St. Louis District
Low Water Operations

Joan Stemler

Water Control
St. Louis District

November 2012

US Army Corps of Engineers
BUILDING STRONG®

Overview

- St. Louis District Overview
- St. Louis District L&D Operations
- Low Water Operations
- Extended River Forecast
- Reservoir Operations
- Low Water Reference Plane
- Questions

USACE

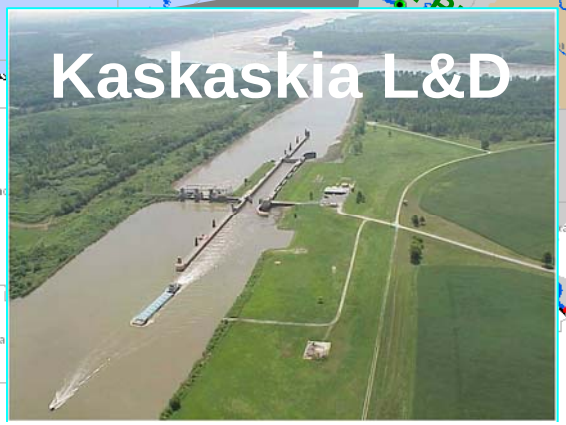

Great Lakes & Ohio River Division
North Atlantic Division
Northwestern Division
South Pacific Division
Southwestern Division
South Atlantic Division
Mississippi Valley Division
Seattle
Portland
Walla Walla
St. Paul
Buffalo
Detroit
Concord
New York
Philadelphia
Rock Island
Pittsburgh
Chicago
Baltimore
Omaha
Sacramento
San Francisco
St. Louis
Cincinnati
Norfolk
Kansas City
Louisville
Huntington
Wilmington
Nashville
Tulsa
Little Rock
Memphis
Charleston
Los Angeles
Albuquerque
Atlanta
Savannah
Vicksburg
Ft. Worth
Dallas
Mobile
Jacksonville
New Orleans
Galveston

St. Louis District

District Overview

- 5 Flood Control Reservoirs Projects
  - Lake Shelbyville, Carlyle Lake, Rend Lake, Mark Twain Lake, and Wappapello Lake
- 5 Lock and Dam Projects
  - L&D 24, L&D 25, Mel Price L&D, L&D 27, and Kaskaskia L&D
- 9 Watersheds draining into the Mississippi River within the St. Louis District
  - Salt, Cuivre, Lower Missouri, Meramec, Upper St. Francis, Castor, Lower Illinois, Kaskaskia, and Big Muddy Rivers

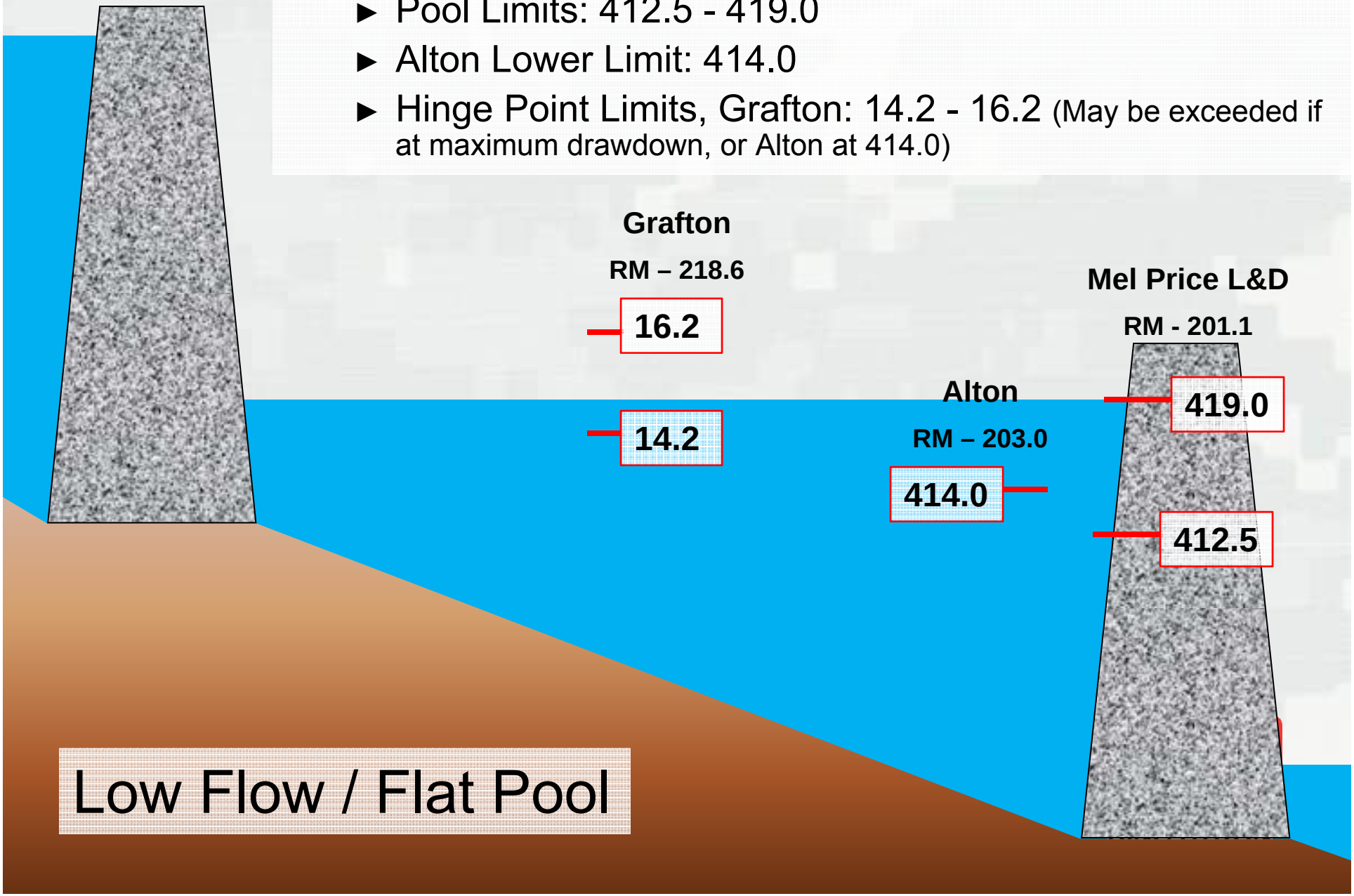
Locks and Dams



Rock Island
Meredosia
Illinois River
Clarksville)
L&D 25 TW (Winfield)
Mel Price T
Hermann
St. Louis
LRD
Mississippi R
SWD
District

Melvin Price Locks and Dam

- Pool Limits: 412.5 - 419.0
- Alton Lower Limit: 414.0
- Hinge Point Limits, Grafton: 14.2 - 16.2 (May be exceeded if at maximum drawdown, or Alton at 414.0)



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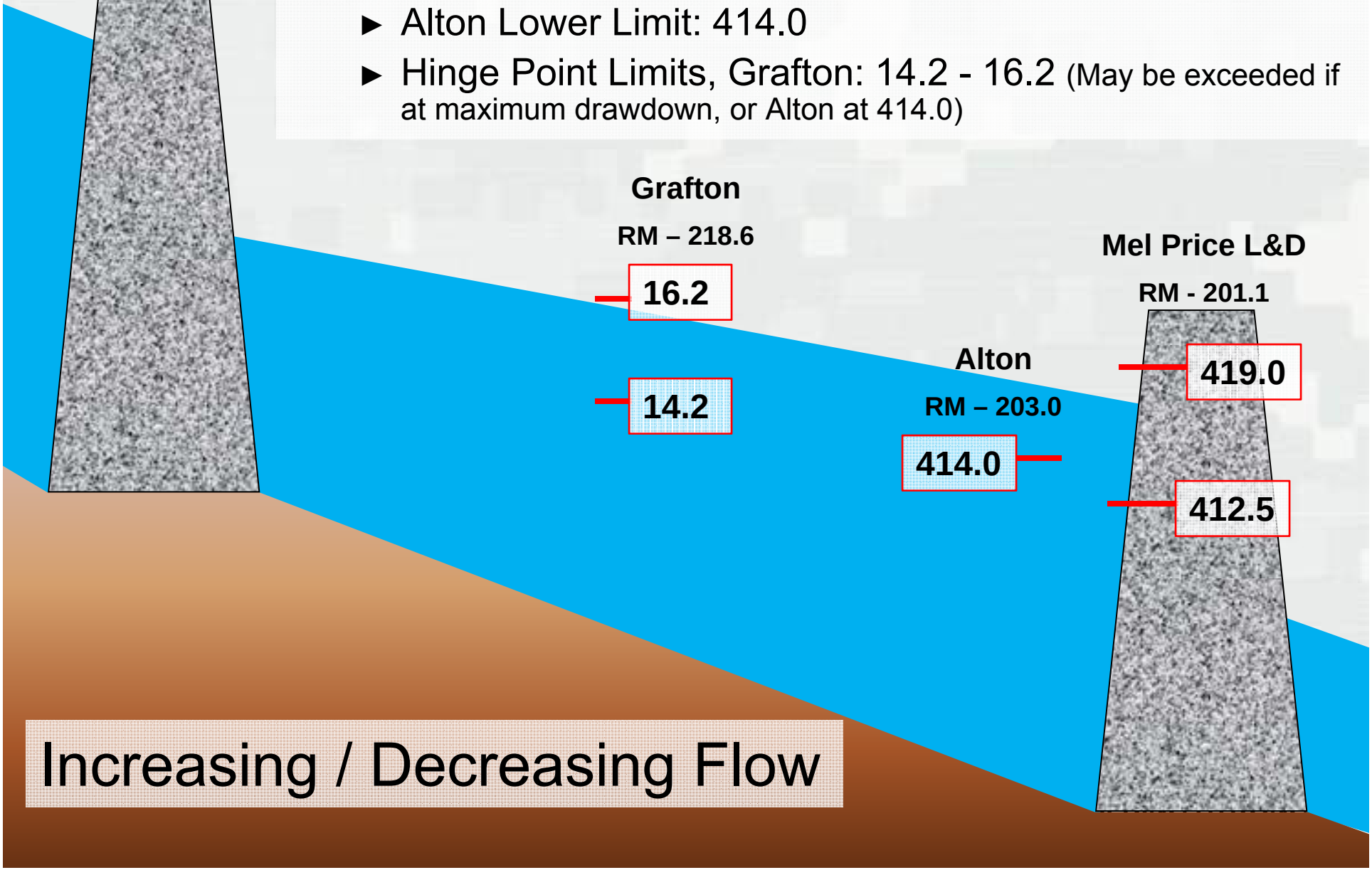

