Missouri River Mainstem Reservoir System
Gavins Point Spring Pulse

Background Information

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US Army Corps of Engineers
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Missouri River Mainstem Reservoir System

Congressionally Authorized

<u>Project Purposes</u>

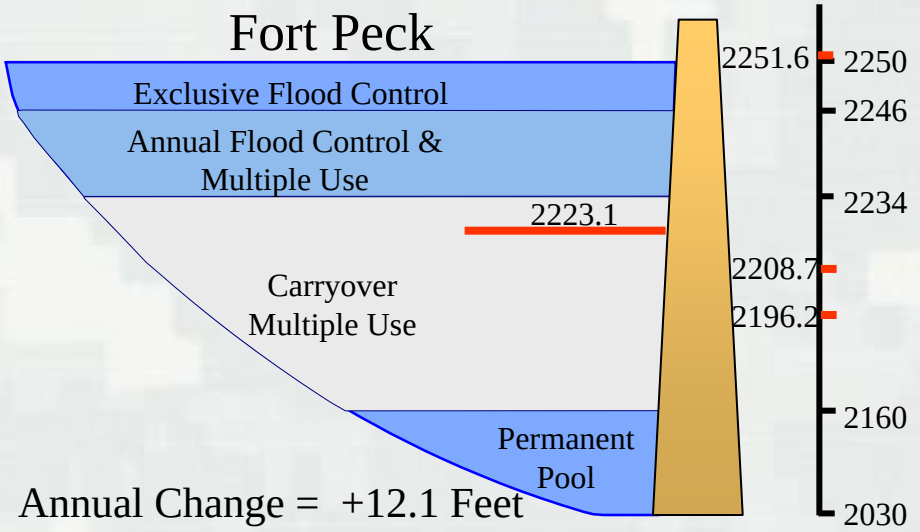
- Flood Control
- Navigation
- Hydropower
- Irrigation
- Recreation
- Water Supply
- Water Quality
- Fish and Wildlife

(Including endangered species)

Bank Stabilization and Navigation Project
Sioux City, IA – St. Louis, MO

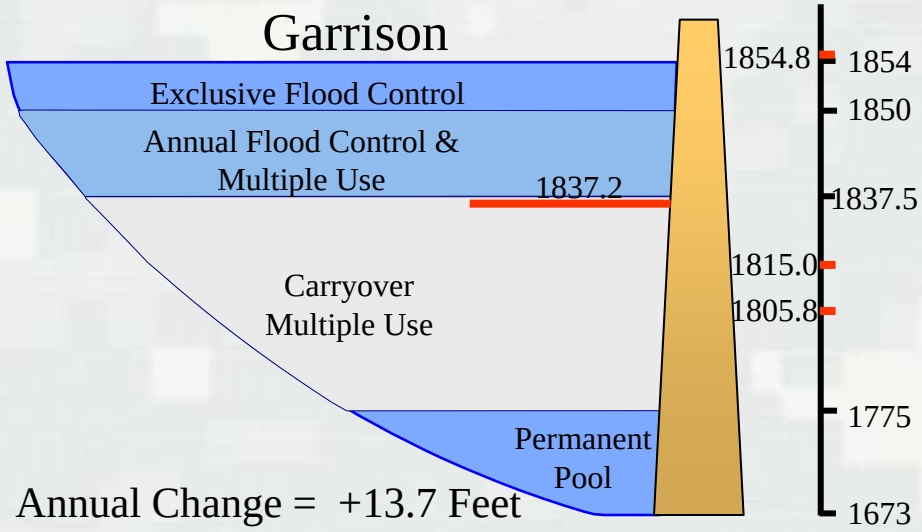
Current Reservoir Levels – March 11, 2010

