Inland Waterway User Board – *"Total Risk Exposure – Update and Discussion"*

Jim Hannon

Chief, Operations and Regulatory

HQ US Army Corps of Engineers

James.R.Hannon@usace.army.mil

PH: 202/761-1983

14 August 2014

US Army Corps of Engineers

BUILDING STRONG®

Where We've Been…

- IWUB #70 – Jan 2014
  - Overview of 2010 Capital Projects Business Model (CPBM) approach – the "1st Step"
  - Update on Corps Asset Management Condition and Risk processes implemented since 2010 CPBM
  - Introduction of "Risk Exposure" approach, including relationship between Operational and Residual Risk Exposure, *at the L&D site level*

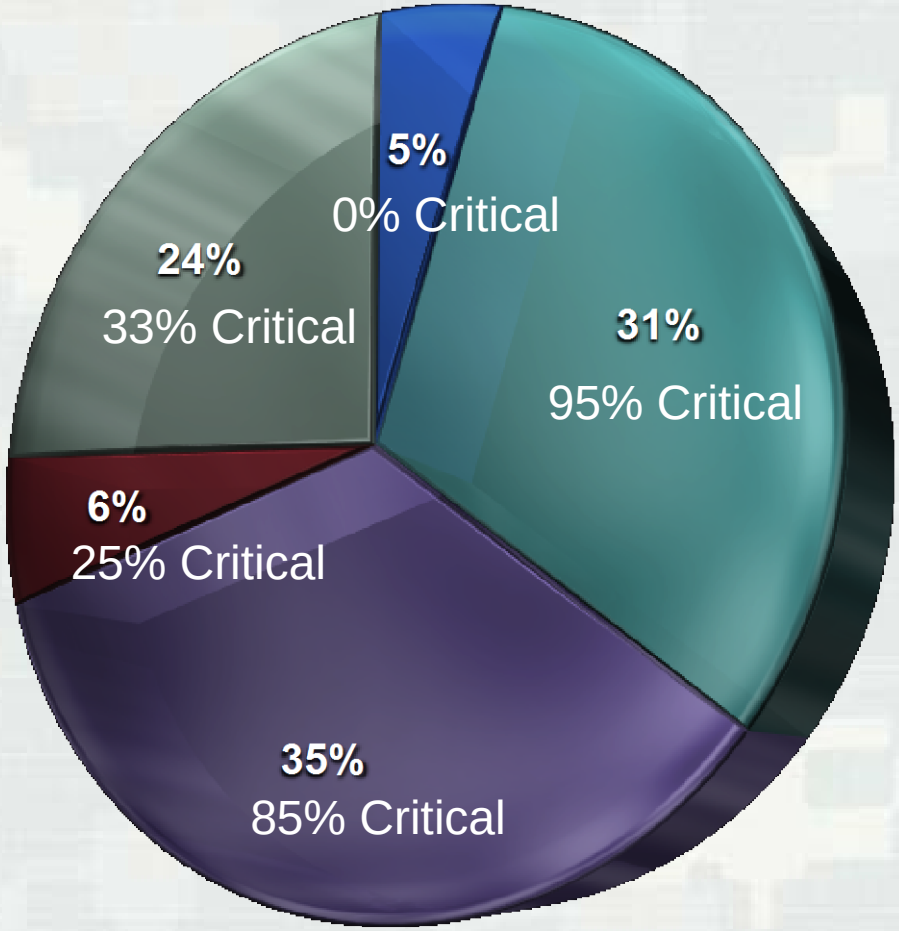
Setting the Stage

Where We've Been…

- IWUB #71 – May 2014
  - Overview of the Corps "Big Picture" – CW Transformation and USACE Infrastructure Strategy
  - Reminder of key points of IWUB #70 on Risk Exposure
  - Introduction to the "Spectrum" of Investment Strategies, *at the critical Component Level*
    - ✓ Need to *maintain/repair the most critical assets/compon*ents that…
    - ✓ Are in the *worst shape/condition* that…
    - ✓ Have the highest likelihood of failing and…
    - ✓ Causes the *highest impact on our customers*
    - ✓ Extending Service Life and inherently Improve Reliability
  - The Corps is "Delivering for the present while preparing for the Future" – Risk Exposure is just next "Step"