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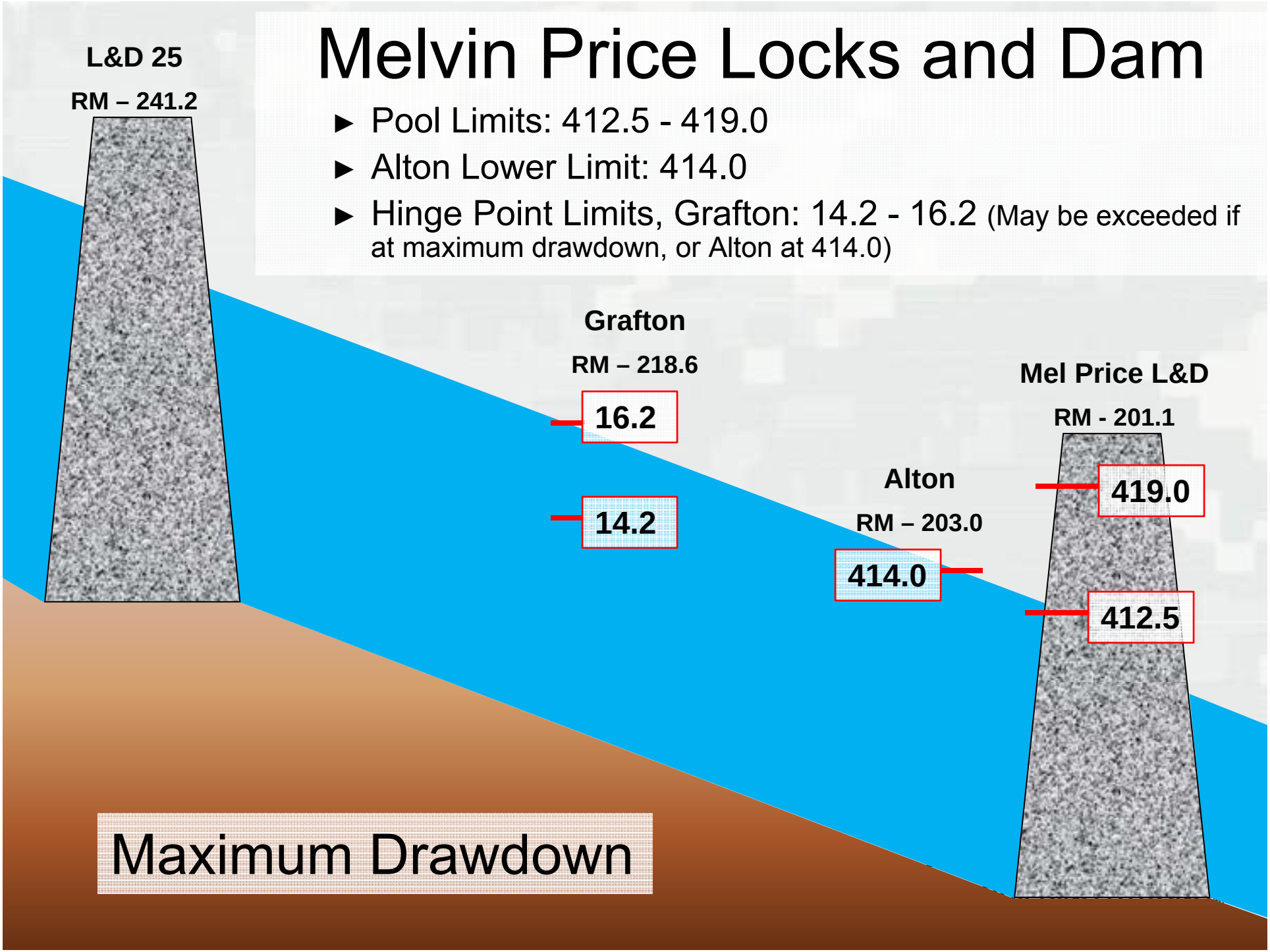

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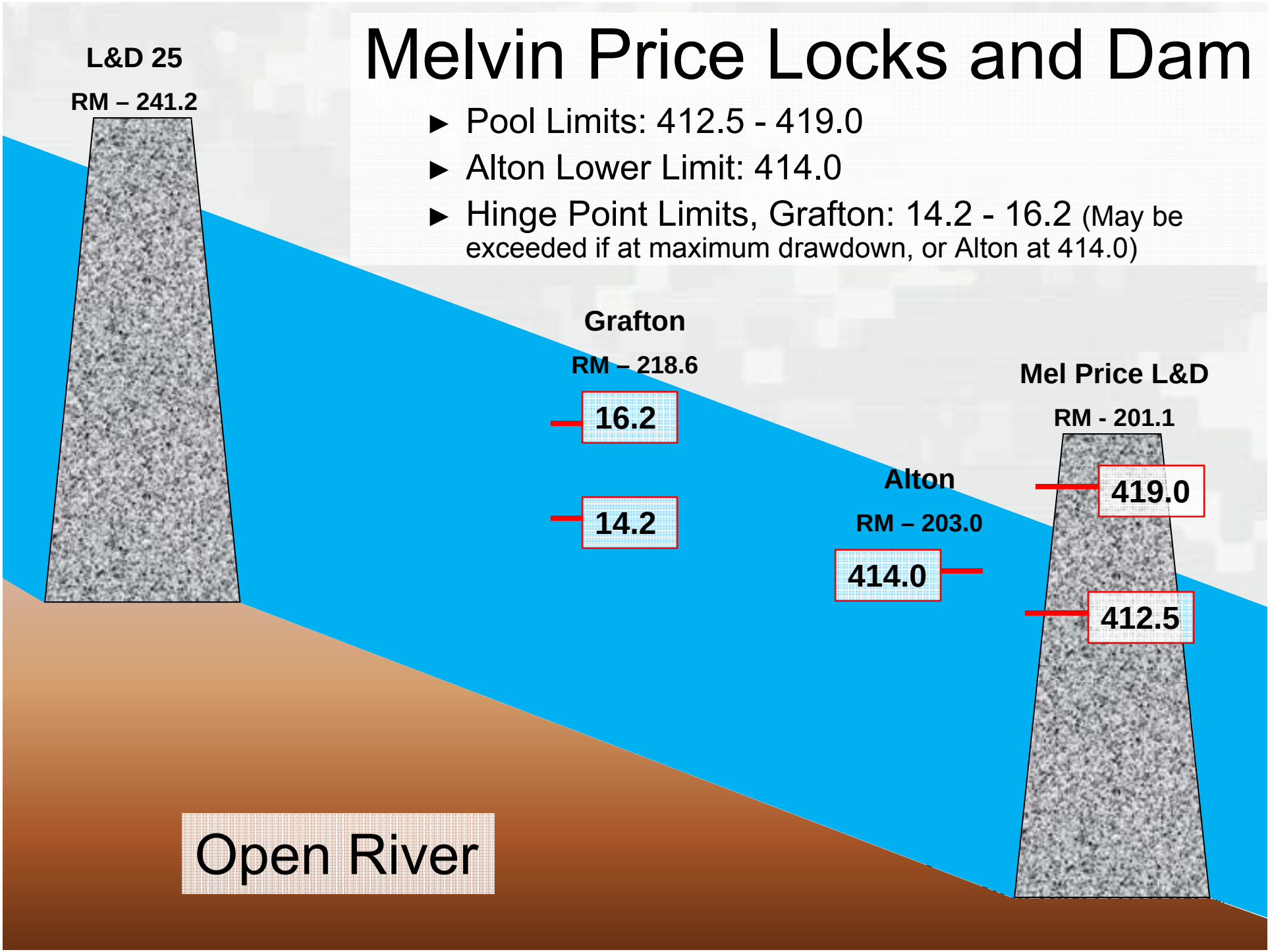

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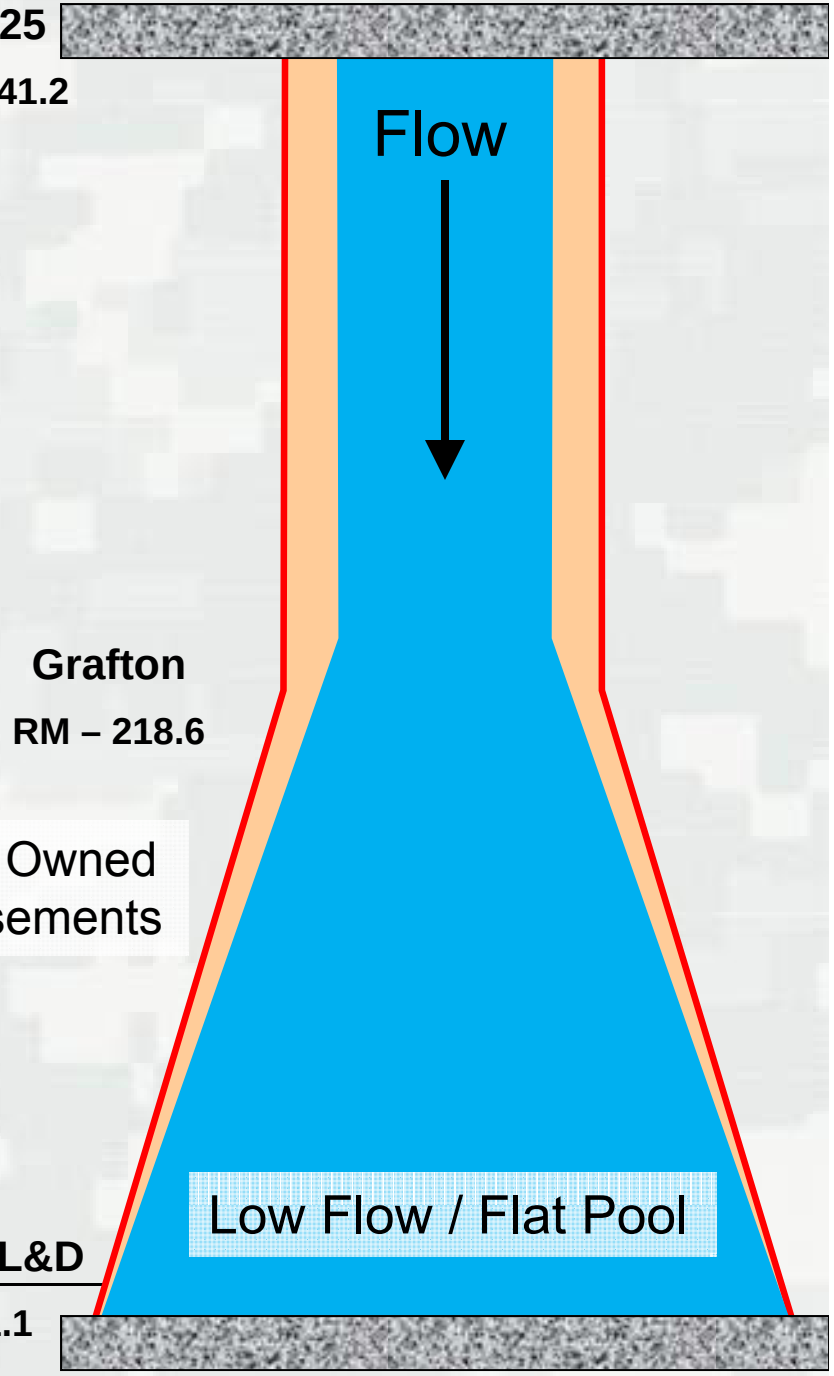