Fort Peck



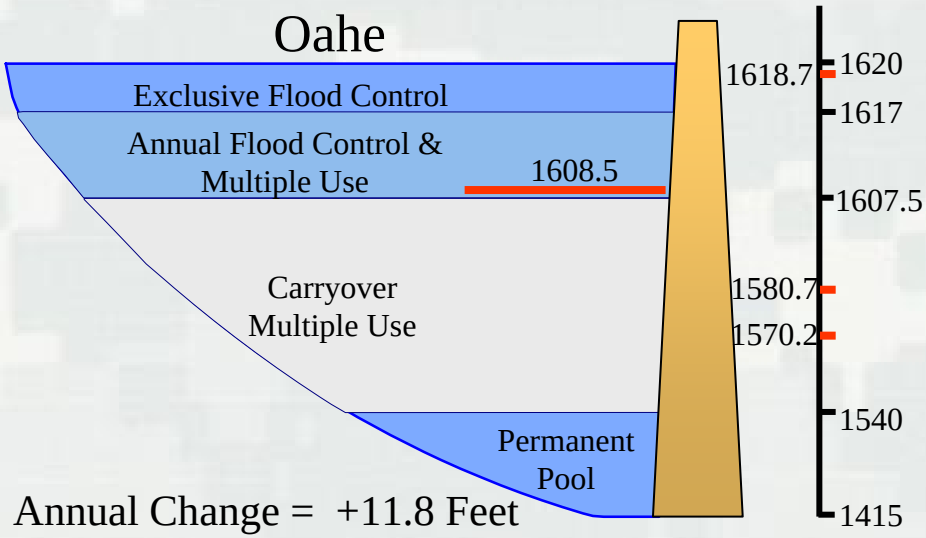
Annual Change = +12.1 Feet
10.9 feet below top of Carryover

Garrison



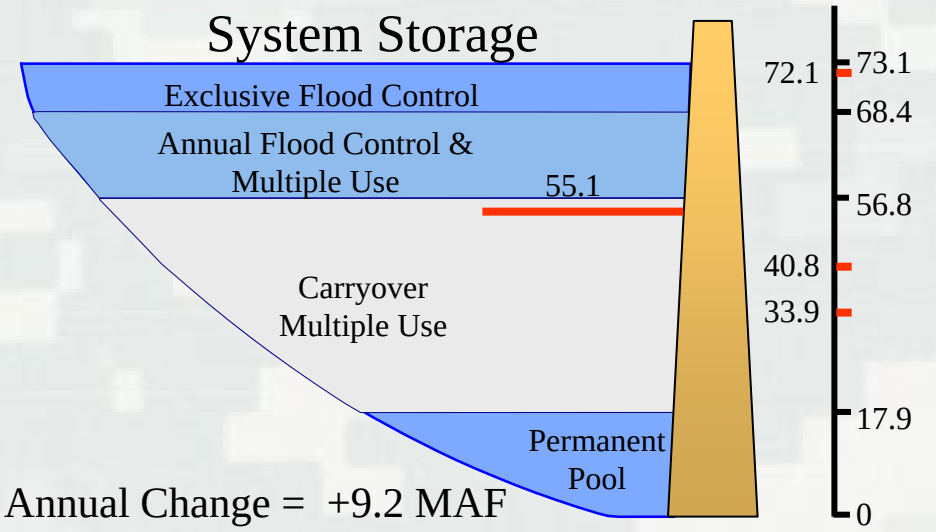
Annual Change = +13.7 Feet
0.3 feet below top of Carryover

Oahe



Annual Change = +11.8 Feet
1.0 feet above top of Carryover

System Storage

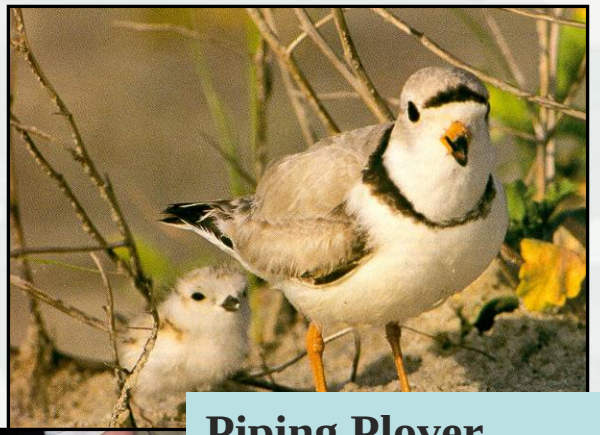


Annual Change = +9.2 MAF
1.7 MAF below top of Carryover

Endangered Species Act of 1973

Each Federal Agency shall... insure that any action authorized, funded, or carried out by such agency… is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat…which is determined… to be critical…

