

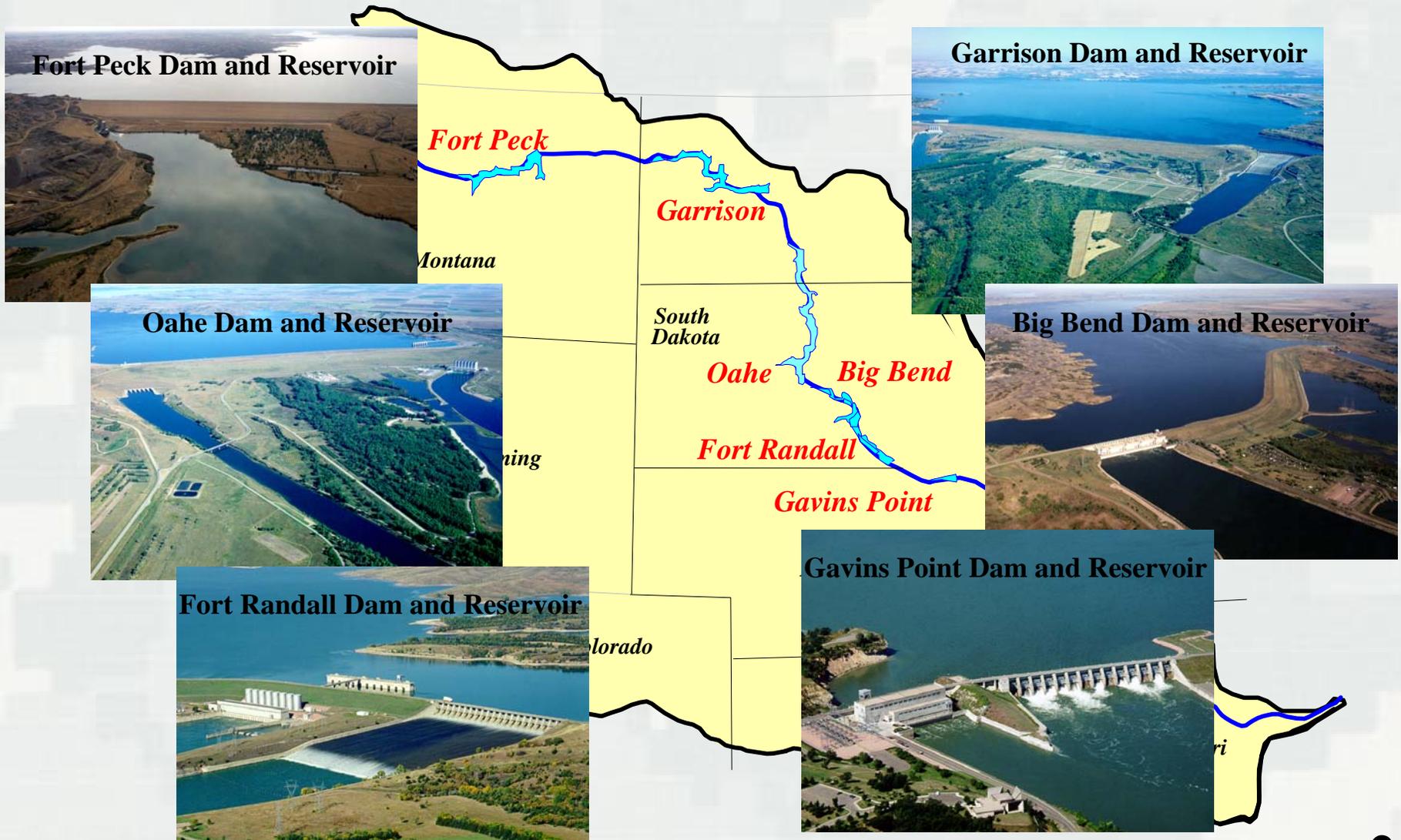
Missouri River Basin Water Management Spring 2010 Public Meetings

April 13 th	11:00 a.m.	S. Sioux City, NE
April 13 th	7:00 p.m.	Fort Peck, MT
April 14 th	1:00 p.m.	Bismarck, ND
April 14 th	7:00 p.m.	Mobridge, SD
April 15 th	1:00 p.m.	Jefferson City, MO
April 15 th	7:00 p.m.	St. Joseph, MO



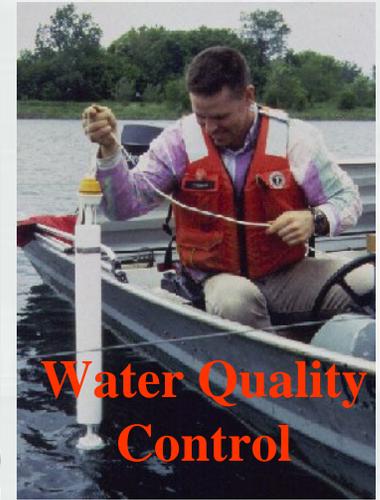
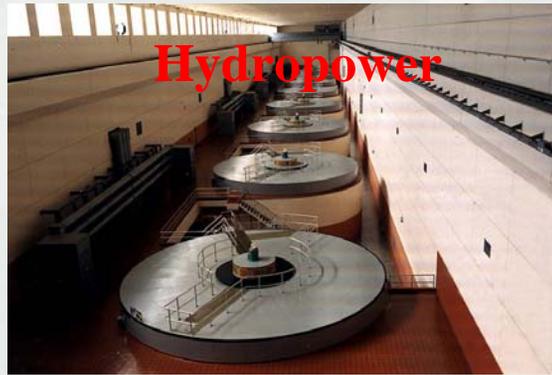
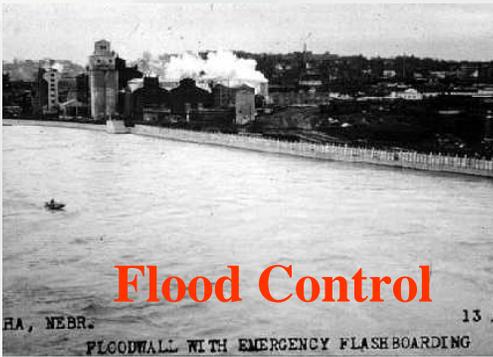
US Army Corps of Engineers
BUILDING STRONG[®]

Missouri River Mainstem Reservoir System



Our Mission

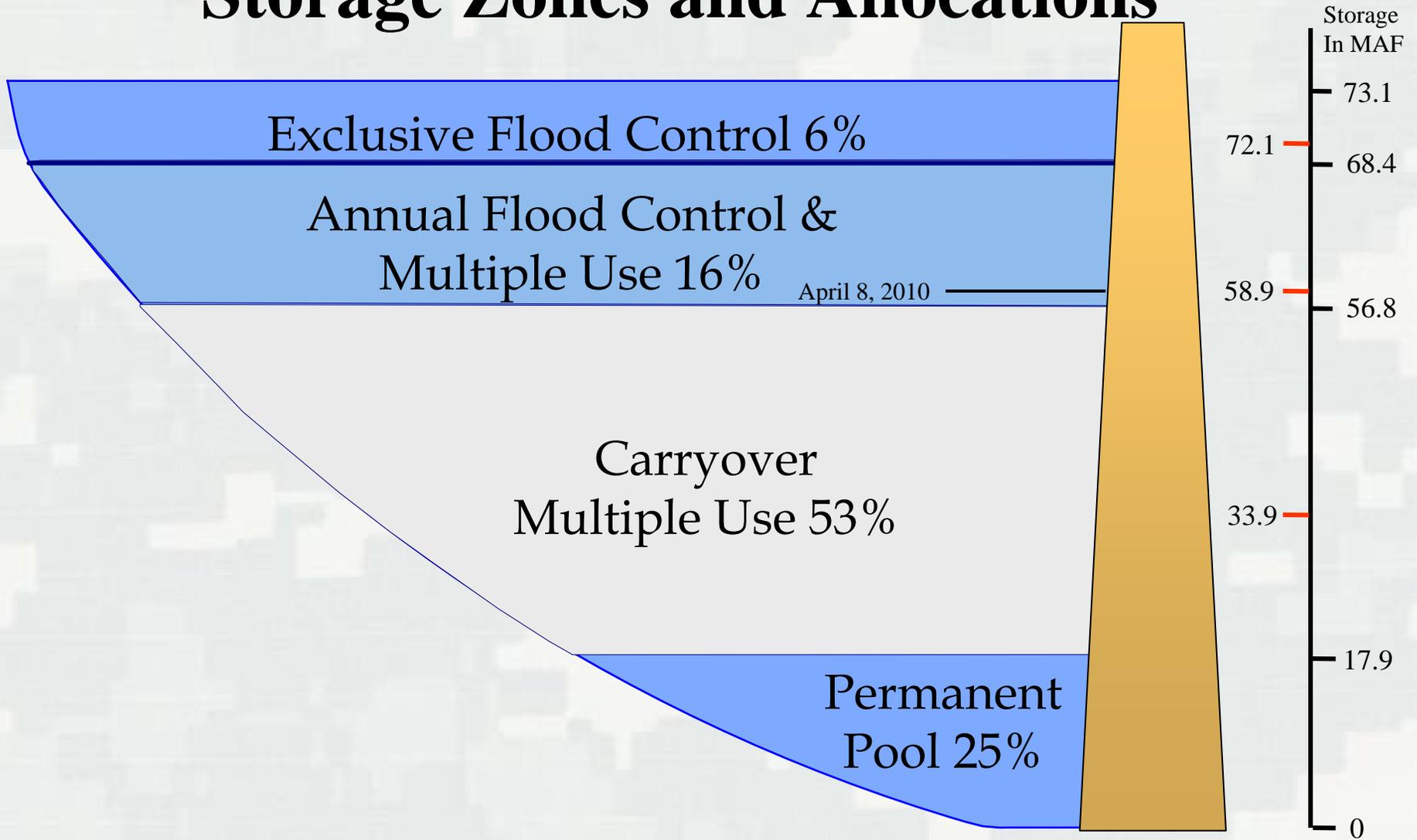
Regulate Missouri River Mainstem Reservoirs to Support Congressionally Authorized Purposes