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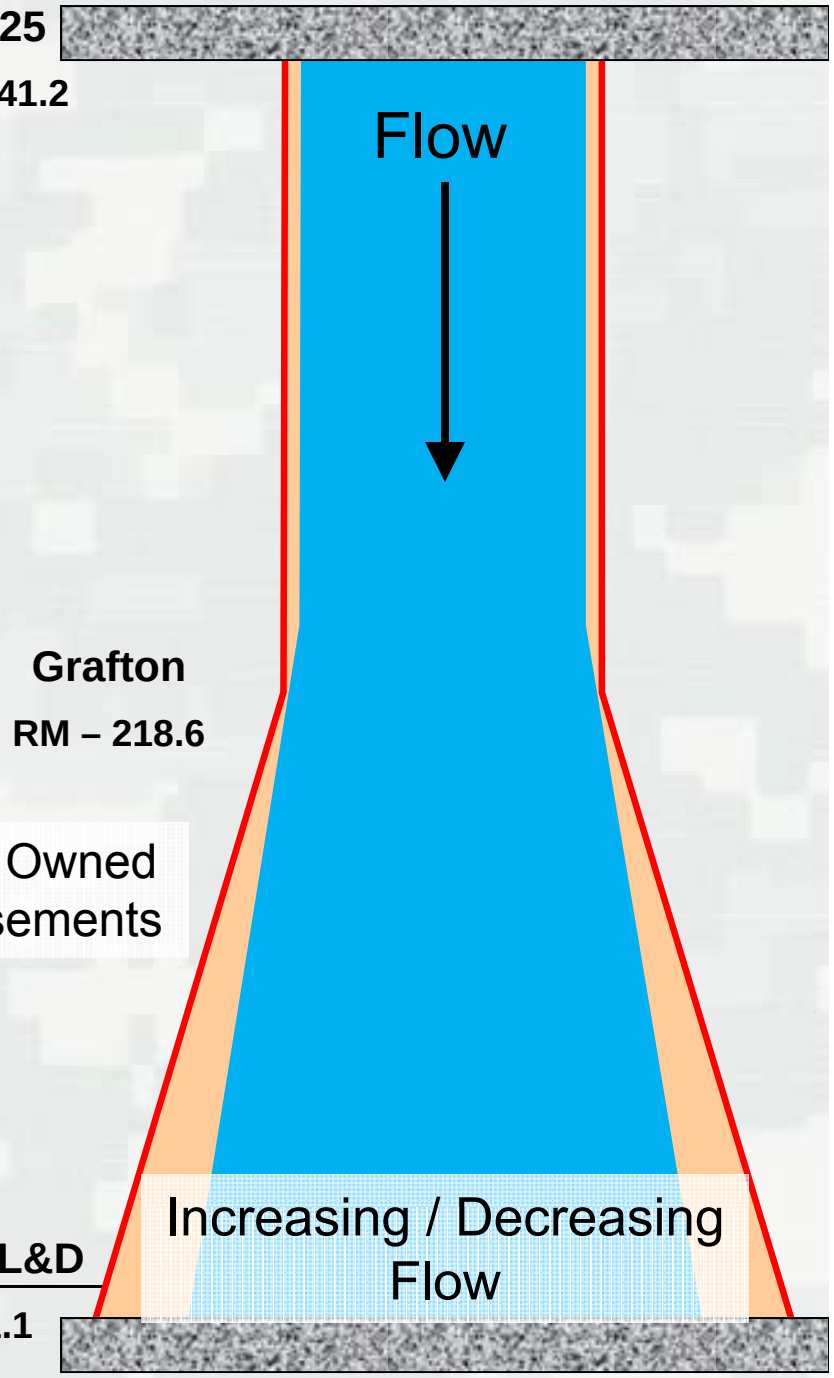

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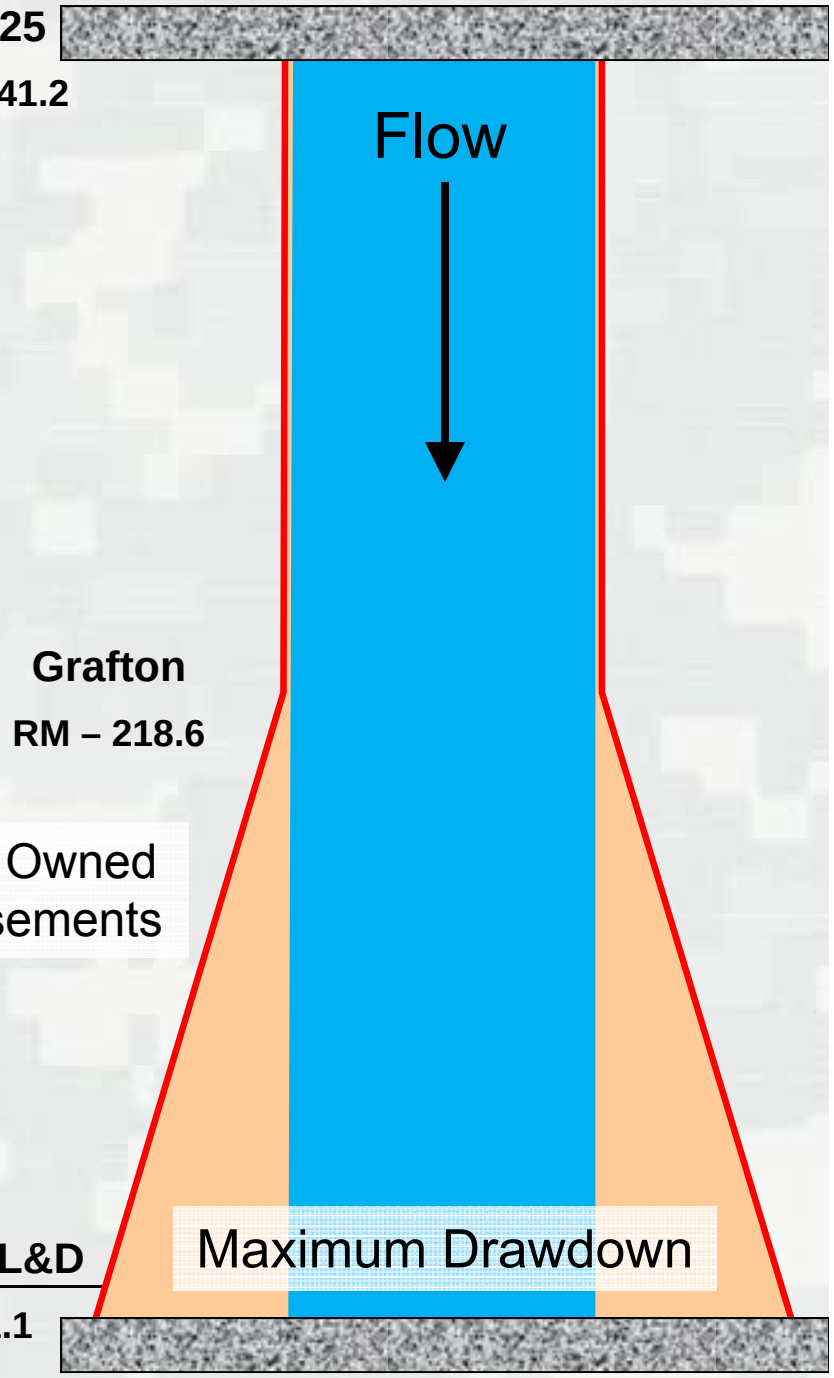

