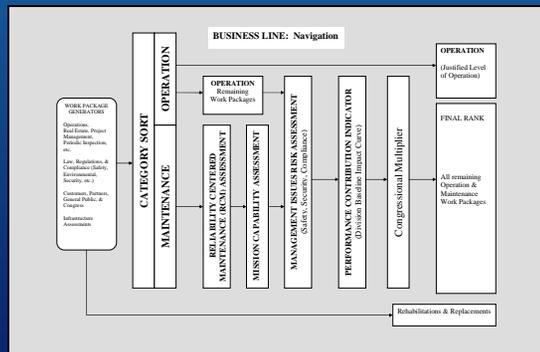
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BACKGROUND



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Project Life Cycle Phases

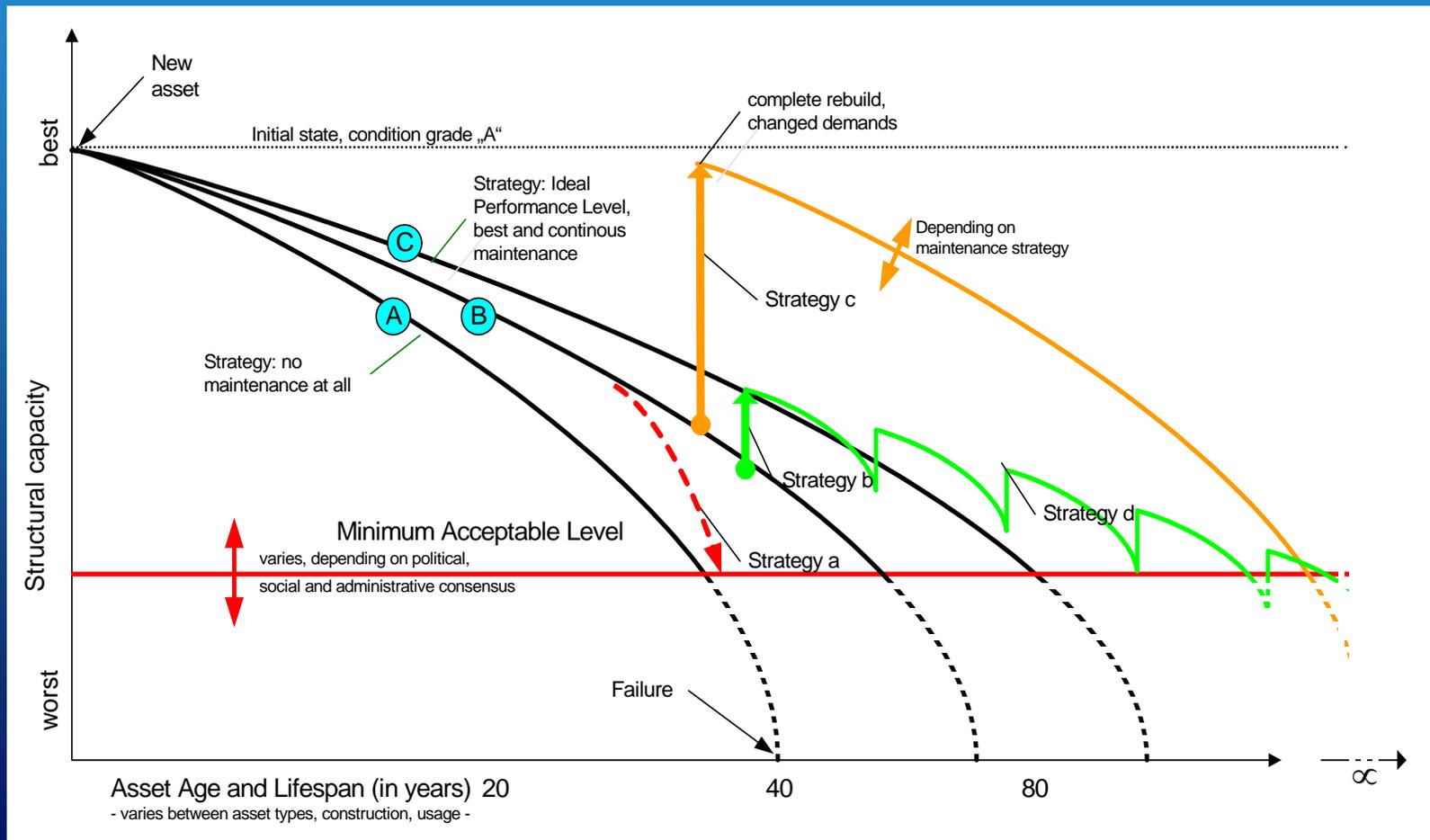


Task Focused on
O&M Phase of
Asset Management



BACKGROUND

How does O&M Asset Management work?