Interior Least Tern
Listed “Endangered” 1986

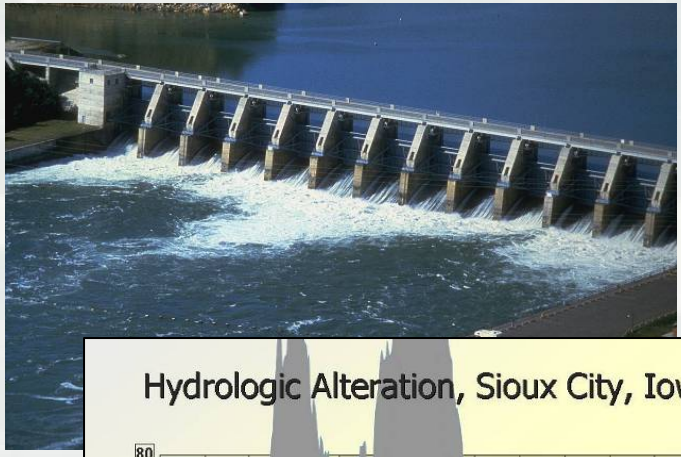


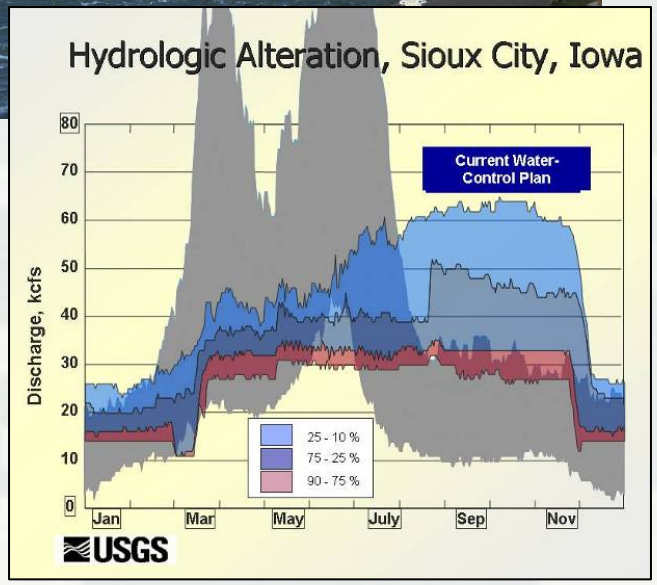
Piping Plover
Listed “Threatened” 1986

Pallid Sturgeon
Listed “Endangered” 1990

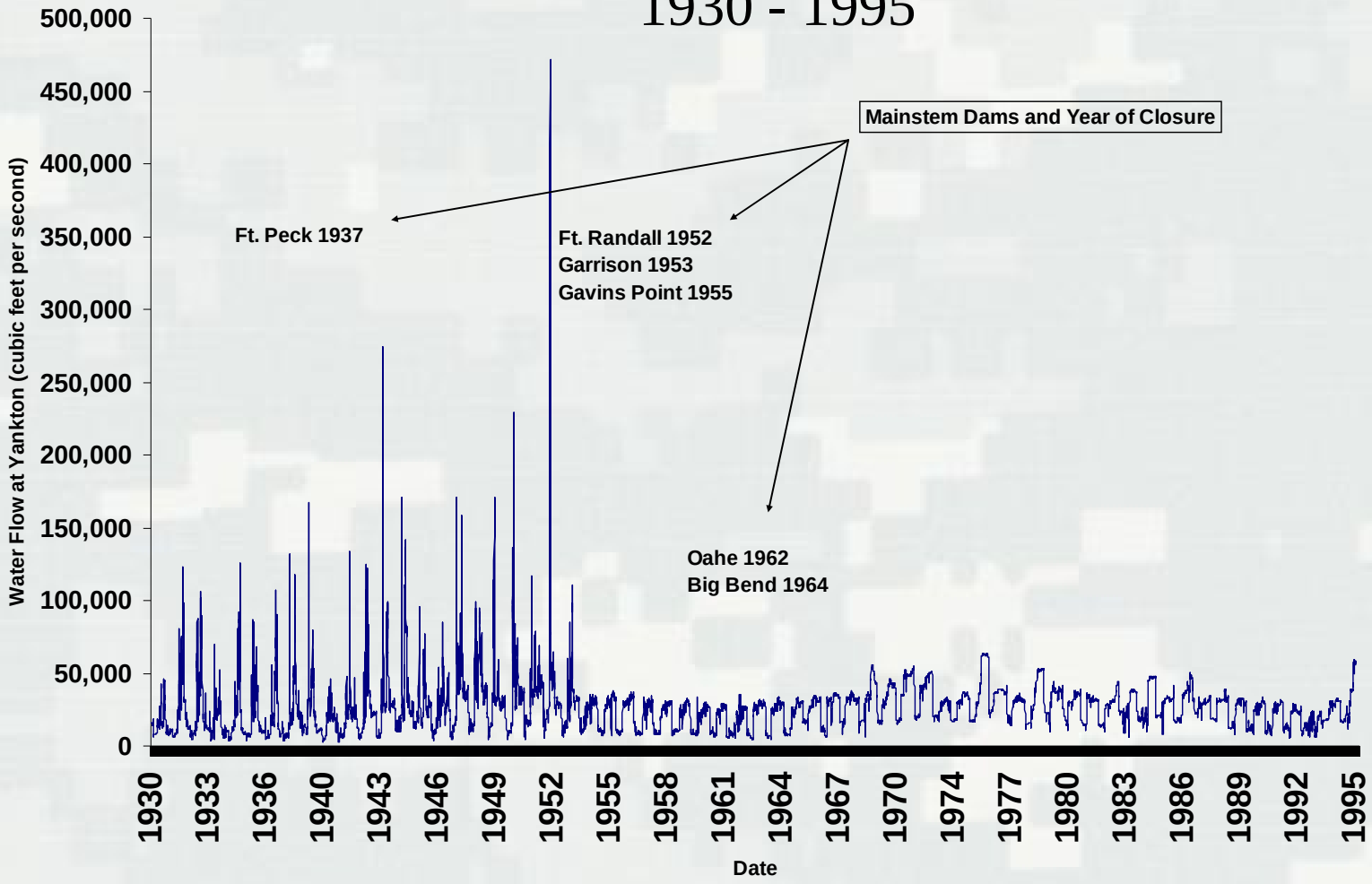
Biological Opinion

- On the Operation of the Missouri River Mainstem Reservoir System, Operation and Maintenance of the Bank Stabilization and Navigation Project, and Operation of the Kansas River Reservoir System
- Opinion issued by the USFWS in 2000 and Amended 2003
- Found that the operation of the system jeopardized the continued existence of the pallid sturgeon
- Identified reasonable and prudent alternatives and measures to prevent extinction





The Heartbeat of a River…Lost



Spring Pulses from Gavins Point Dam

- Part of a Reasonable and Prudent Alternative (RPA) in the USFWS 2003 Amended Biological Opinion to avoid jeopardy to the pallid sturgeon
- Master Manual revised in 2006 to include bimodal (March and May) spring pulse from Gavins Point dam

Spring Pulse from Gavins Point Dam

- Spring Pulse is Intended to Trigger Pallid Sturgeon Spawning
- Specific technical criteria in Master Manual define pulse magnitude, timing and duration
- Stop protocol included for drought and flood conditions

Spring Pulse History

- First ever May spring pulse in May 2006
  - Peak magnitude of 9,000 cfs for 2 days
- First ever March spring pulse in March 2008
  - Peak magnitude of 5,000 cfs for 2 days
  - Pulse eliminated downstream of the confluence with the Kansas River
- Drought preclude cancelled other pulses in 2006-2008