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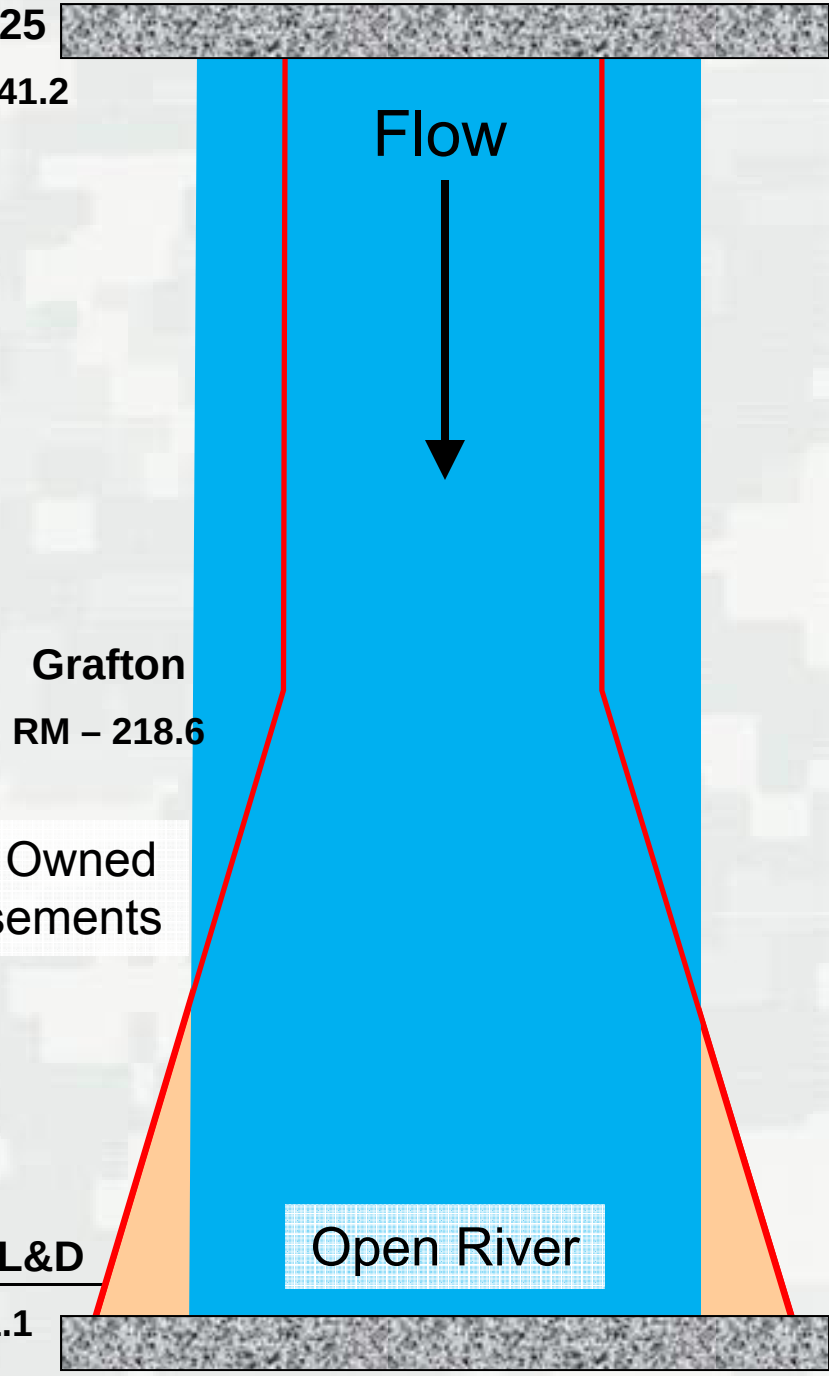
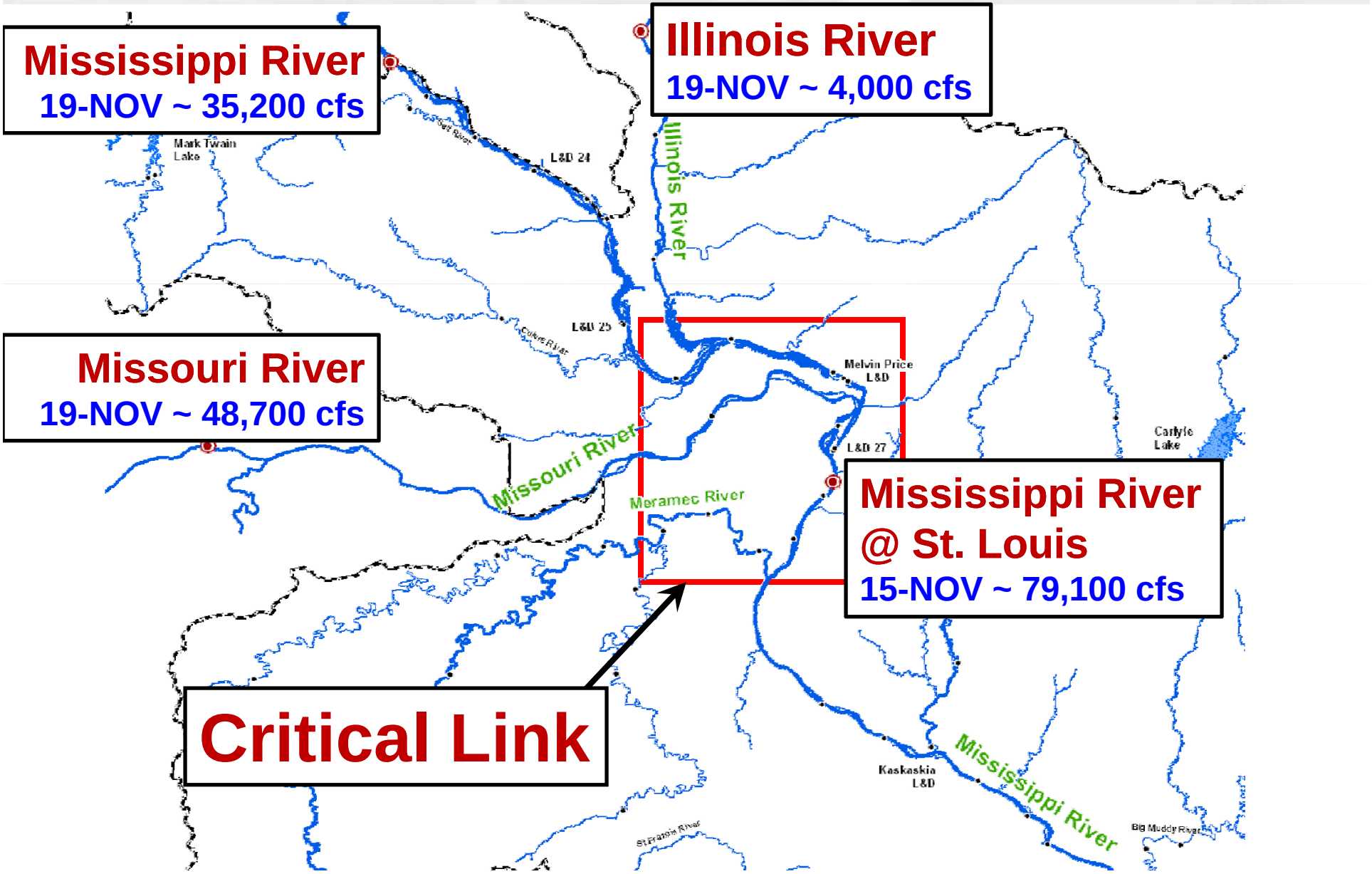


Hinge Point Limits

- Lock and Dam 24
  - Pool Limits: 445.5 - 449.0
  - Hinge Point Limits, Louisiana: 11.5 - 12.2 (May be exceeded if at maximum drawdown)
- Lock and Dam 25
  - Pool Limits: 429.7 - 434.0
  - Hinge Point Limits, Mosier Landing: 434.0 - 437.0 (May be exceeded if at maximum drawdown)
- Melvin Price Locks and Dam
  - Pool Limits: 412.5 - 419.0 Alton Lower Limit: 414.0
  - Hinge Point Limits, Grafton: 14.2 - 16.2 (May be exceeded if at maximum drawdown, or Alton at 414.0)
- Kaskaskia Lock and Dam
  - Pool Limits: 363.0 - 368.8
  - Hinge Point, Red Bud: 368.0 - 370.0

Low Water Operations

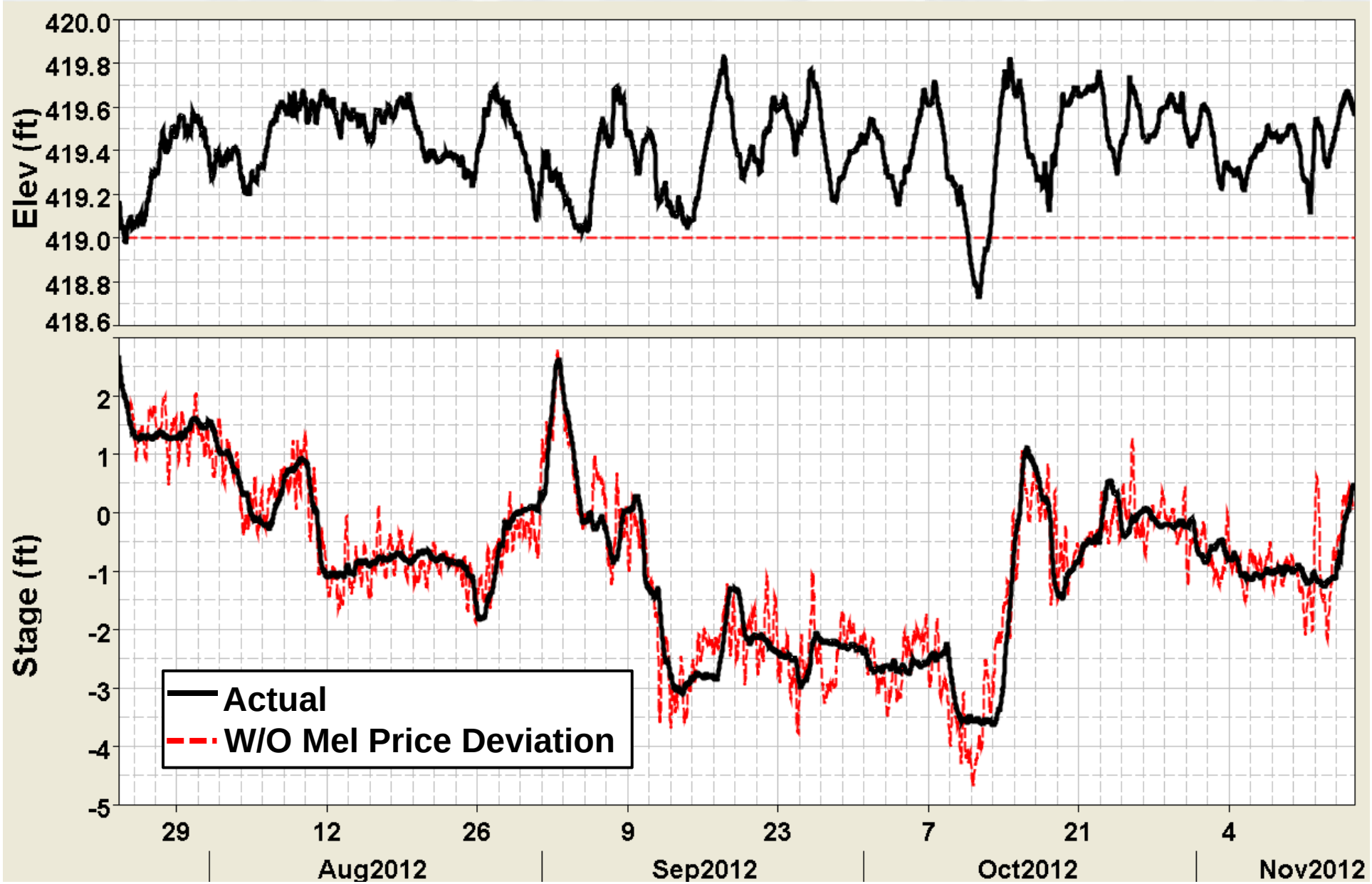
Critical Link



Mel Price Low Water Operations

- Approved Deviation to hold Mel Price 0.5 ft above maximum regulated pool
  - ▶ Minimize fluctuations downstream (i.e. St. Louis Harbor)
  - ▶ Extra storage is used to prevent low dips from L&D operations upstream
  - ▶ Extra storage can be used to provide a pulse of water to free grounded tows if needed