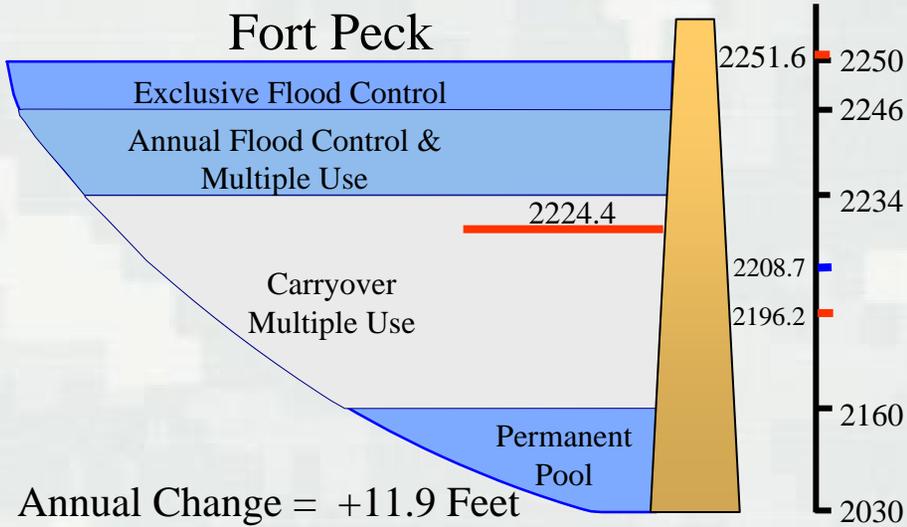
Threatened and Endangered Species



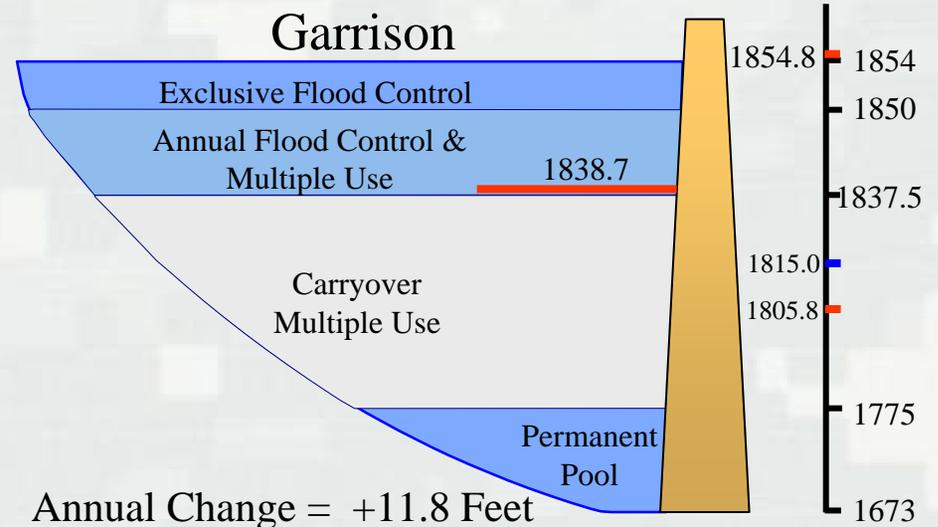
Missouri River Mainstem System Storage Zones and Allocations



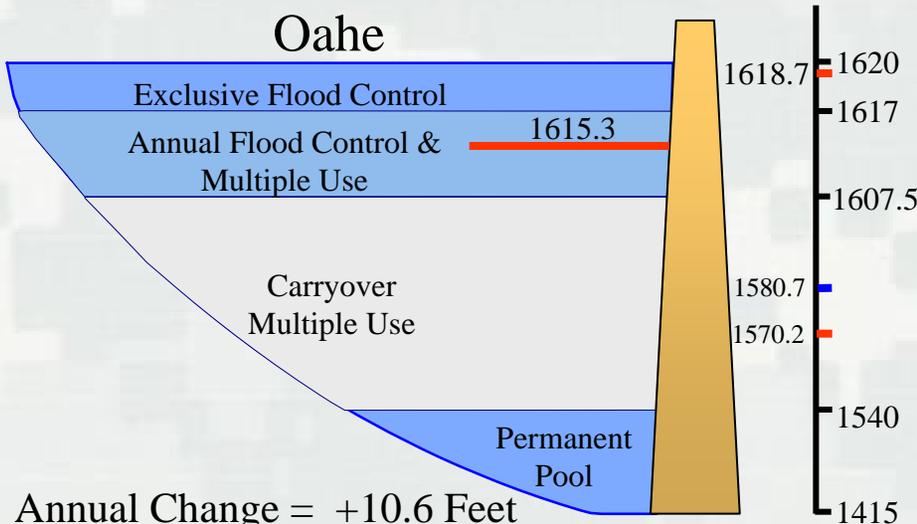
Current Reservoir Levels – April 8, 2010



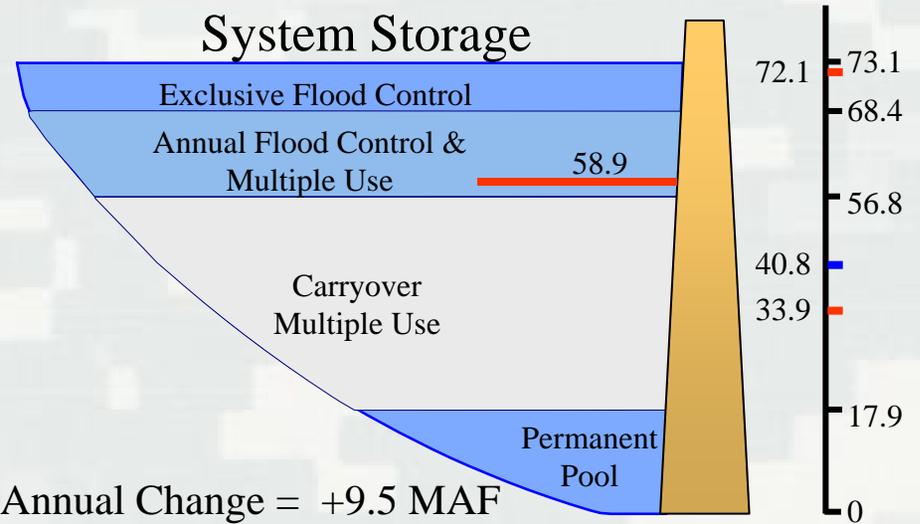
Annual Change = +11.9 Feet
9.6 feet below top of Carryover



Annual Change = +11.8 Feet
1.2 foot above top of Carryover



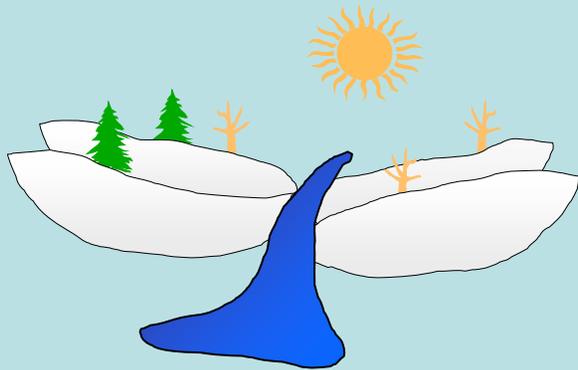
Annual Change = +10.6 Feet
7.8 feet above top of Carryover