- First ever bimodal spring pulse planned in 2009, but only single pulse implemented

2009 Spring Pulses

- March pulse cancelled due to forecasted flows in excess of downstream flow limits
- May pulse implemented
  - Peak magnitude of 6,000 cfs for 2 days
  - Pulse eliminated downstream of the confluence with the Kansas River

2010 March Pulse from Gavins Point

- Estimated peak magnitude
  - 5,000 cfs minus the flow in the James River
  - Duration of peak flows = 2 days
  - Flows return to navigation level over 5 days
- Initiate at start of navigation season

2010 March Pulse from Gavins Point

- Estimated downstream stage change
  - Sioux City to Omaha 1.25 feet
  - Nebraska City to Kansas City 1.0 foot
  - Boonville to Hermann 0.5 foot
- Downstream flow limits in effect to reduce risk of flood damages
  - River forecast includes radar detected precipitation and 5-days NWS forecasted precipitation
- Monitoring in place
  - Biological
  - Socio-economic

2010 March Pulse from Gavins Point

- Additional volume of water released during pulse
  - 40,000 acre-feet
- Water source during event
  - Fort Randall and Gavins Point
  - < 0.5 foot
- Impact at end of water year
  - Balance impact among upper three reservoirs
  - <0.1 foot lower than without March pulse

2010 May Pulse from Gavins Point

- Estimated peak magnitude
  - 9,000 to 20,000 cfs depending on the 1 May system storage and runoff forecast
  - Duration of peak flows = 2 days
  - Flows return to navigation level over 10 days
- Timing between 1 May and 19 May
  - Water temperature
  - Nesting terns and plovers
  - Downstream flow limits