Mel Price Low Operations



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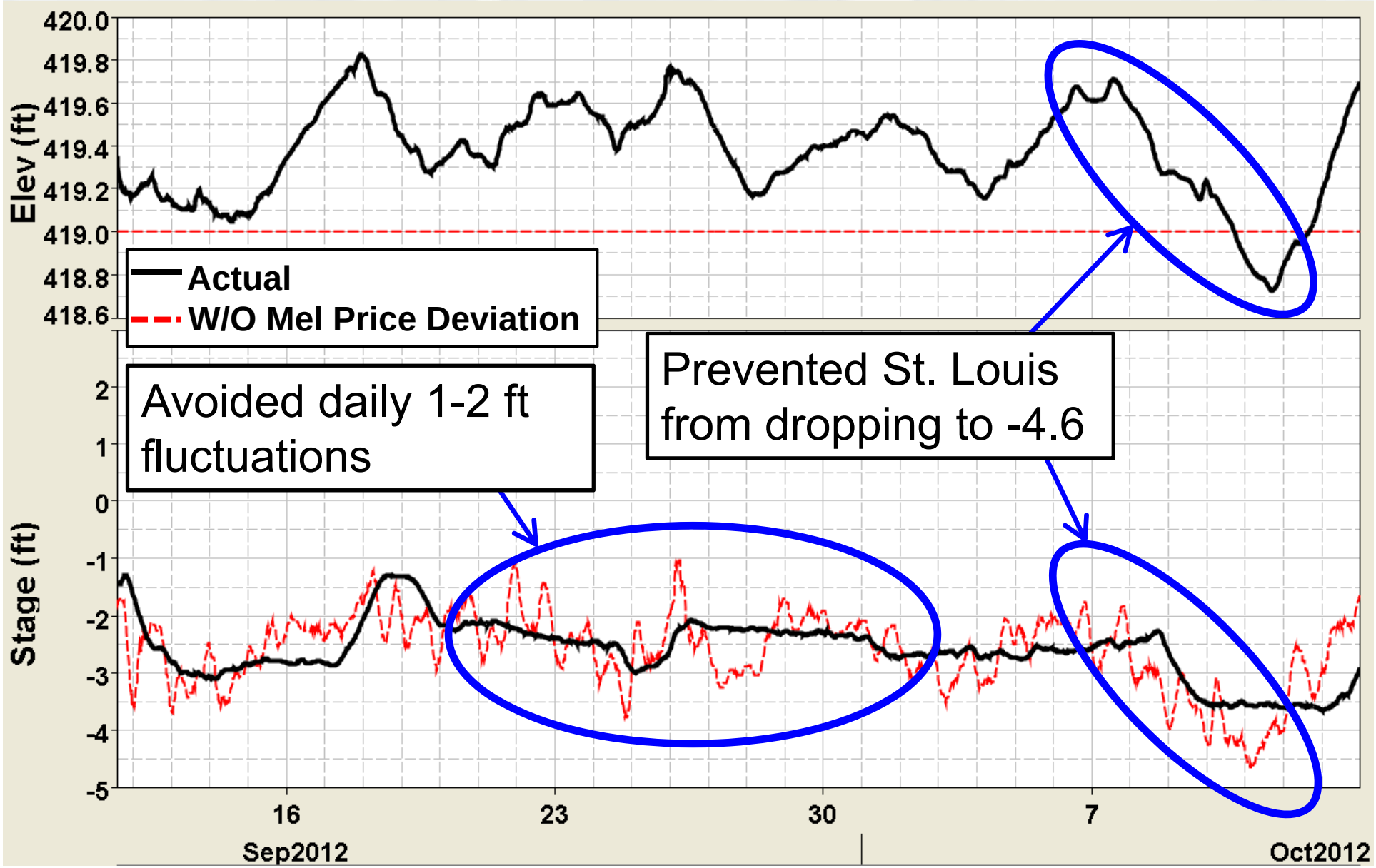
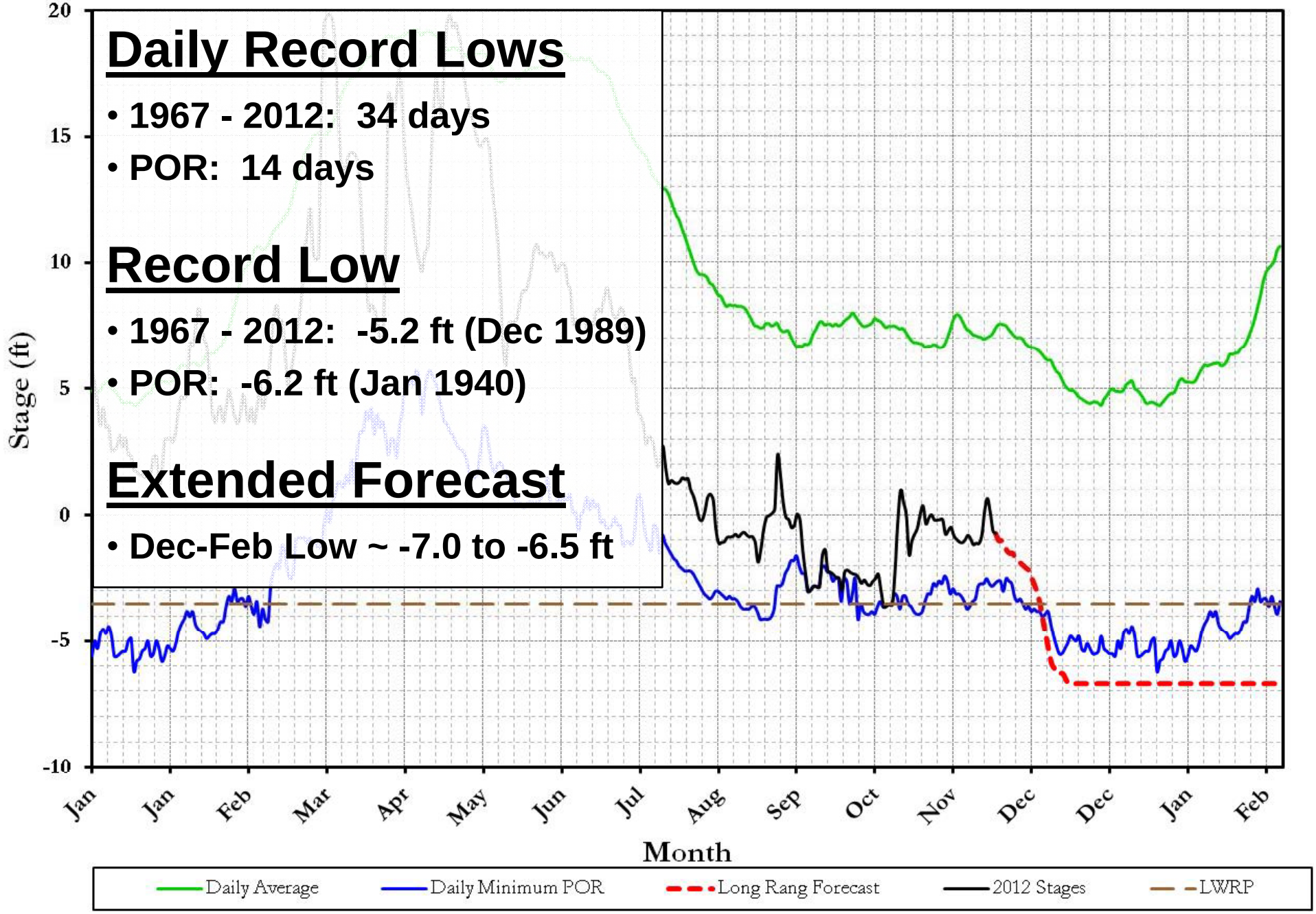
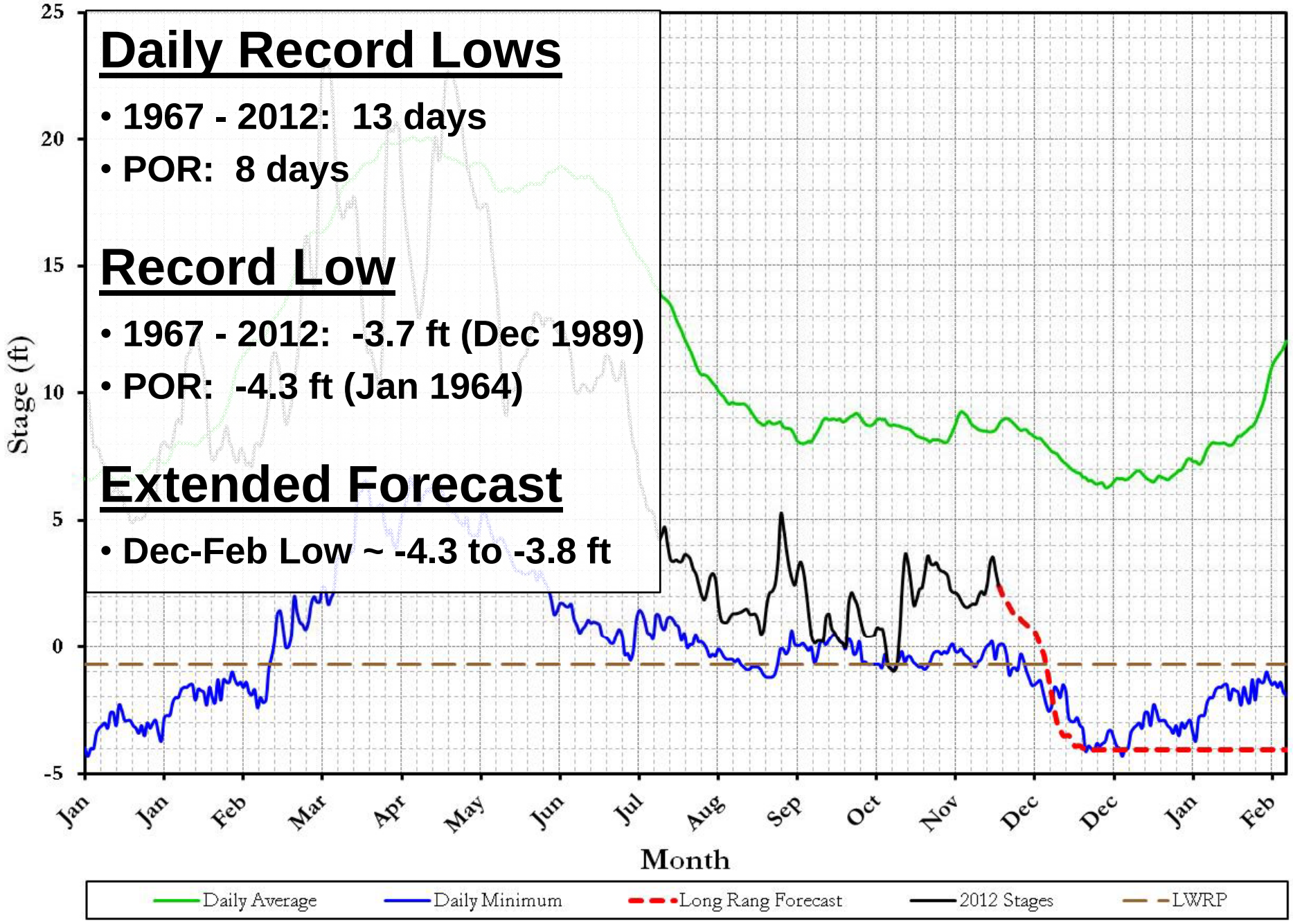