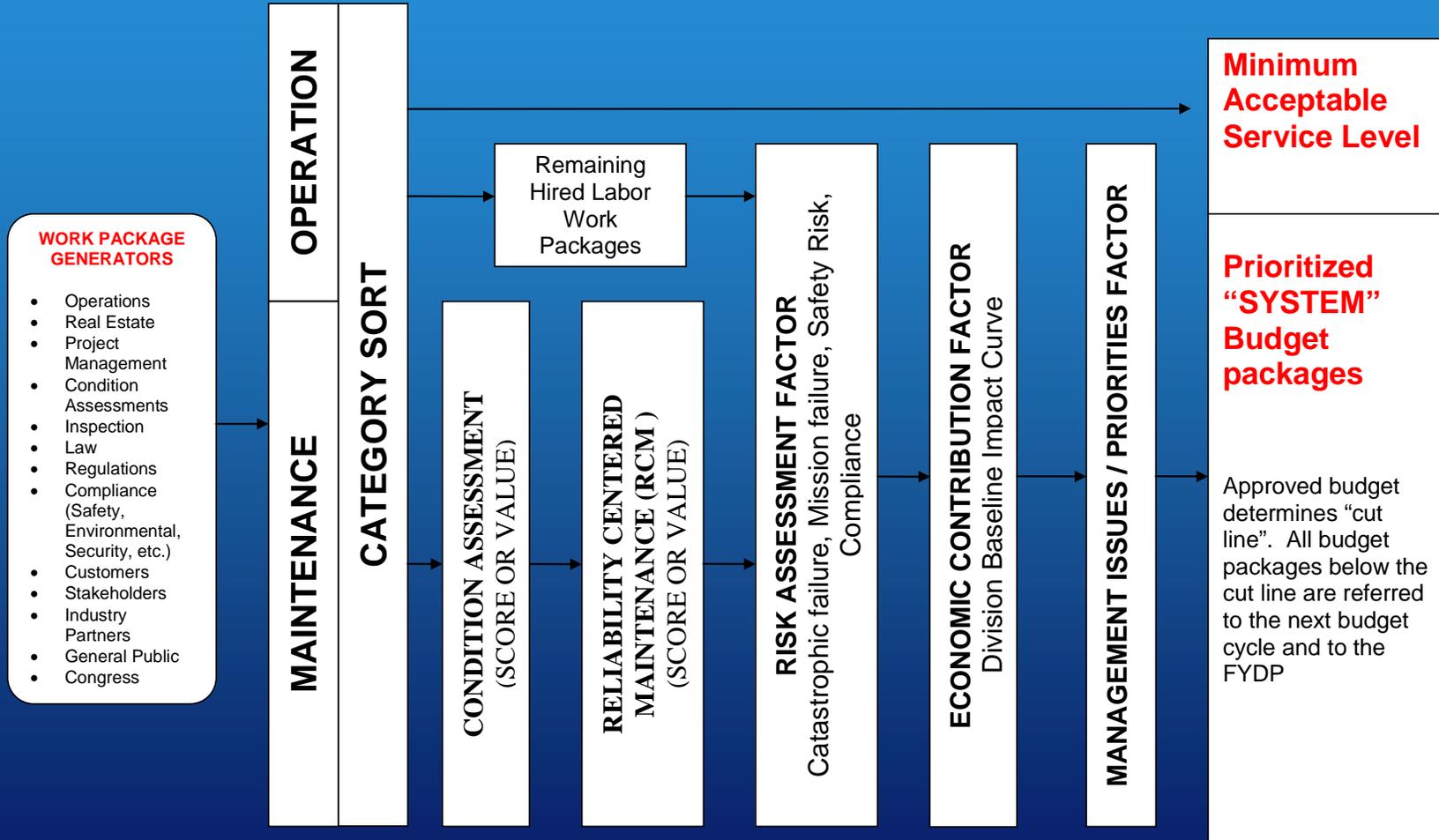


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BACKGROUND

Work Process for O&M





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Four Asset Management Goals

- ◆ Operate and Maintain our facilities at or above the **Minimum Acceptable Service Level**
- ◆ Use Inspection and repair **resources** for the **highest priority needs of the system.**
- ◆ Receive input from and provide input to a **cost-effective, multi-year system investment program**
- ◆ Communicate the **impact** on system reliability & project **risks** of various investment scenarios through a **credible, quantifiable tool** .



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Asset Management - Basics

- ◆ Use Physical Condition and Scheduled, Repetitive Maintenance to define **NEED**
 - Assess **current physical conditions** based upon existing inspections
 - Use Reliability Centered Maintenance Software (FEM/MAXIMO) to forecast **necessary preventative maintenance**
 - Prioritize based upon relationship to the **minimum acceptable service level**



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Current Progress and Development



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Progress Highlights

- ◆ We developed and fielded multi-division/discipline Facility Condition Assessment Teams (FCATs) to assess Physical Condition
- ◆ 100% complete all LRD Navigation assessments - 11 May 07, (3 wks **ahead of schedule**)
- ◆ Assessment Cost : \$8-10K/project (travel dependent)
- ◆ Developed an automated NAV assessment and analysis tool prototype and presented it at 14 Jun LRD CC meeting)



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Background

Standard Condition Rating Scale

Asset Management - Performance Reliability Assessment Standards	
Condition Classification	Definitions