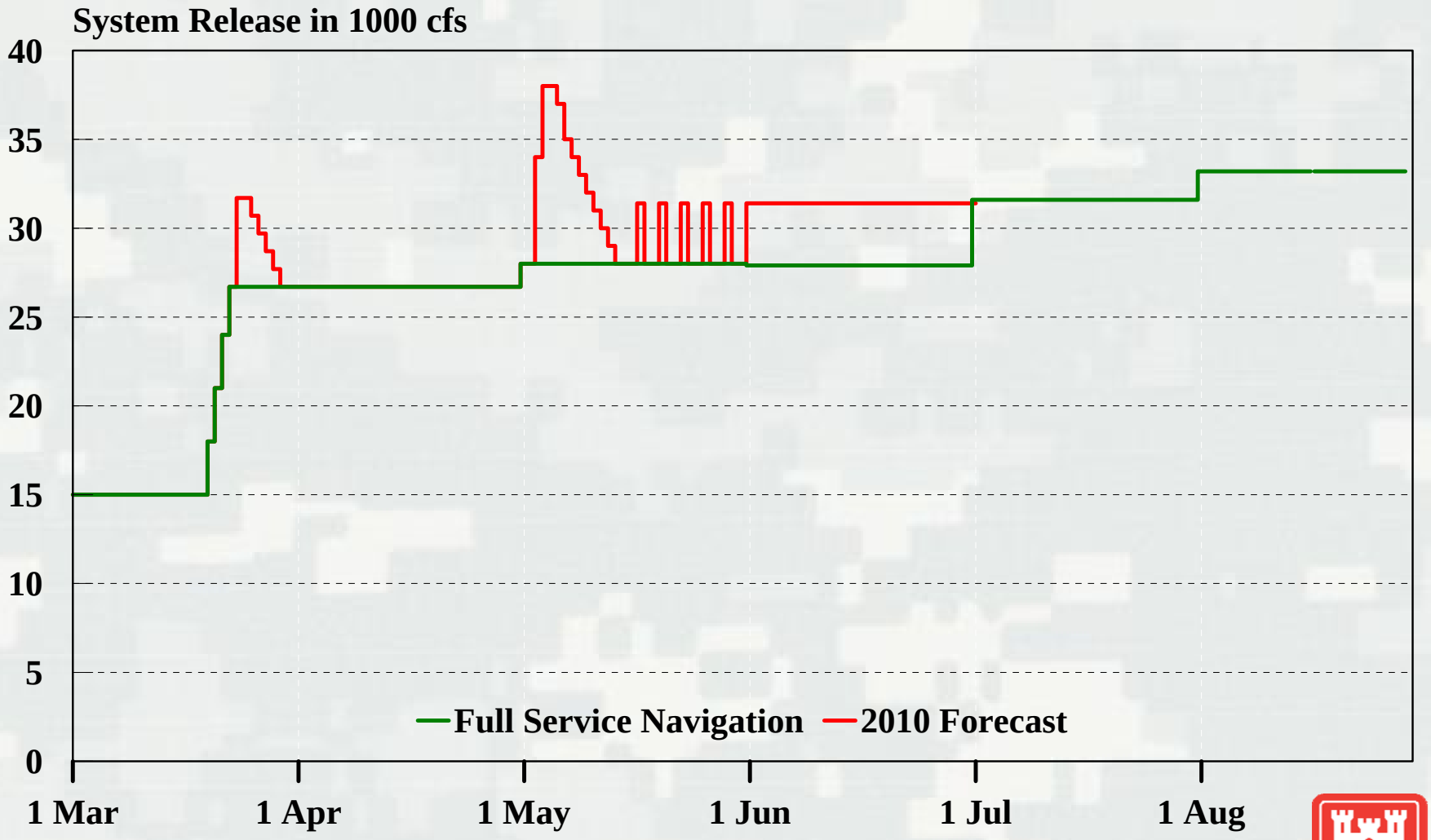
2010 May Pulse from Gavins Point

- Estimated downstream stage change
  - Sioux City to Omaha 2.5 to 4.5 feet
  - Nebraska City to Kansas City 2.0 to 3.5 feet
  - Boonville to Hermann 1.5 to 3.0 feet
- Downstream flow limits in effect to reduce risk of flood damages
  - River forecast includes radar detected precipitation and 5-days NWS forecasted precipitation
- Monitoring in place
  - Biological
  - Socio-economic