Middle Mississippi River Extended Forecast

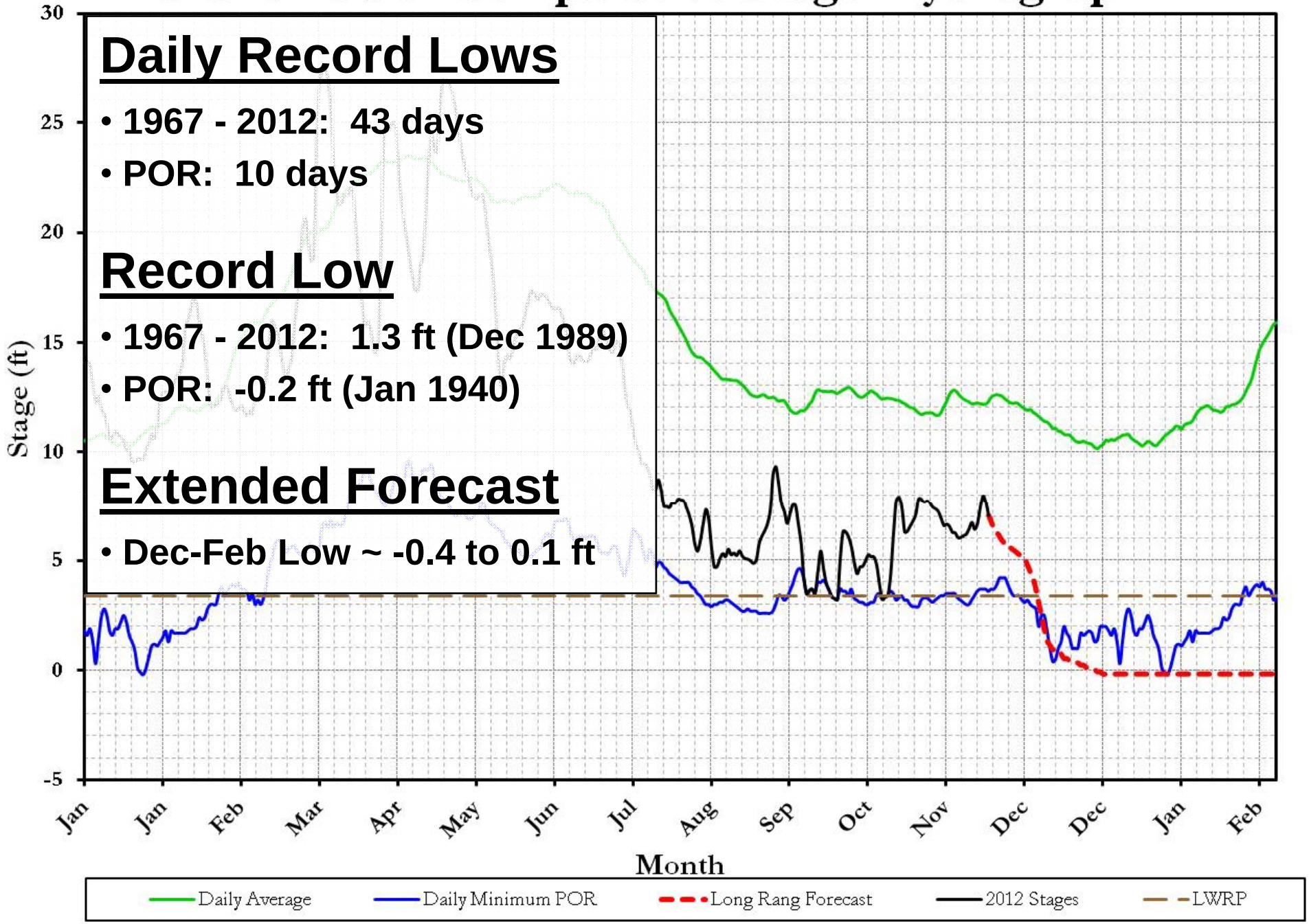
St. Louis Comparative Stage Hydrograph



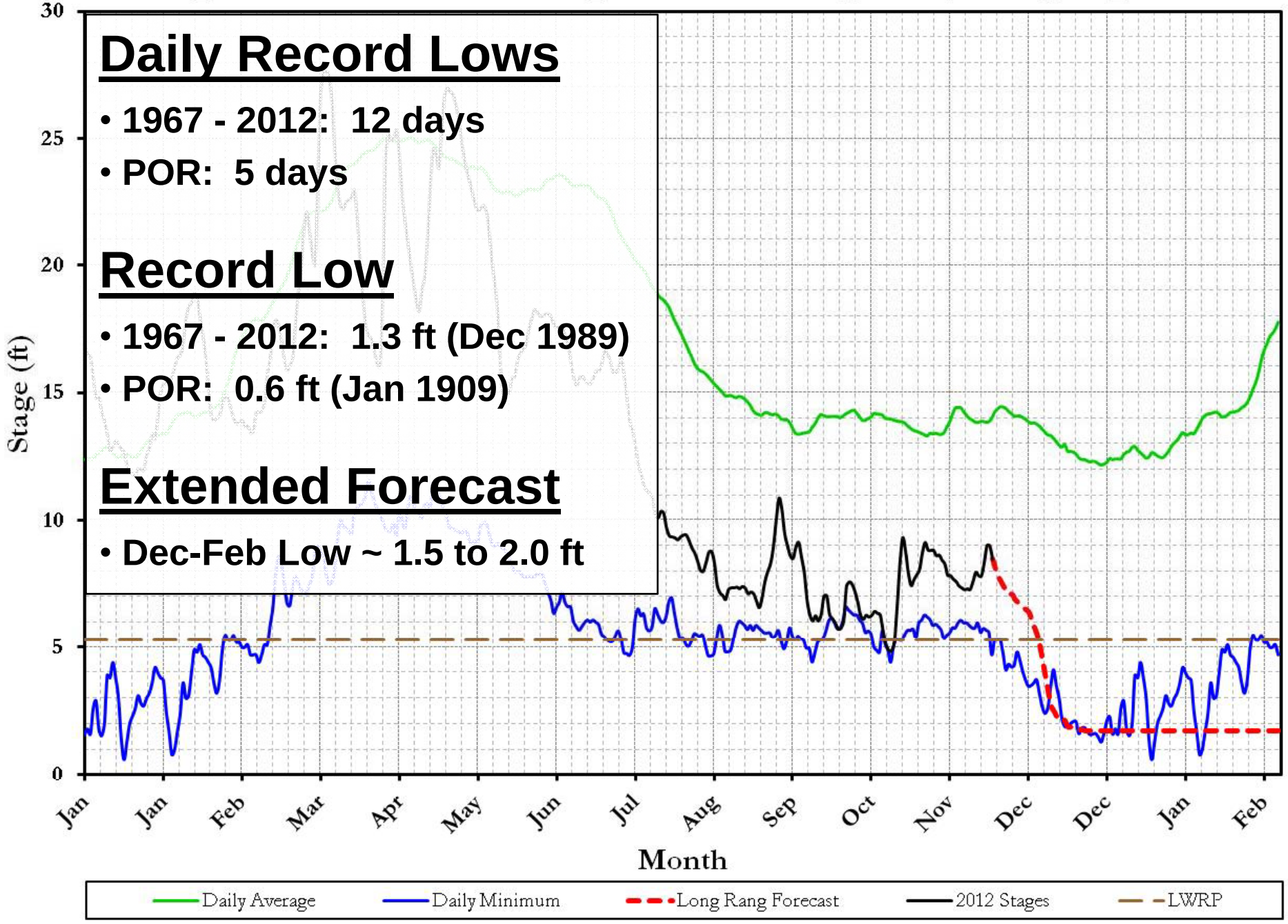
Chester Comparative Stage Hydrograph