Annual Change = +9.5 MAF
2.1 MAF above top of Carryover

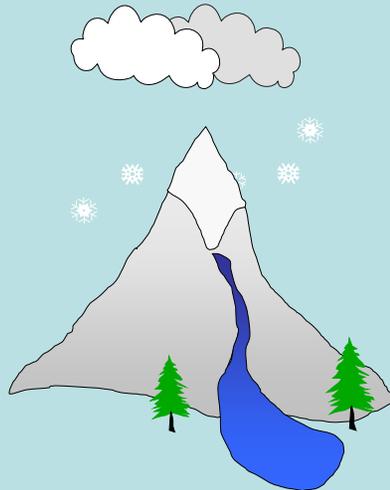
Runoff Components

Plains Snowpack



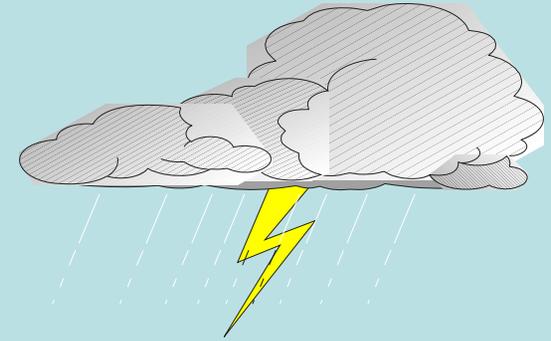
March and
April

Mountain Snowpack



May, June
and July

Rainfall

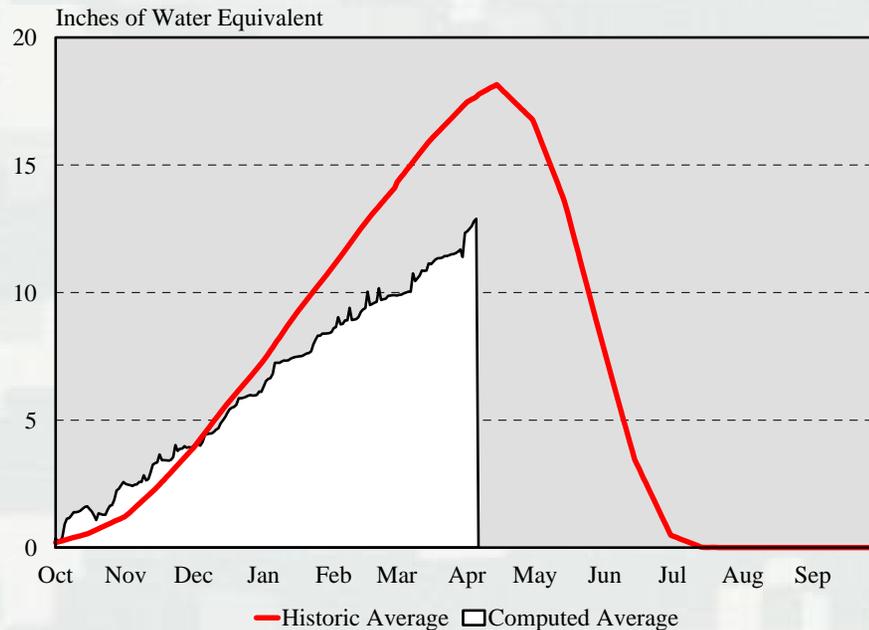


March through
October

2010 Forecast = 26.0 MAF

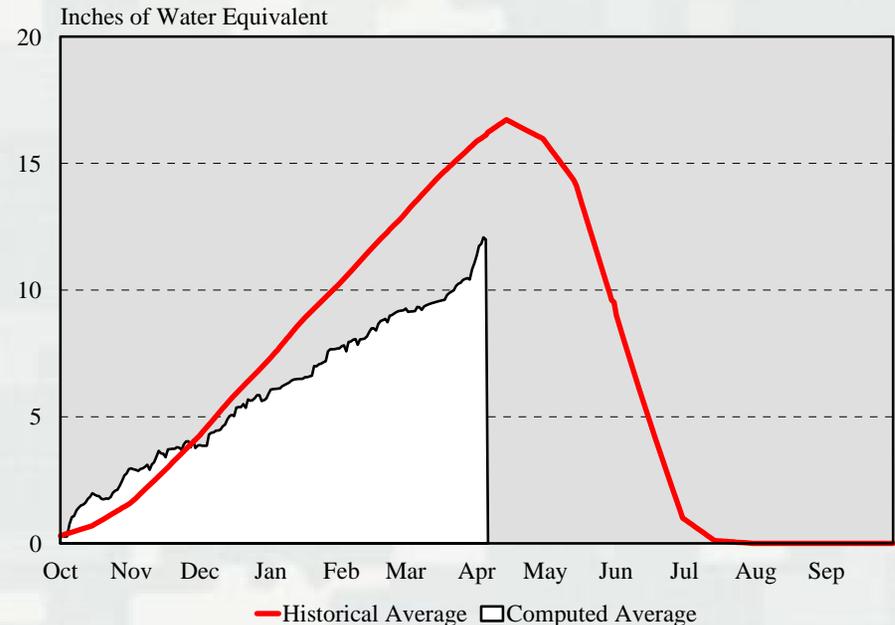
Missouri River Basin Mountain Snowpack Water Content 2009-2010

Total Above Fort Peck



Snowpack Water Content Percent of Average
Total above Fort Peck 73 percent.

Total Fort Peck to Garrison



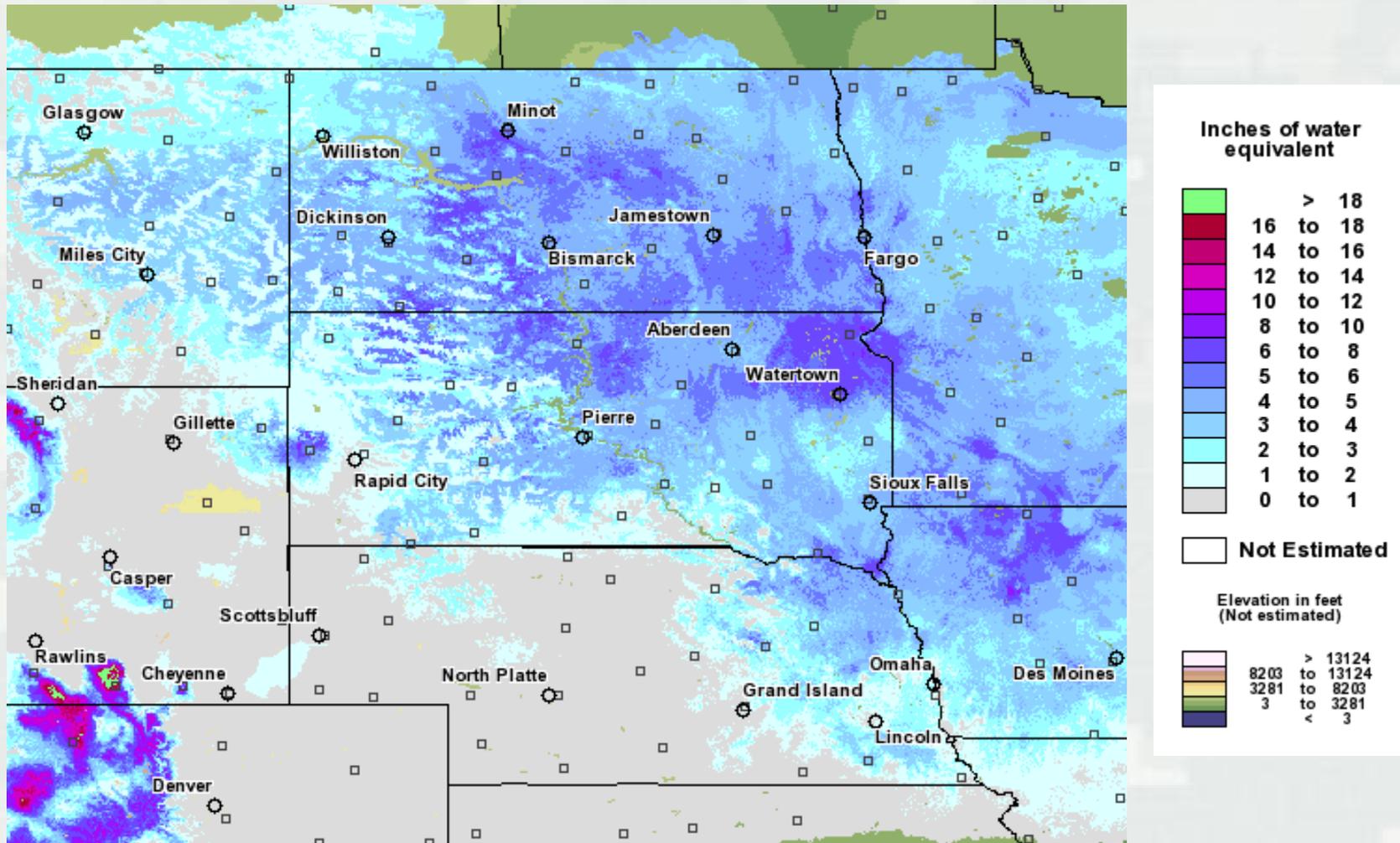
Snowpack Water Content Percent of Average
Total Fort Peck to Garrison 74 percent.

Missouri River basin Mountain Snowpack normally peaks near April 15.
Normally 96 percent of the peak accumulation has occurred by April 1.

April 5, 2010

Provisional data subject to revision.

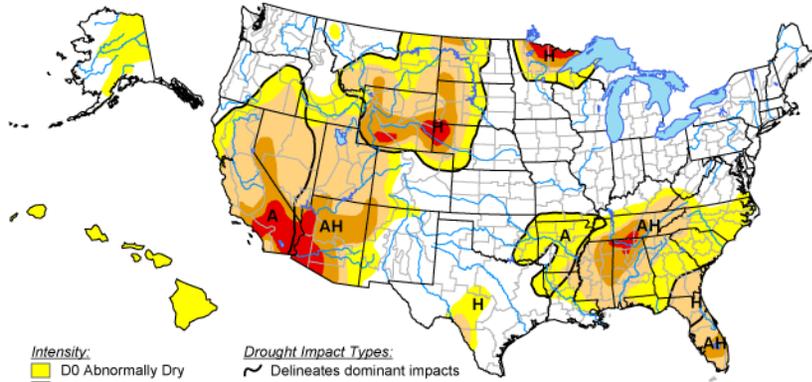
Plains Snowpack



20 February 2010

U.S. Drought Monitor

April 10, 2007
Valid 8 a.m. EDT



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- ~ Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