A Adequate	<ul style="list-style-type: none"> - There is a high level of confidence that the feature will continue to perform well under the designed operating conditions. This confidence level is supported by data, studies or observed project characteristics which are judged to meet current engineering or industry standards. - There is a limited probability that the verified degraded conditions will cause an inefficient operation, or degradation or loss of service.
B Probably Adequate	<ul style="list-style-type: none"> - There is a moderate level of confidence that the feature will continue to perform well under designed operating conditions, and may not meet current engineering or industry standards. The feature may require additional investigation or studies to confirm adequacy. - There is a low probability that the verified degraded conditions will result in inefficient operation, or degradation or loss of service.
C Probably Inadequate	<ul style="list-style-type: none"> - There are indications that the feature may not continue to perform well under designed operating conditions, and may not meet current engineering or industry standards. The feature will require additional investigation or studies to confirm adequacy. - There is a low probability that the verified degraded conditions will result in inefficient operation, or degradation and potential loss of service
D Inadequate	<ul style="list-style-type: none"> - There is a high level of confidence that the feature will <u>not perform</u> well under designed operating conditions. Physical signs of distress and deterioration are present . Analysis indicates that factors of safety are near limit state. The feature deficiencies are serious enough that the feature no longer performs at a satisfactory level of performance or service. - There is a high probability that the verified degraded conditions will result in inefficient operation, or degradation or loss of service.
F Failed	<ul style="list-style-type: none"> - The feature has FAILED or the facility has provided significant engineering studies to support the evaluation that the feature will fail within the current assessment cycle. - Historically the feature regularly experiences scheduled or unscheduled failure or loss of service for repairs.



