

National Smart Water Grid™

Presentation to Ground Water Protection Council
Ronald Beaulieu, Principal Investigator

Mississippi River Basin





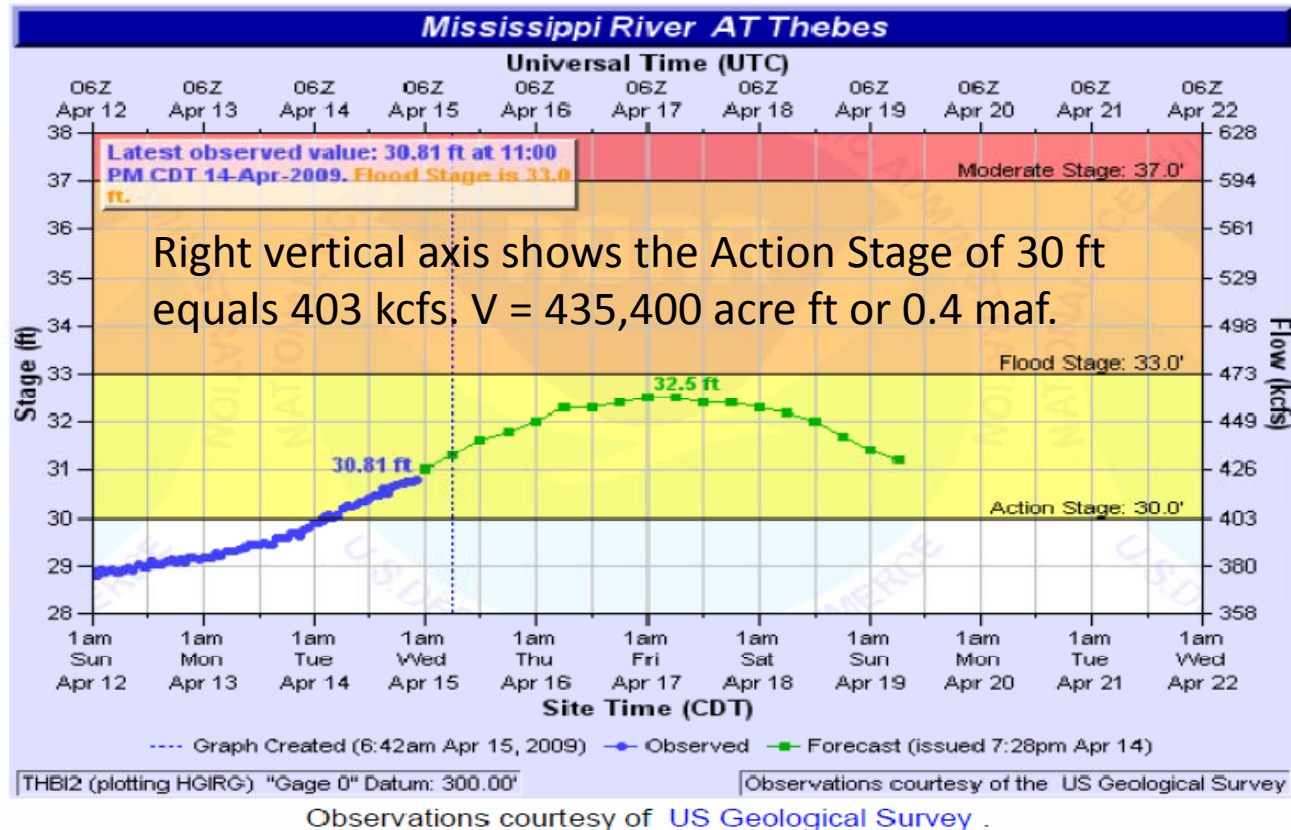
Flood Stages via River Gages

- **Action Stage** — water level above which flooding begins. This is the water level where fresh water capture could begin.
- **Minor flooding** — minimal or no property damage, but possibly some public threat or inconvenience.
- **Moderate Flooding** — some inundation of structures and roads near stream. Some evacuations of people and/or transfer of property to higher elevations are necessary.
- **Major Flooding** — extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations are necessary.