Providing Broader Context

Maintain/Repair Critical Components



- Buildings
- Dam
- Lock
- Misc Spt Str and Sys
- Util/Power/Controls

Total # of Inventory “Records” > 160,000

Shape/Condition of Navigation Inventory

Are we Focused on Mission Critical Components?

	Overall Inventory		Critical Components	VS	Non-Critical Components
% in A/B Condition	92.8%	↑	94.4%		89.7%
% in C Condition	3.6%	↓	3.4%		4.0%
% in D/F Condition	3.6%	↓	2.3%		6.3%

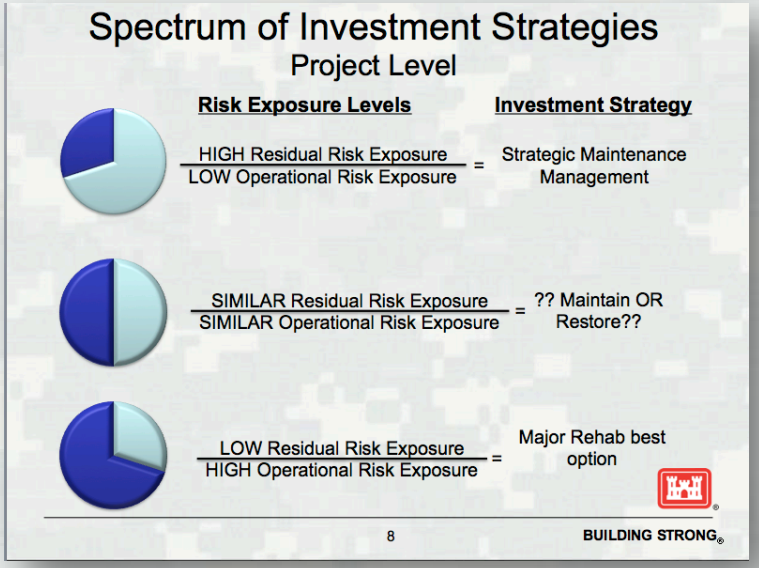
Generally Yes, but we can, and must, do better!!

What Asset Components are in Worst Shape/Condition?

Feature	% Critical Components		
	A/B Condition	C Condition	D/F Condition
Buildings	N/A	N/A	N/A
Dam	94%	4%	2%
Lock	95%	3%	2%
Miscellaneous Support Structures & Systems	87%	6%	7%
Utilities/Power/Controls	95%	3%	2%

…But by NUMBER of Components, ~86% in D/F Condition are in Lock and Dam!!

Where are the Highest Impacts on our Customers?



- Is the "size" of the Project level Risk Exposure "pie" the same everywhere on the IMTS?
- *AND* if not, what does that mean for the overall Investment Strategy?

- NO! the "size" or amount of **"Total$_{iNav}$" Risk Exposure** is not the same across the IMTS

IMTS has High, Moderate and Low Use Waterways

IMTS Waterway Classifications

Classification	Potential Risk to Navigation Mission	Example(s) (NOT all inclusive)
High Use (> 3 billion ton-miles)	**Maximum** (> 5 billion ton-miles)	GIWW, Illinois, Miss (MVR), Ohio (KY, IL, IN, OH)
	High (3-5 billion ton-miles)	BWT, Miss (MVP/MVS), Ohio (PA, OH, WV), Tennessee
Moderate Use (1 - 3 billion ton-miles)	**Moderate** (1 - 3 billion ton-miles)	Columbia, Snake, MKARNS, Tenn-Tom, Kanawha
Low Use (< 1 billion ton-miles)	**Low** (500 million to 1 billion ton-miles)	Monongahela
	Negligible (< 500 million ton-miles)	Allegheny, ACF, Ouachita and Black