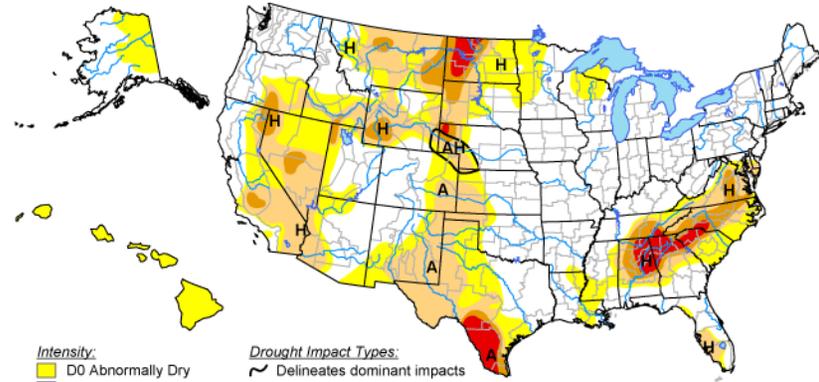
<http://drought.unl.edu/dm>



Released Thursday, April 12, 2007
Author: Thomas Heddinghaus, CPC/NOAA

U.S. Drought Monitor

April 8, 2008
Valid 8 a.m. EDT



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

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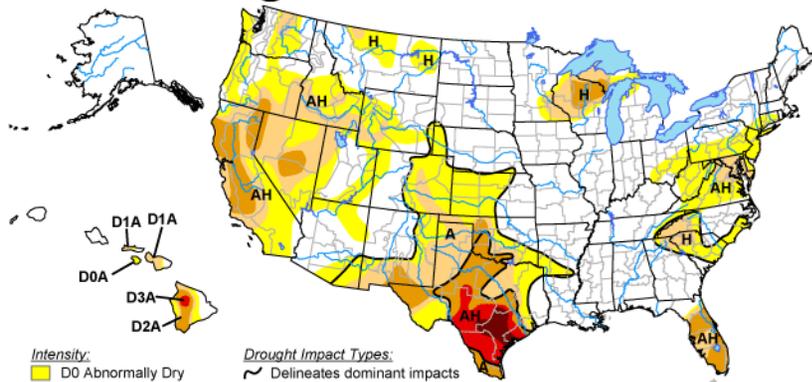
<http://drought.unl.edu/dm>



Released Thursday, April 10, 2008
Author: Rich Tinker, Climate Prediction Center, NOAA

U.S. Drought Monitor

April 7, 2009
Valid 8 a.m. EDT



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- ~ Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

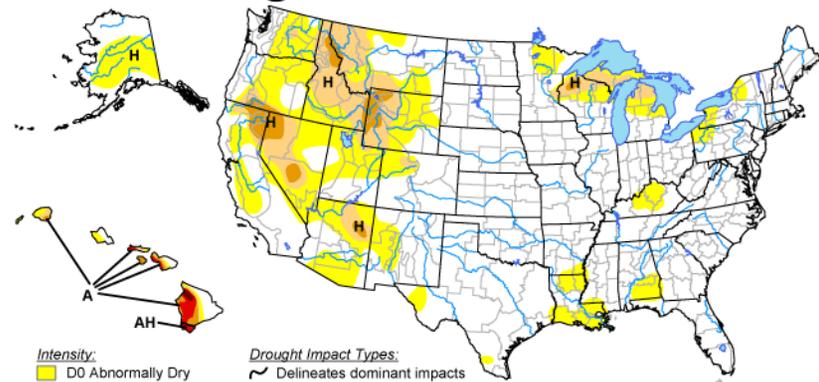
<http://drought.unl.edu/dm>



Released Thursday, April 9, 2009
Author: Mark Svoboda, National Drought Mitigation Center

U.S. Drought Monitor

April 6, 2010
Valid 8 a.m. EDT



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- ~ Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

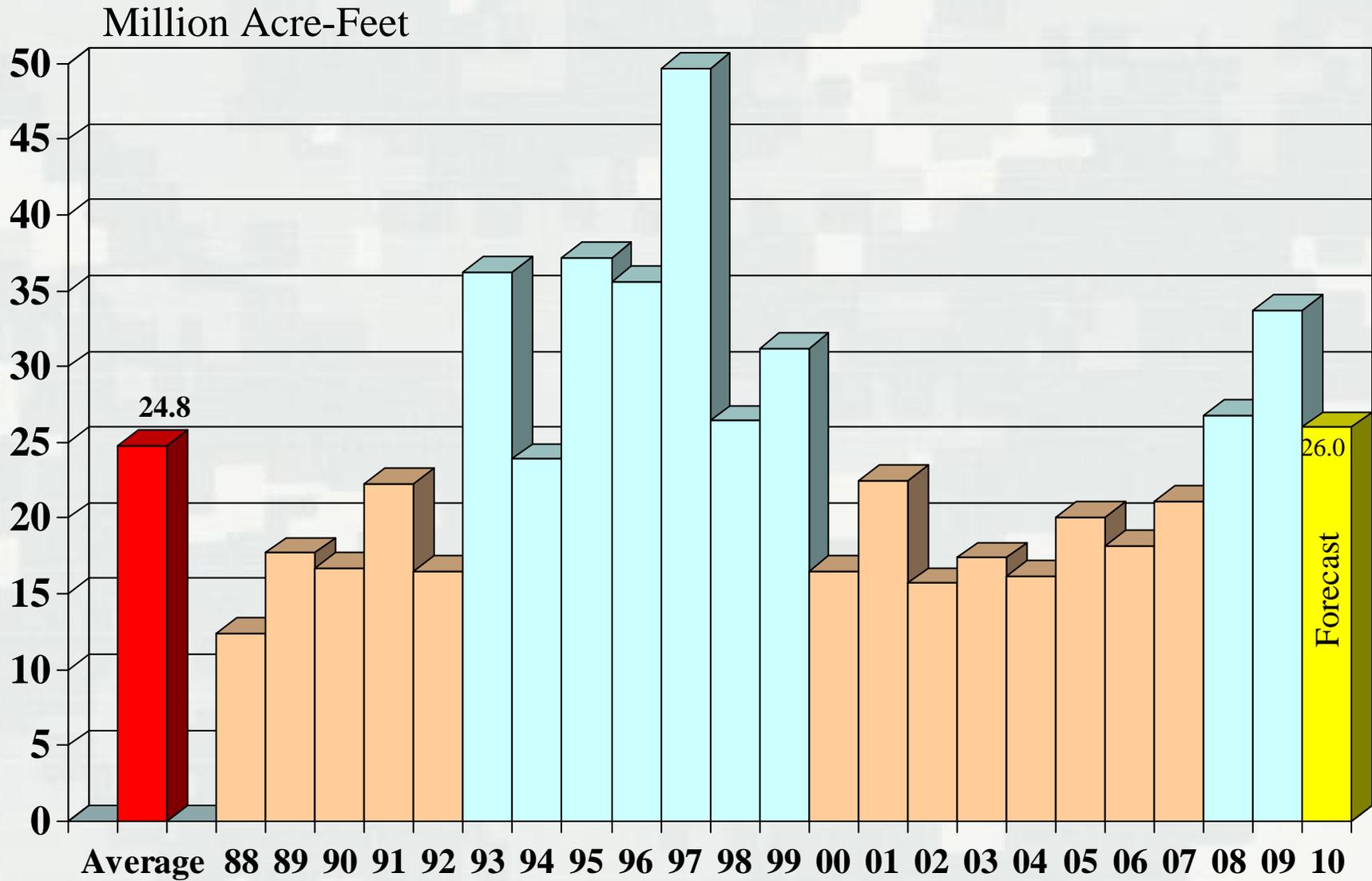
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>