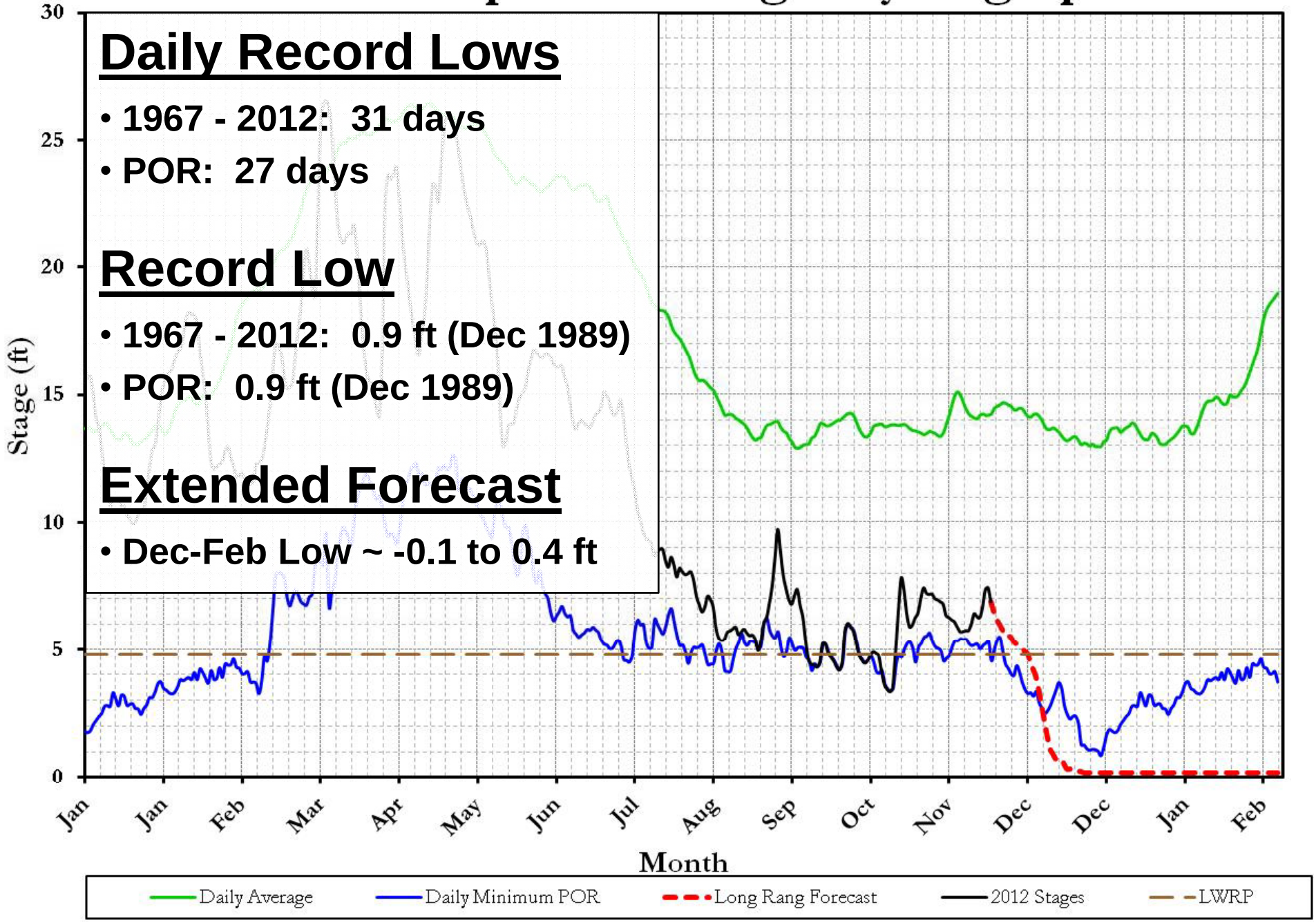
Grand Tower Comparative Stage Hydrograph



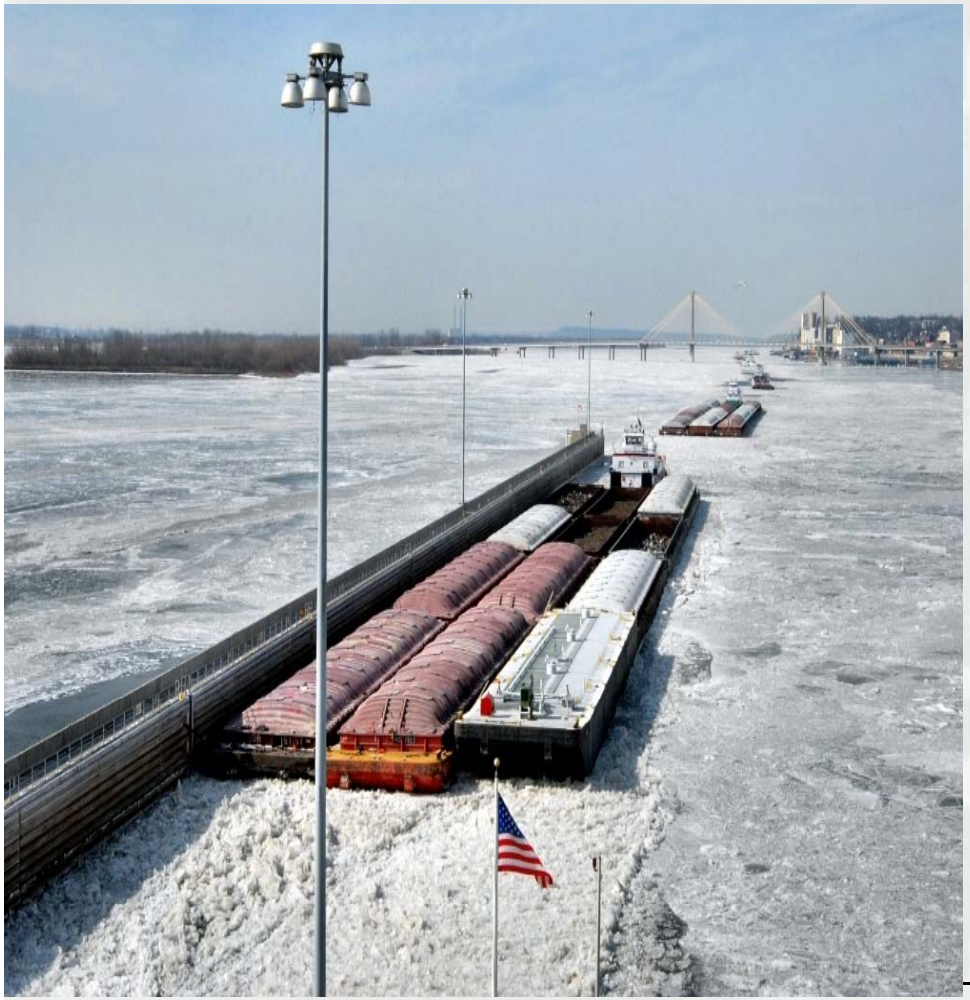
Cape Girardeau Comparative Stage Hydrograph