Flood Water Available to Withdraw

Ex. 1: Area under the Curve Over Action Stage

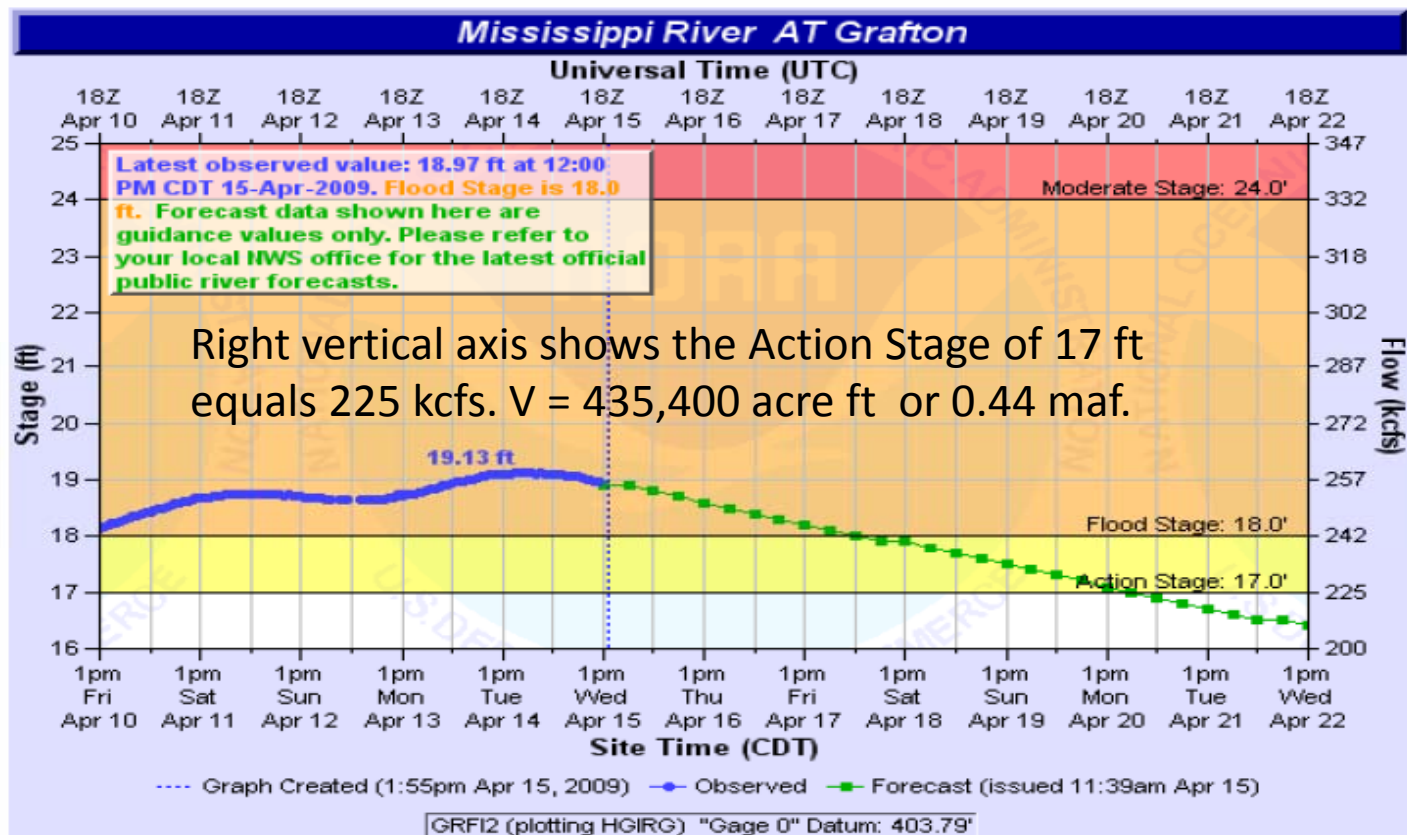
National Weather Service
 Advanced Hydrologic Prediction Service
www.weather.gov/ahps/