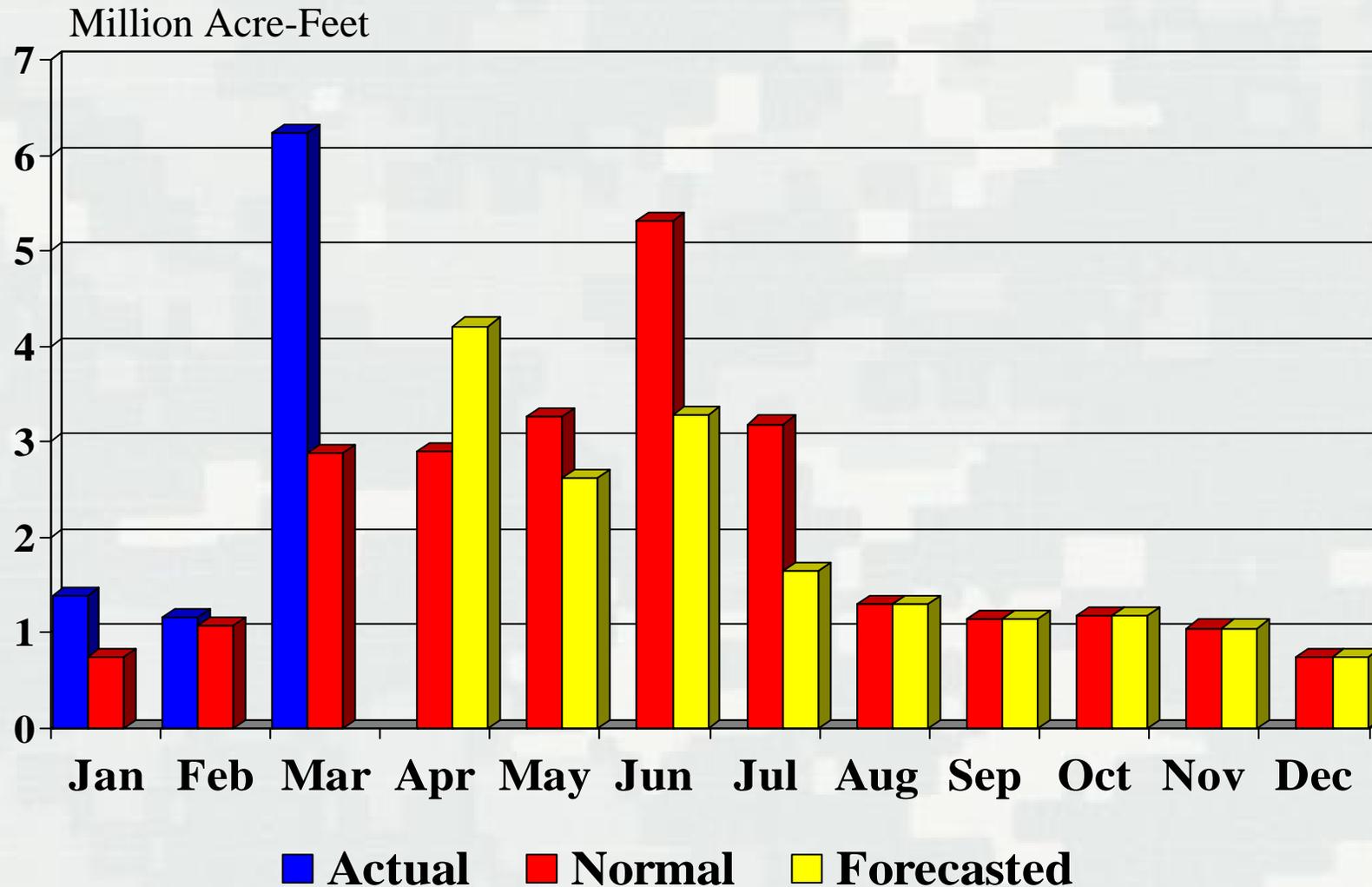


Released Thursday, April 8, 2010
Author: Anthony Artusa, NOAA/NWS/NCEP/CPC

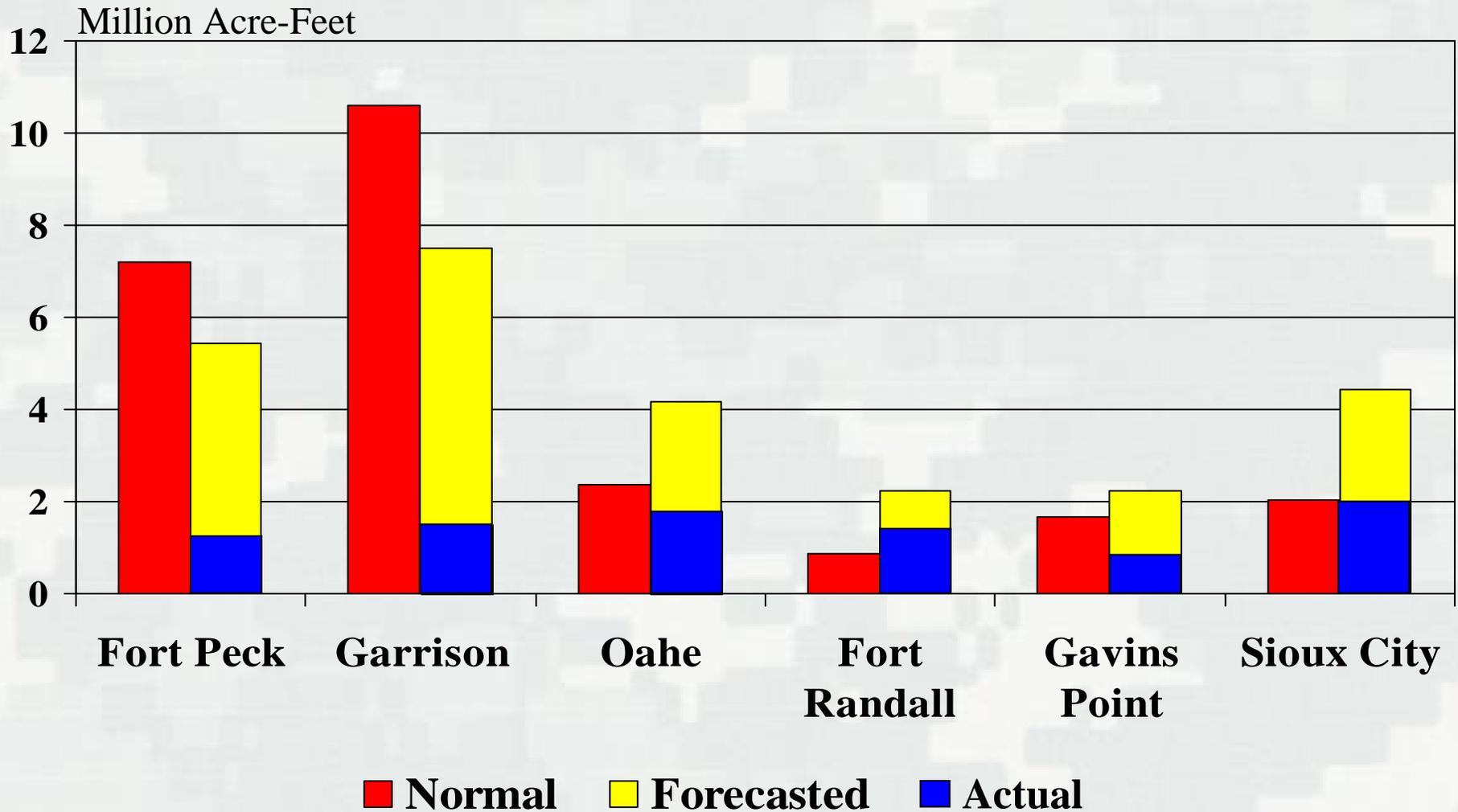
Runoff above Sioux City



2010 Missouri River Runoff Above Sioux City, Iowa

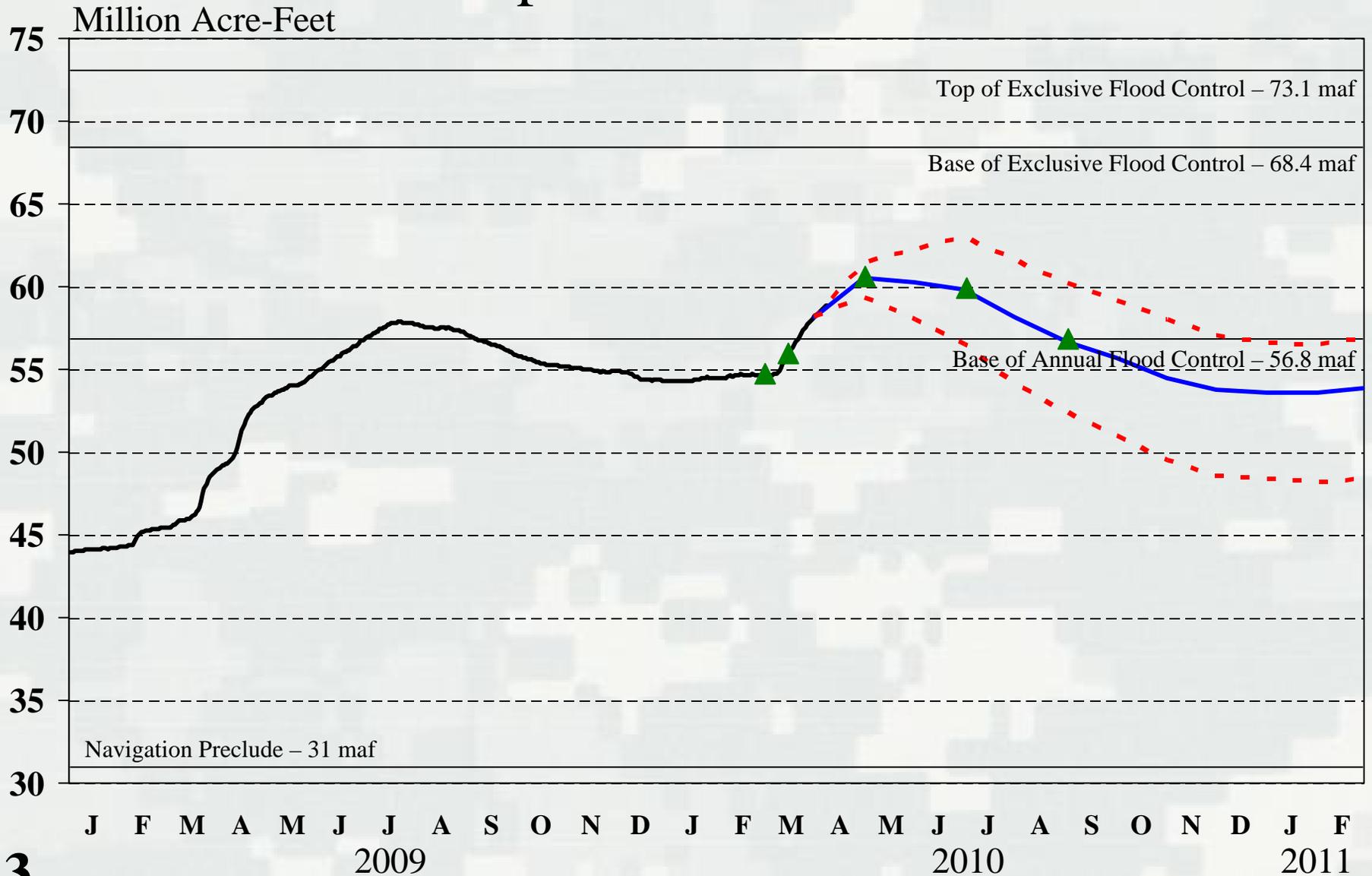


2010 Missouri River Runoff by Reaches



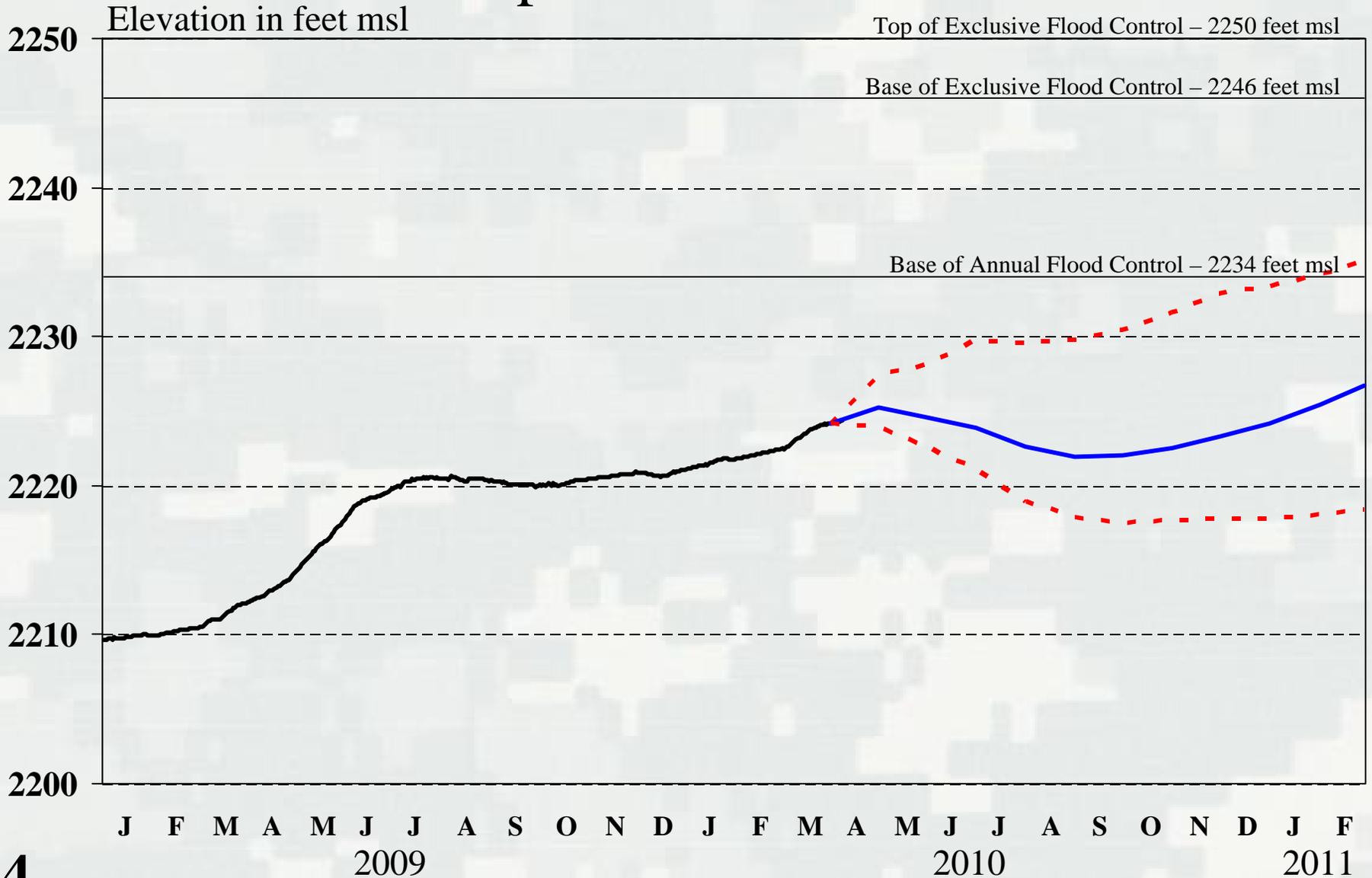
System Storage

April 1 Forecast



Fort Peck

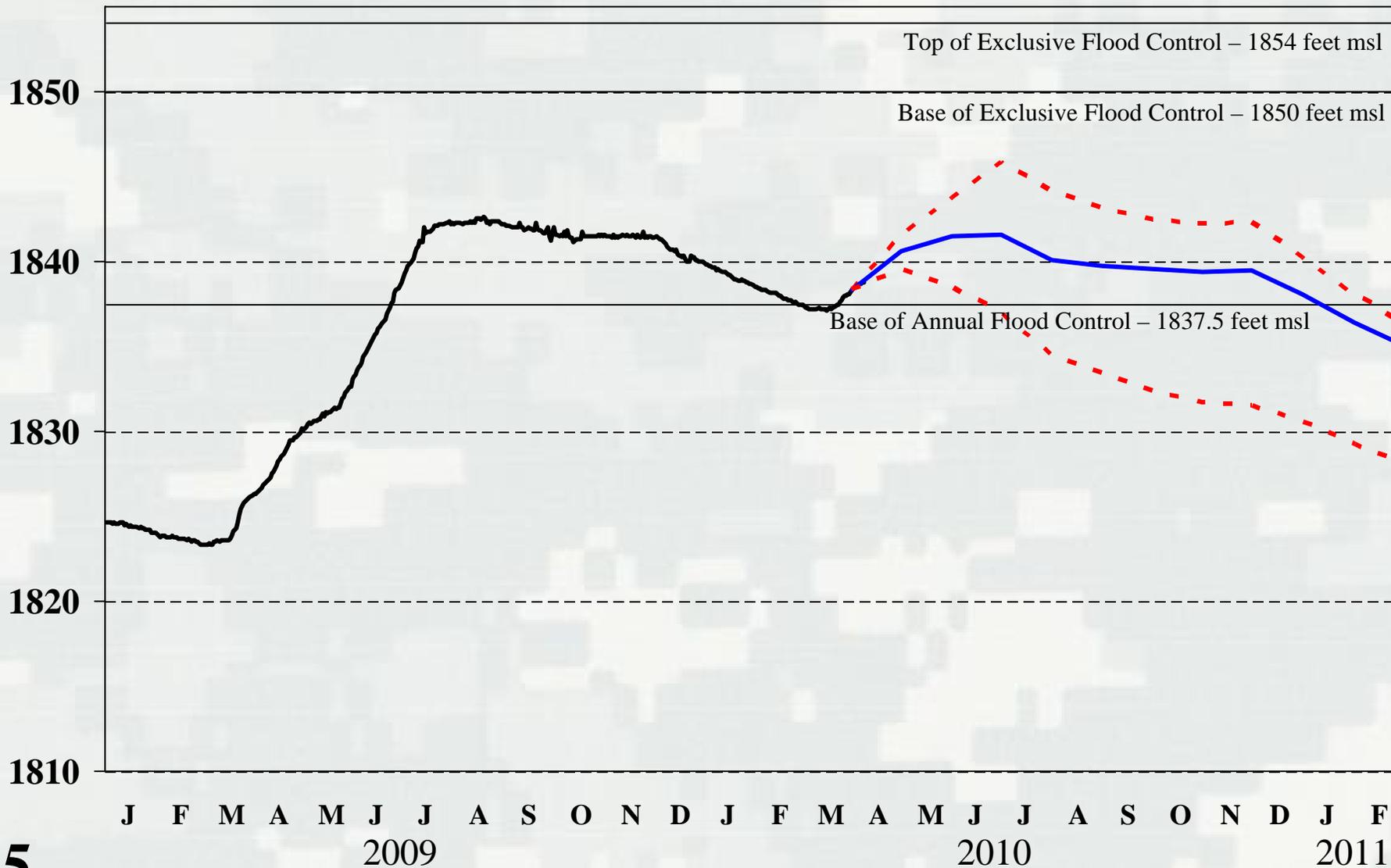
April 1 Forecast



Garrison

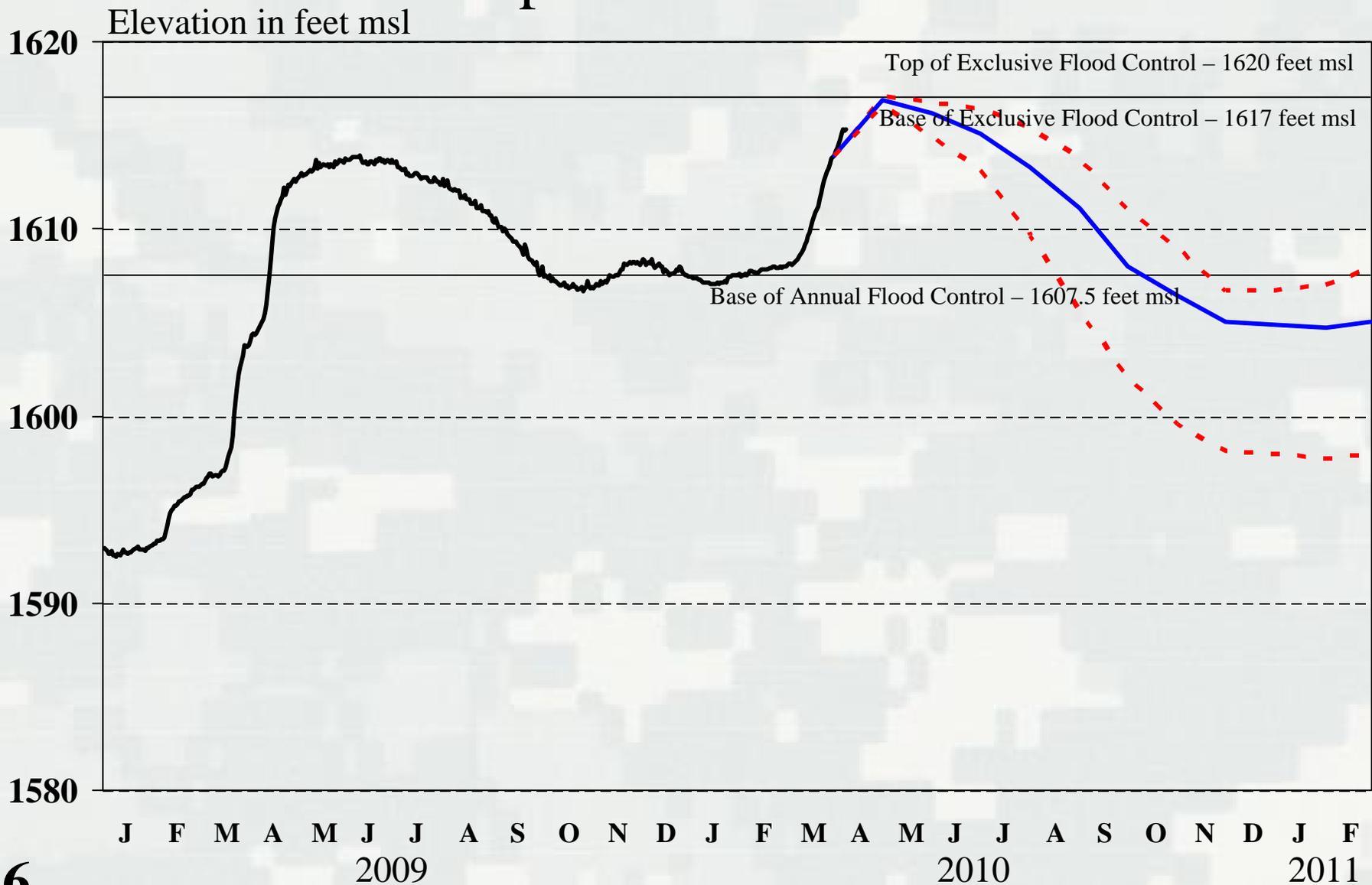
April 1 Forecast

Elevation in feet msl



Oahe

April 1 Forecast



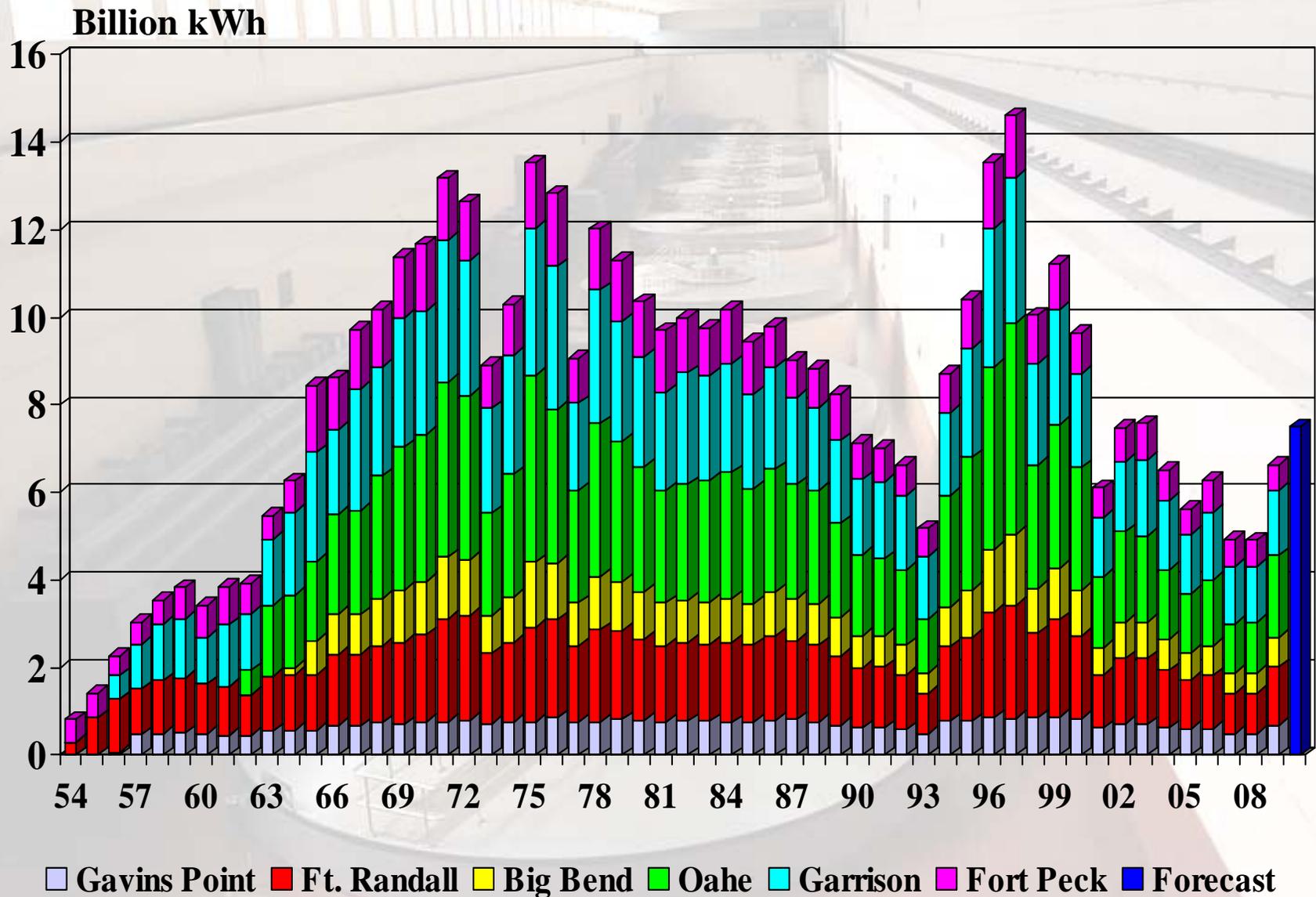
Expected Results for Authorized Purposes in 2010



Flood Control

- All flood storage space available March 1