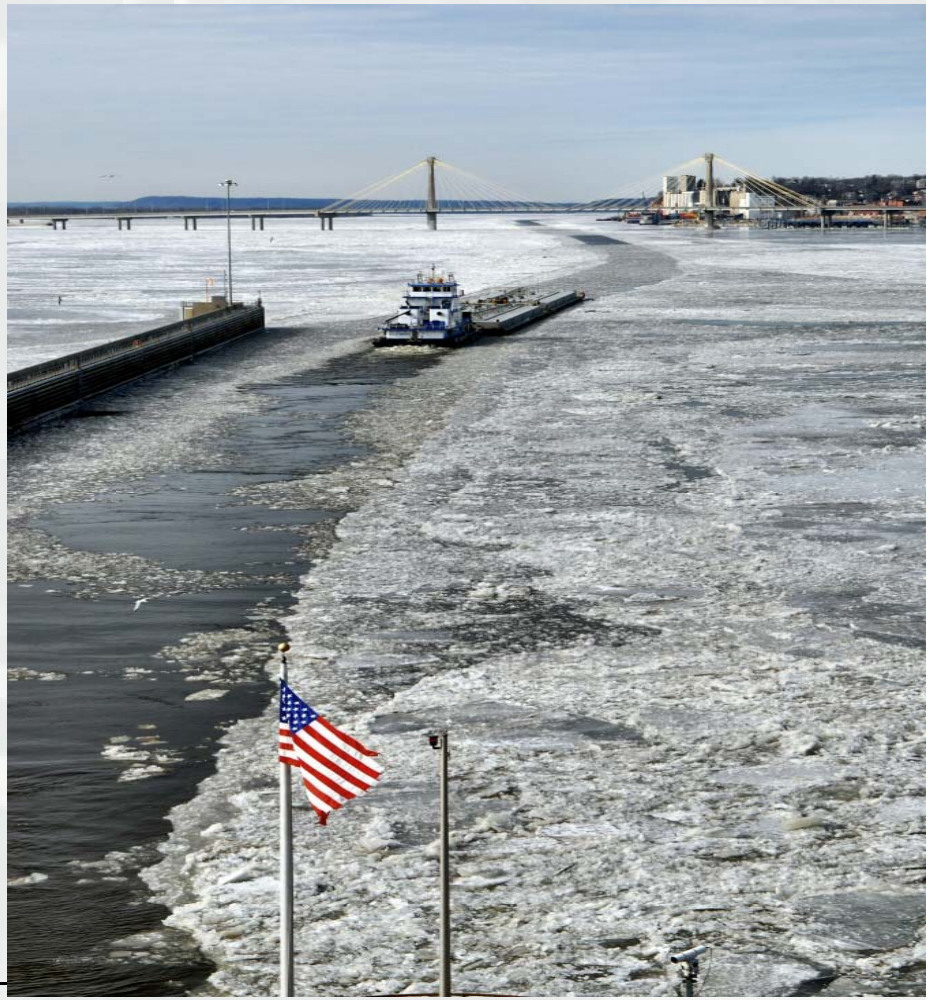


Thebes Comparative Stage Hydrograph



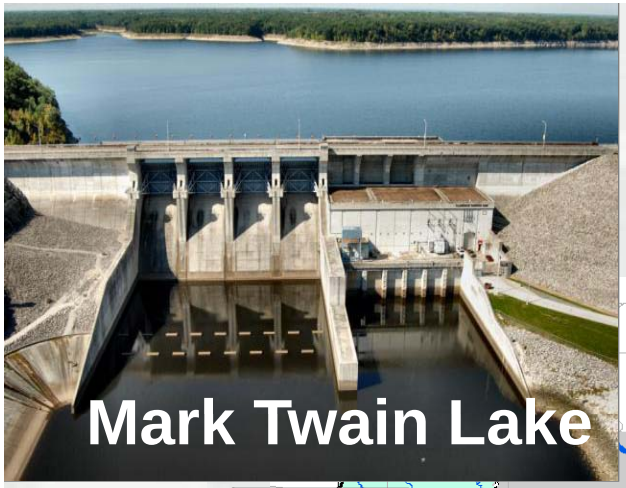
River Ice Gorging

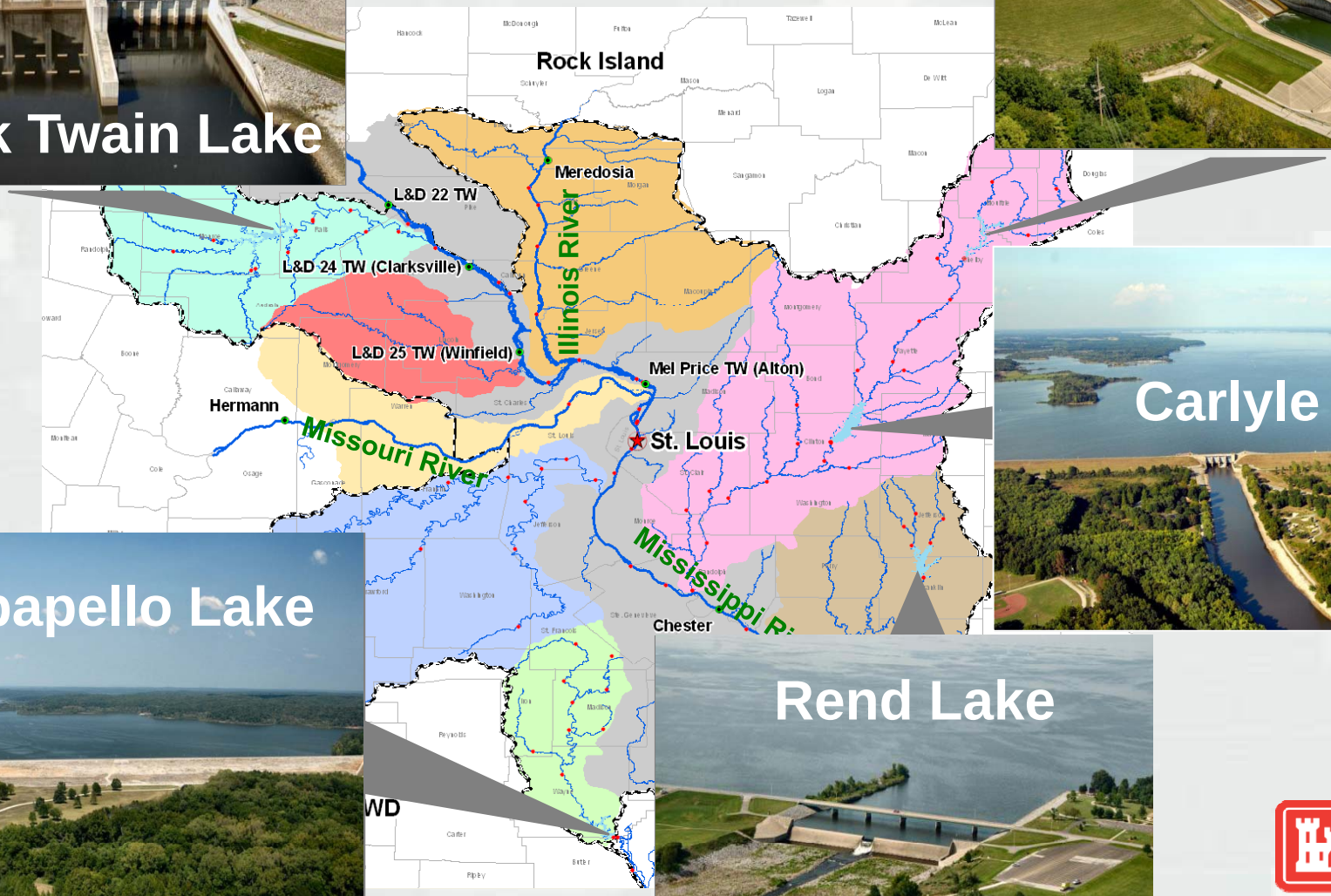




Reservoir Operations

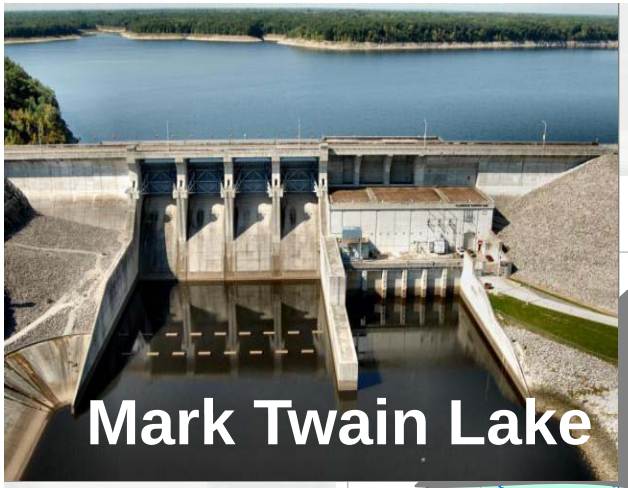
Reservoirs





ILDING STRONG®

Control Points



- Releases are restricted when the Mississippi River is at or above Flood Stage:
  - ►Louisiana – 15 ft
  - ►St. Louis – 30 ft

LOUISIANA, MO

ST. LOUIS, MO

Rock Island

L&D 22 TW

L&D 24 TW (Clarksville)

L&D 25 TW (Winfield)

Mel

St. Louis

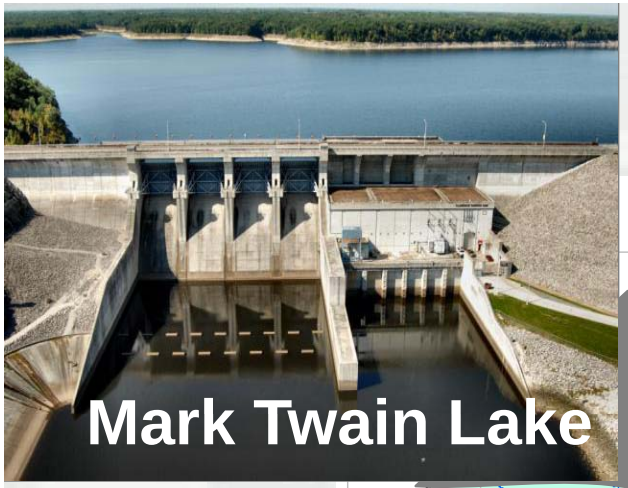
LRD

Chester

Cape Girardeau

Memphis District

Control Points



- Project Purposes:
  - Flood control, hydropower, water supply, fish and wildlife, and recreation
- Travel Time
  - ▶ Louisiana ~ 1 day
  - ▶ St. Louis ~ 2 - 3 days
  - ▶ Thebes ~ 4 - 5 days

Control Points

- Releases are restricted when the Mississippi River is at or above Flood Stage:
  - Chester – 27 ft
  - Cape Girardeau – 30 ft
  - Cairo – 40 ft

Control Points

- Project Purposes:
  - Flood Control, recreation, water supply, water quality enhancement, navigation, & fish and wildlife
- Travel Time
  - Chester ~ 3 days
  - Cape Girardeau ~ 4 days
  - Thebes ~ 4 - 5 days
  - Cairo ~ 6 days

CHESTER, IL

CAPE GIRARDEAU, MO

CAIRO, IL

SWD

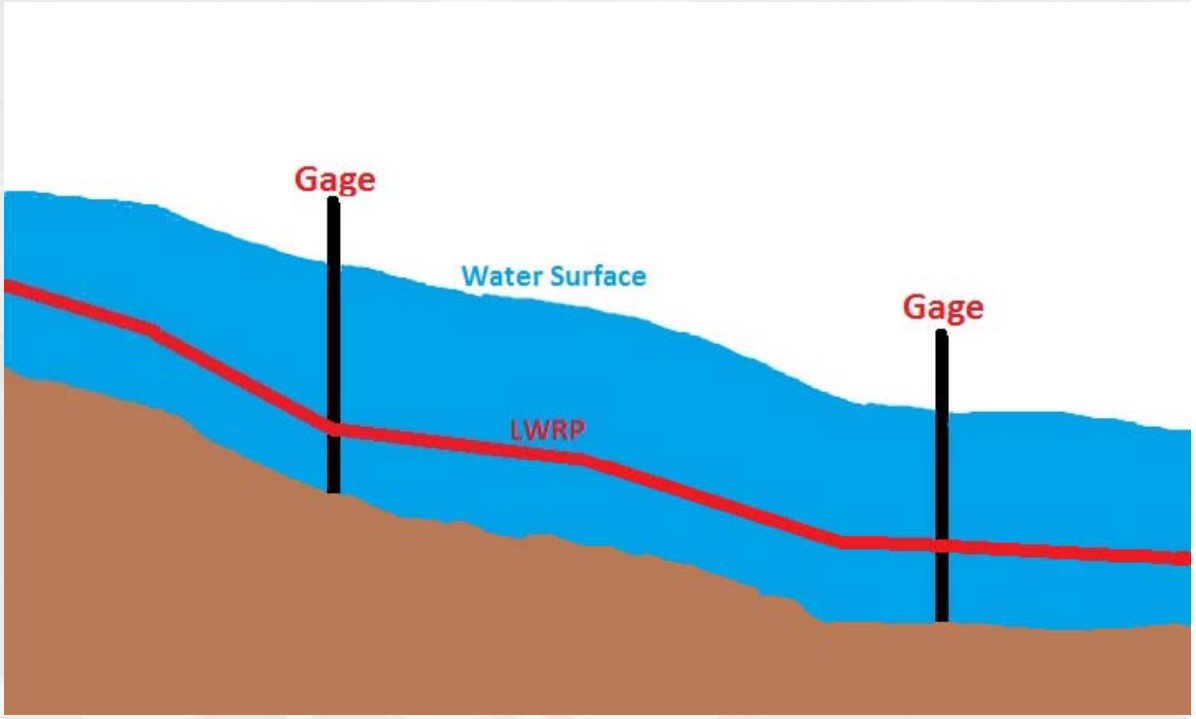
Memphis District

STRONG®

Low Water Reference Plane

Low Water Reference Plane

- Hypothetical Reference
- Used as a design tool for dredging and construction
- Helpful reference for preparation for low water
- Main guide:
  - LWRP = -3.5 ft at St. Louis gage



? ? ? Questions ? ? ?