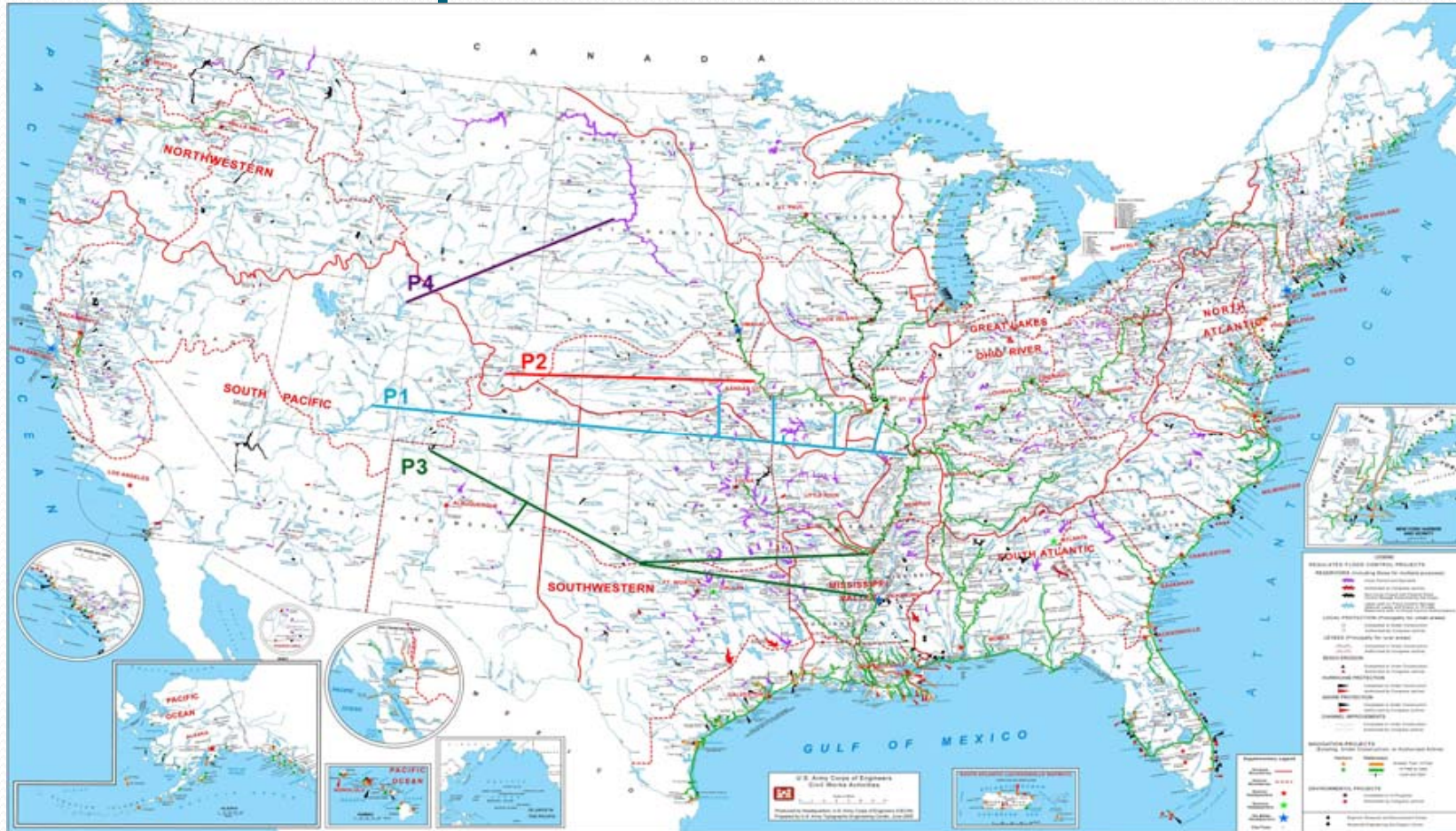
Flood Water Available to Withdraw

Ex. 2: Area under the Curve Over Action Stage

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NSWG Pipelines P1 – P4



Cost Estimate to Build Initial Proposal of Pipelines

Leg	Distance (miles)	Design	Cost per pipeline leg
P 1 Blue	1140	6 x 12 ft dia pipes	\$45.6B
P 2 Red	620	2 x 12 ft dia pipes	\$12.4B
P 3 Green	970	6 x 12 ft dia pipes	\$38.8B
P 4 Purple	470	1 x 12 ft dia pipe	\$4.7B
Totals	3200	14,370 miles of pipe	\$101.5B (total)
Cost/Benefit Summary for P1 & P3			Cost or Benefit
Drought Consequence in West (average of \$6-8B/yr SWAQ 2007)			\$7B
Major Flood Consequence in Midwest (USACE 2008)			\$27B
Misery Index (Drought + Floods)			\$34B
Construction P1 & P3 (\$45.6B + \$38.8B)			\$84.4B
Estimated Volume of Captured Fresh Water from 6 months of withdraw at P1 & P3			48.4 maf
Average total sales Captured Fresh Water (\$1,350M/maf x 48.4 maf)			\$65.34B
Net Benefit = Water Sales + Misery Index – Construction Costs			+ \$14.9B



NSWG Socio-economic Benefits

1. Flood mitigation
2. Drought mitigation
3. Significant sustainable job creation
4. Decreased eutrophication in the Gulf of Mexico
5. Significant increased gross domestic product
6. Improved National Security
7. Contribution to federal and state budgets deficit reduction
8. Improved national fresh water management
9. Increased agricultural productivity
10. Improved transportation on the Midwest Rivers, and adjacent railroads and highways
11. Improved fishery and wildlife habitats
12. Increased recreation and tourism



Summary

- The status of the Nation's water resources will continue to change with growing population, increasing urbanization, changing industrial and agricultural practices, and changing climate.
- We have to find ways to use water more efficiently, capture more runoff, restore broken infrastructure, build new infrastructure, and reuse water multiple times. The NSWG is part of a comprehensive, integrated water management solution.
- Help make this idea a reality.