When combined with condition of assets on the Waterway systems it begins to bring some focus on where the highest impacts are possible

Conditions by Waterway

(Mission Critical Components ONLY)

Determined by Ton-Miles

Potential Risk	Waterway	% in A/B Condition	% in C Condition	% in D/F Condition
Maximum	GIWW	93%	2%	5%
	GIWW Algiers Canal	90%	3%	7%
	GIWW Port Allen- Morgan City Alt. Rte River	93%	4%	4%
	GIWW Texas	79%	18%	3%
	Illinois	92%	5%	3%
	Mississippi	96%	2%	2%
	Ohio	92%	5%	2%
High	Black Warrior	97%	1%	2%
	Tennessee	95%	4%	1%
Moderate	Columbia	93%	4%	3%
	Snake	96%	2%	3%
	Arkansas	91%	5%	4%
	Tenn-Tombigbee	98%	1%	1%
	Kanawha	94%	5%	2%
Low	Allegheny	93%	3%	4%
	Ouachita	97%	3%	0%
	Black	95%	5%	0%

…BUT remember, this only <u>begins</u> to bring <u>some</u> focus on where the highest Total Risk Exposure is possible…WHY?

Economic Consequences

Determining Where the Highest Impacts are on our Customers

- Shipper-Carrier Cost (SCC) Model
  - USACE began transition from Tonnage related "consequences" to Economic Impact on Shippers and Carriers in 2010 *(NED Transportation Rate Savings)*
  - Tons and Ton-Miles are not a "consequence"
  - BUT DO factor into the Savings per Ton part of the SCC model used for our Risk and Consequence analysis, including Risk Exposure,
  - The SCC is updated annually to assist in developing Budget Work Packages

Tonnage vs Economic Impact

5-Yr Average Tonnage Rankings			SCC Economic Impact Rankings		
Rank	**River**	**Project**	**Rank**	**River**	**Project**
1	Ohio	Ohio River L&D 52	1	GIWW	Calcasieu Lock
2	Ohio	Ohio River L&D 53	2	GIWW	Leland Bowman
3	Ohio	Newburgh L&D	3	St Mary's	Soo Locks - Poe
4	Ohio	Smithland L&D	4	Illinois	Lagrange L&D
5	Ohio	John T Myers L&D	5	Illinois	Peoria L&D
6	Ohio	McAlpine L&D	6	GIWW	Bayou Boeuf Lock
7	Ohio	Cannelton L&D	7	Mississippi	Mississippi L&D 24
8	St Mary's	Soo Locks - Poe	8	Mississippi	Mississippi L&D 22
9	Mississippi	Mississippi L&D 27	9	Mississippi	Mississippi L&D 19
10	Ohio	Markland L&D	10	Mississippi	Mississippi L&D 25