- Significant plains snowpack
 - ▶ Below Gavins Point
 - High tributary runoff
 - Low Gavins Point releases
 - No March spring pulse
 - ▶ Above Gavins Point
 - High tributary runoff
 - Utilizing large portion of annual flood control zone – Oahe & Fort Randall

Hydropower



Navigation

- **March 15 Storage Check**
 - ▶ Full Service Level
 - ▶ Target Locations
 - Sioux City (31,000 cfs)
 - Omaha (31,000 cfs)
 - Nebraska City (37,000 cfs)
 - Kansas City (41,000 cfs)
- **July 1 Storage Check**
 - ▶ Full season length anticipated
 - ▶ Service level (full service to -1,000 cfs)

Water Supply – Water Quality

Irrigation – Recreation

- Fort Peck
 - ▶ Reservoir level not fully recovered from drought
 - ▶ Minimum releases (irrigation)
 - ▶ Reservoir access (10 of 11 boat ramps usable)
- Garrison and Oahe
 - ▶ Reservoir levels recovered from drought
 - ▶ Near normal releases
 - ▶ No access issues
- Lower 3 reservoirs
 - ▶ Reservoir levels not impacted by drought
 - ▶ Near normal releases (navigation and winter)

Fish and Wildlife

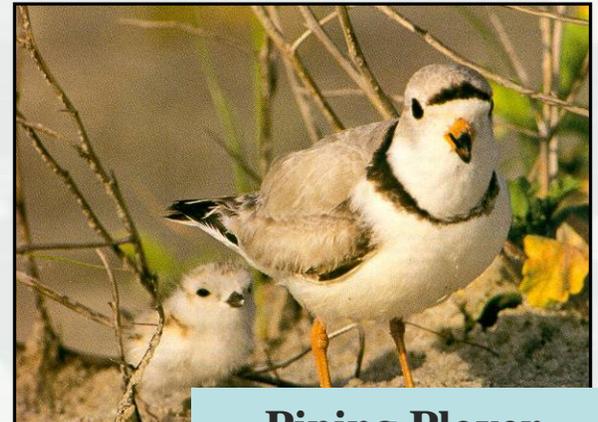
- Steady to rising levels at upper three reservoirs during forage fish spawn
 - ▶ Favor Fort Peck and Oahe April 20 to May 20 if runoff not sufficient
- Unbalancing upper 3 reservoirs
 - ▶ Transition during 2010 if possible
- Minimize zero releases at Fort Randall
- No cold water habitat issues expected

Endangered Species Act of 1973

Each Federal Agency shall... ensure 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...