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Automating Condition Reporting Process

- ◆ Standard Equipment Hierarchy
- ◆ Flexible at Component Level
- ◆ Mission Critical Indicator
- ◆ Condition Rating
- ◆ Comments (standard/unique)
- ◆ Risk Category Indicators
- ◆ Automated Version to Include Additional Info, Help Features, Logic and Auto Rollup

Project: Markland L&D		Asset Management - Summary of Condition Assessments and Their Affect on Performance Reliability			
Miter Gate & Operating Machinery Conditions	MCC (Y / N)	Condition Assessment			Observations
		Condition Rating (5 Levels) A, B, C, D, F	Risk Category (5 Categories) SF,SC,M,ST,CF		
Miter Gate Structures, Seals and Contact Blocks					
Primary Lock - US Gates	Y	D	M		Primary gates have reached their fatigue life and should be replaced per the major rehab study performed by the Louisville District. Auxiliary gates are near the end of their fatigue life and should be replaced per the major rehab study performed by the Louisville District.
Primary Lock - DS Gates	Y	D	M		
Auxiliary Lock - US Gates	N>Y	C	M		
Auxiliary Lock - DS Gates	N>Y	C	M		
Miter Gate Anchorage, Pintle and Miter Device					
Primary Lock - US Gates	Y	B			
Primary Lock - DS Gates	Y	B			
Auxiliary Lock - US Gates	N>Y	B			
Auxiliary Lock - DS Gates	N>Y	B			
Miter Gate Operating Equipment					
Primary Lock - US Gates	Y	B			Strut arms need replacement when miter gates are replaced.
Primary Lock - DS Gates	Y	B			
Auxiliary Lock - US Gates	N>Y	B			
Auxiliary Lock - DS Gates	N>Y	B			
Miter Gate Controls and Position Indicators					



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Automated Assessment Process

(Lap-Top Screen Currently Under Development)

ACOE Data Collection

Edit Help

Navigation Flood Damage Reduction

Project Selection

District LRP-Pittsburgh

- Allegheny
 - L/D 2 (LRP)
 - Lock Structures
 - Lock Buildings
 - Lock Walls
 - Mooring Cells
 - Miscellaneous
 - Miter Gate & Operating Machinery
 - Filling/Emptying Valves and Operating
 - Dam Structures
 - Dam Gates and Operating Machinery
 - Bill Young L/D (LRP)
 - L/D 4 (LRP)
 - L/D 5 (LRP)
 - L/D 6 (LRP)
 - L/D 7 (LRP)
 - L/D 8 (LRP)
 - L/D 9 (LRP)
- Clinch
- Cumberland
- Green
- Kanawha
- Monongahela
- Tennessee
- Chicago
- Niagra
- St. Marys
- Ohio

Component Evaluation

Component	Mission Critical	Rating	View DASH-10 Help
▶ Control Shelters	<input type="checkbox"/>	ADEQUATE	View Help
Maintenance Building	<input type="checkbox"/>		View Help
Land Wall Operations Building	<input type="checkbox"/>		View Help
Middle Wall Lock Building	<input type="checkbox"/>		View Help
River Wall Lock Building	<input type="checkbox"/>		View Help
Admin Building	<input type="checkbox"/>		View Help
Davis Building	<input type="checkbox"/>		View Help
*	<input type="checkbox"/>		

Standard Comment

Select Comment Select predefined comment...

Predefined comments can be selected here. These are populated from the DASH-10 document.

Custom Comment

Custom comments can be entered by the evaluator here.

Images

View All Images

Add Image

Clear Form Complete Evaluation



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GIS Management Tool



- ◆ Graphically Tells our Story
- ◆ Overall System Health
- ◆ “Drill Down” Capability by Project - “1-3 clicks”
- ◆ Auto Update from Condition Assessment

Project - Lock 7 Allegheny River

Condition - Component: US Gate Machinery out of service-

Risk -Single lock is out of service

Impact – Regional loss of \$1

Estimated Cost to Repair:

\$500K



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Near Term Goals and Objectives

- ◆ Complete baseline condition assessment schedule for LRD FDR projects (31 Dec 07)
- ◆ Test Deploy FEM/MAXIMO in LRP (30 Sep 07)
- ◆ Document overall relationship between Condition, Reliability, Risk, Impact, and Regional Considerations for prioritization (Target Sep 07)
- ◆ Deploy FEM/MAXIMO Division (LRD) wide (Target Jan 08)
- ◆ Full implementation for all Navigation & FDR projects and FY-10 budget submittal (Target Jan 08)
- ◆ Incorporate best of RecBest and ESBest
- ◆ Transport to remainder of MVD and other Corps Districts/Divisions



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Questions/Comments