2010 May Pulse from Gavins Point

- Additional volume of water released during pulse
  - 120,000 to 240,000 acre-feet
- Water source during event
  - 1.5 to 3.0 feet from Fort Randall
  - 1 to 1.5 feet from Gavins Point
- Impact at end of water year
  - Balance impact among upper three reservoirs
  - 0.1 to 0.3 foot lower than without May pulse

Gavins Point Releases



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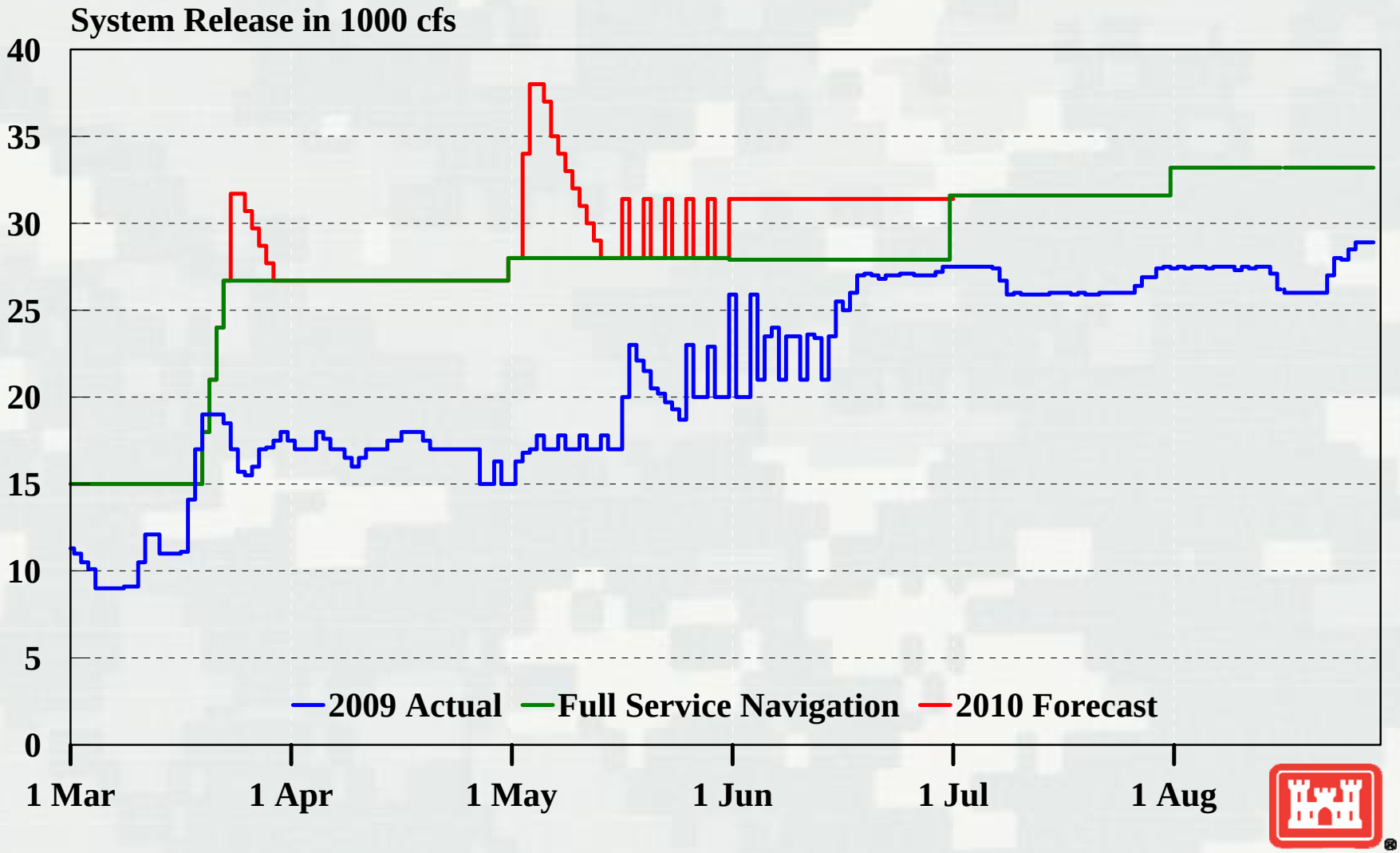
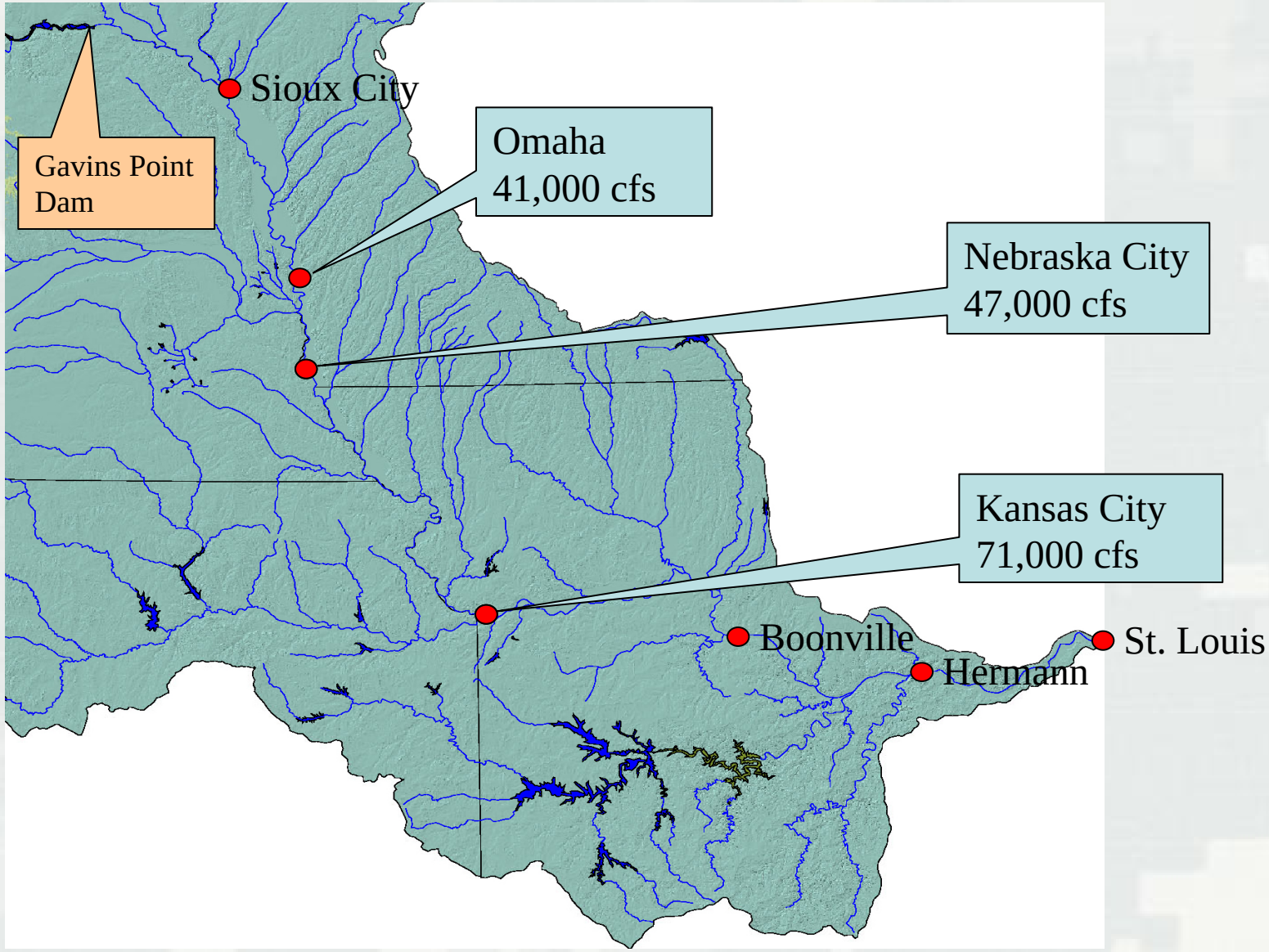
2009 Gavins Point Releases