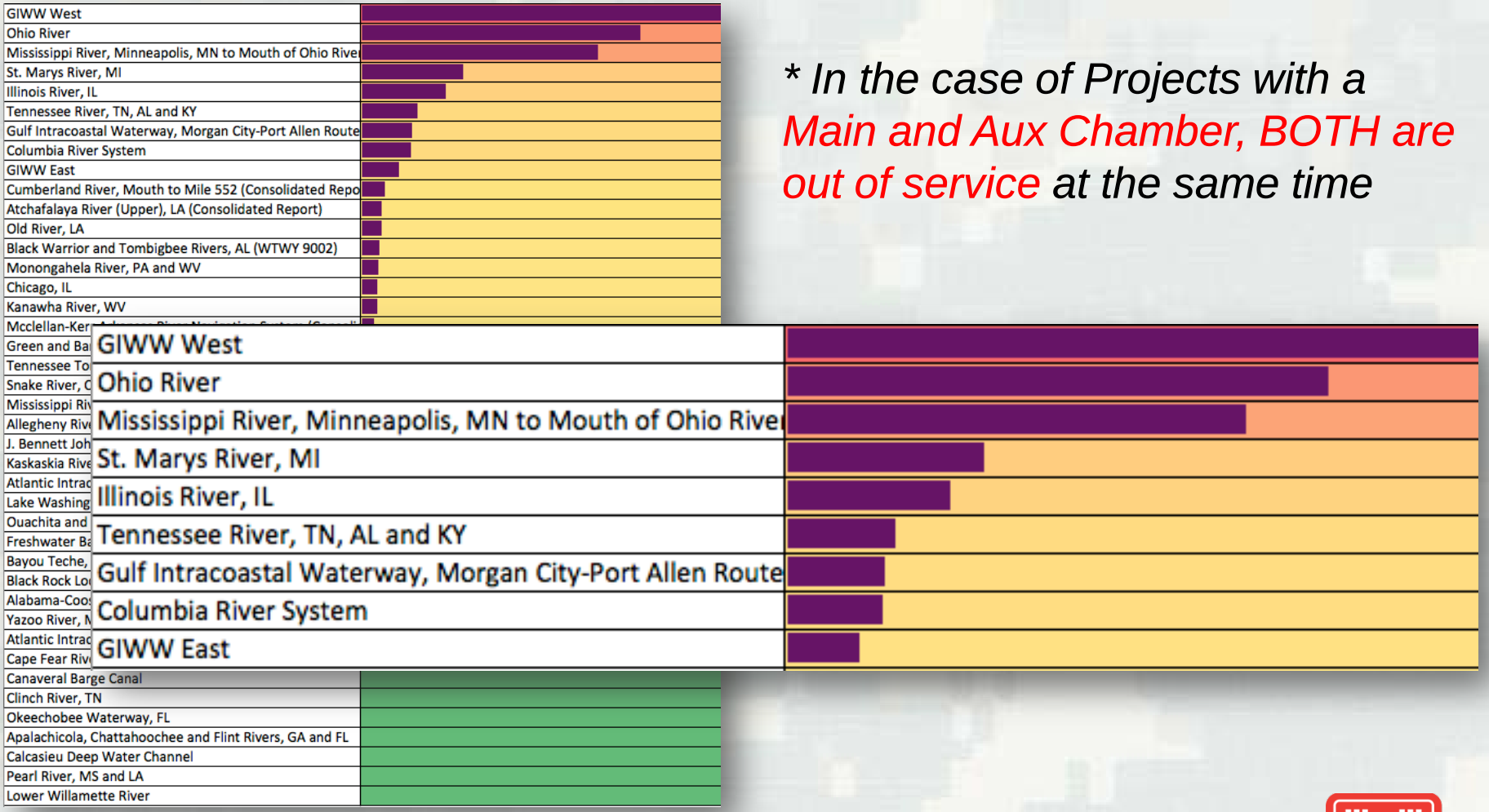
Common Factors (all):

- High Use (Maximum)
- 1200’ Main Chamber
- Redundancy with Auxiliary Chamber (2 have twin 1200’s!)

Common Factors:

- High Use (Maximum)
- GIWW/Poe 1200’ Main, all other 600’
- NO Auxiliary Chambers (except Poe)

SCC – Total* River Closure *(Draft)*



** In the case of Projects with a Main and Aux Chamber, BOTH are out of service at the same time*

A Handful of Rivers Produce the Most Potential Risk

Summary

- IWUB #70, 71 and 72 covered:
  - 2010 CPBM initial “Step”
  - Corps Big Picture
  - Condition and Risk advancements, including Risk Exposure approach, the next “Step”
    - Site level
    - Component level
  - General Condition of Critical components across the IMTS
  - Varying “Importance” of different River Systems

Bottom Line – Informing the IMTS Investment strategy

Questions?