Interior Least Tern
Listed "Endangered" 1986



Piping Plover
Listed "Threatened" 1986



Pallid Sturgeon
Listed "Endangered" 1990

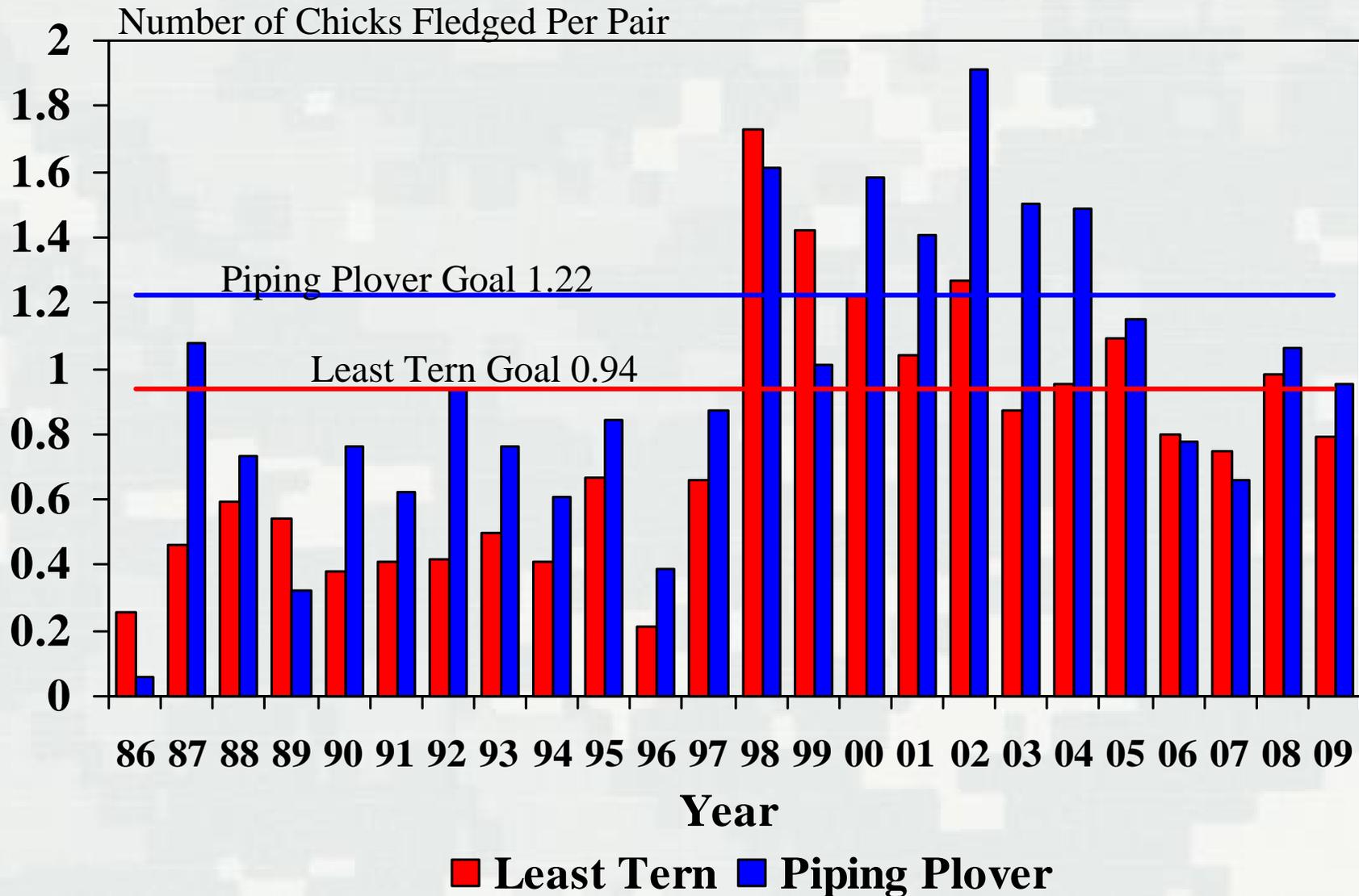
Threatened and Endangered Species

Piping Plover and Least Tern

- Gavins Point
 - ▶ Steady release – flow to target
 - ▶ Cycle Gavins Point releases
- Intra-day peaking patterns – Garrison & Fort Randall
- Measures to minimize take
 - ▶ Utilize Kansas River projects for navigation support
 - ▶ Target flows may not be met in reaches without commercial navigation

Fish and Wildlife

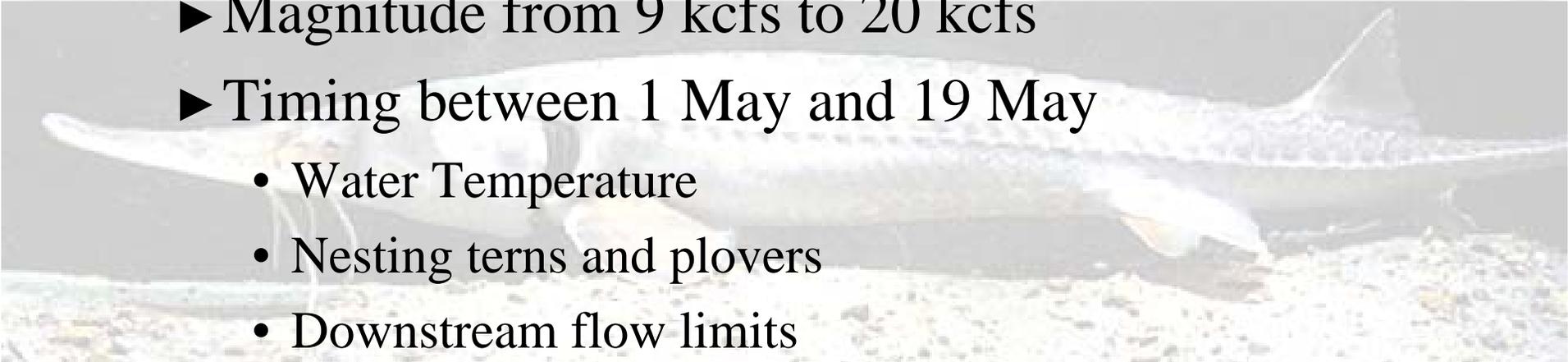
Threatened and Endangered Species



Threatened and Endangered Species

Bi-Modal Spring Pulse – Pallid Sturgeon

- 2003 Amended Biological Opinion – Reasonable and Prudent Alternative
- March (not implemented in 2010)
- May
 - ▶ Magnitude from 9 kcfs to 20 kcfs
 - ▶ Timing between 1 May and 19 May
 - Water Temperature
 - Nesting terns and plovers
 - Downstream flow limits

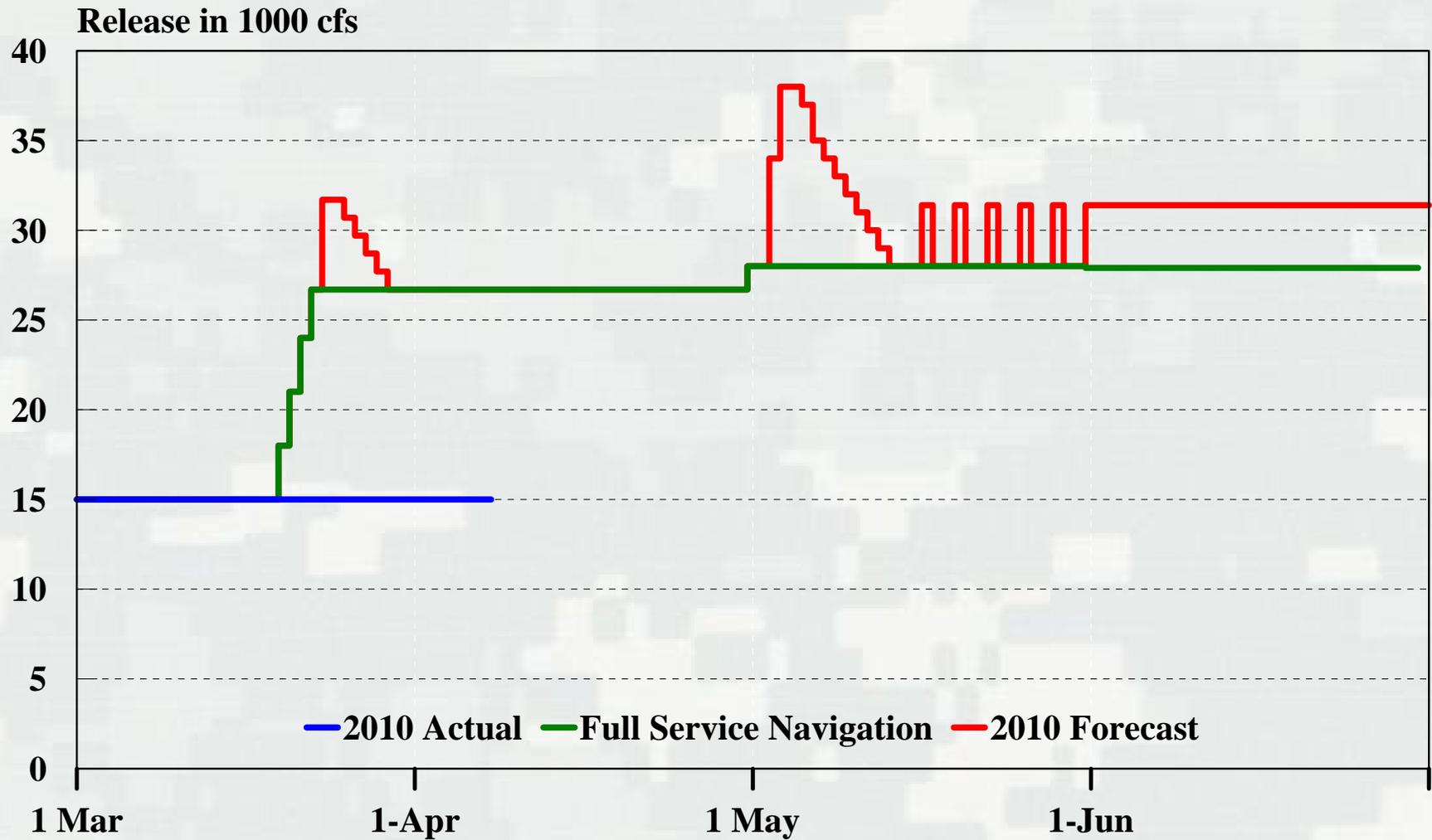


Threatened and Endangered Species

Bi-Modal Spring Pulse – Pallid Sturgeon

- Downstream flow limits
 - ▶ Omaha (41,000 cfs)
 - ▶ Nebraska City (47,000 cfs)
 - ▶ Kansas City (71,000 cfs)
- Eliminate pulse downstream of Kansas City using tributary reservoirs
- Monitoring in place
 - ▶ Biological, interior drainage, groundwater

Gavins Point Releases



Summary

- Near normal runoff
- Return to more normal releases and reservoir levels
- Improved service to all authorized purposes