Navigation Targets and Downstream Flow Limits

	Minimum Service	Full Service	Downstream Flow Limit
Omaha	25 kcfs	31 kcfs	41 kcfs
Nebraska City	31 kcfs	37 kcfs	47 kcfs
Kansas City	35 kcfs	41 kcfs	71 kcfs

Spring Pulse
Downstream Flow Limits



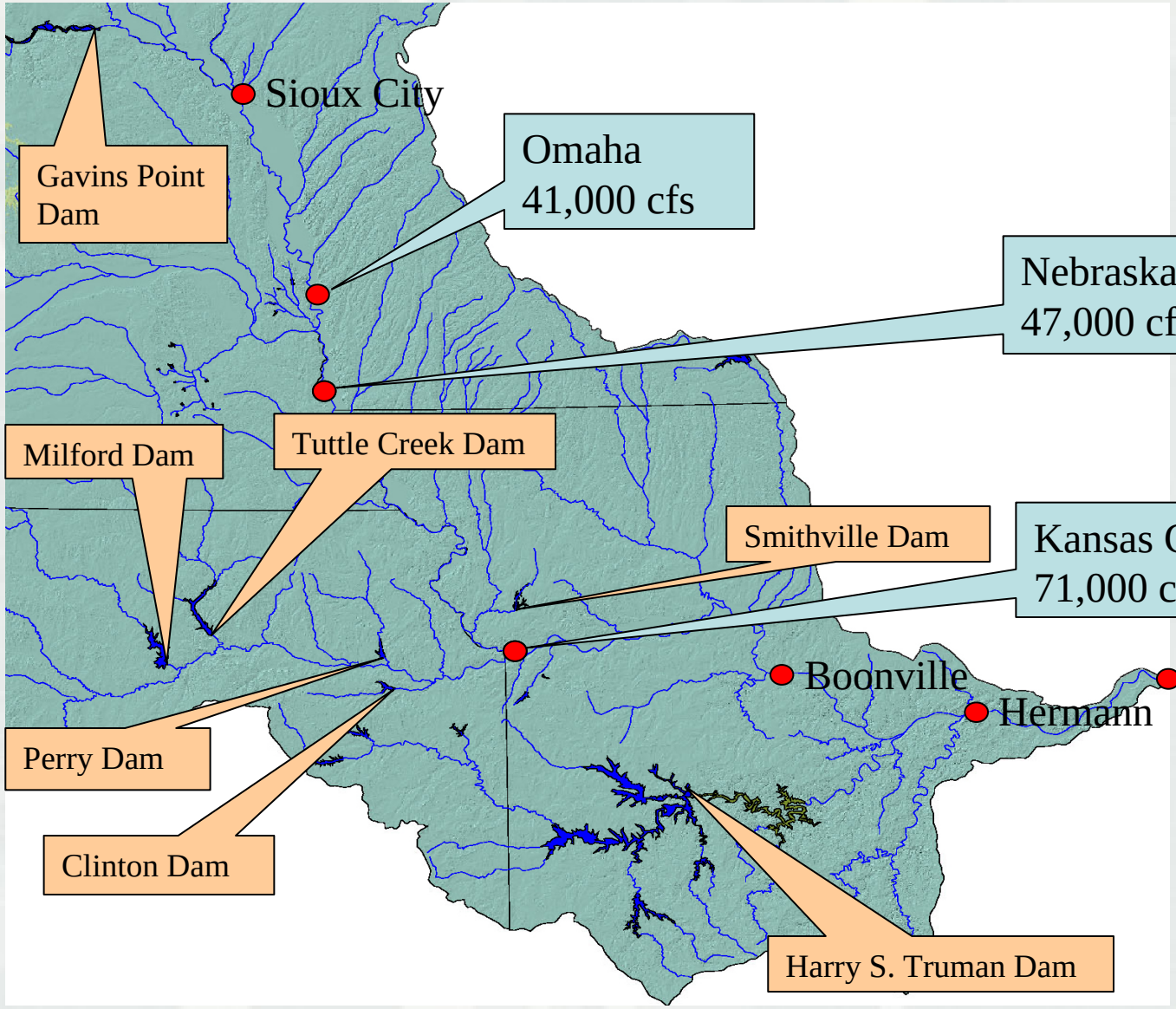
Elimination of Pulses below Kansas City

- USFWS has indicated:
  - The Gavins Point spring pulses are most important in the reach from the dam to the mouth of the Platte River just downstream of Omaha, NE
  - Below the confluence of the Platte and Missouri Rivers natural pulses occur with sufficient frequency to meet the requirements of the pallid sturgeon

Elimination of Pulses below Kansas City

- Releases from Corps' tributary projects may be adjusted to reduce or eliminate the spring pulse
  - If significant releases are being made from Corps tributary projects
  - And, if a temporary reduction in releases would not cause undue increased risk to other areas

Corps' Tributary Projects Potentially Available to Reduce or Eliminate the Spring Pulse



Questions?

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