MISSOURI RIVER BASIN WATER MANAGEMENT

FALL 2022 PUBLIC MEETINGS

Oct. 24th	11:00 a.m.	Fort Peck, MT
Oct. 24th	5:00 p.m.	Bismarck, ND
Oct. 25th	10:00 a.m.	Fort Pierre, SD
Oct. 25th	4:00 p.m.	Sioux City, IA
Oct. 26th	11:00 a.m.	Smithville, MO
Oct. 26th	5:00 p.m.	Nebraska City, NE

U.S.ARMY

US Army Corps of Engineers®

Missouri River Basin Weather and Climate Update Winter Outlook

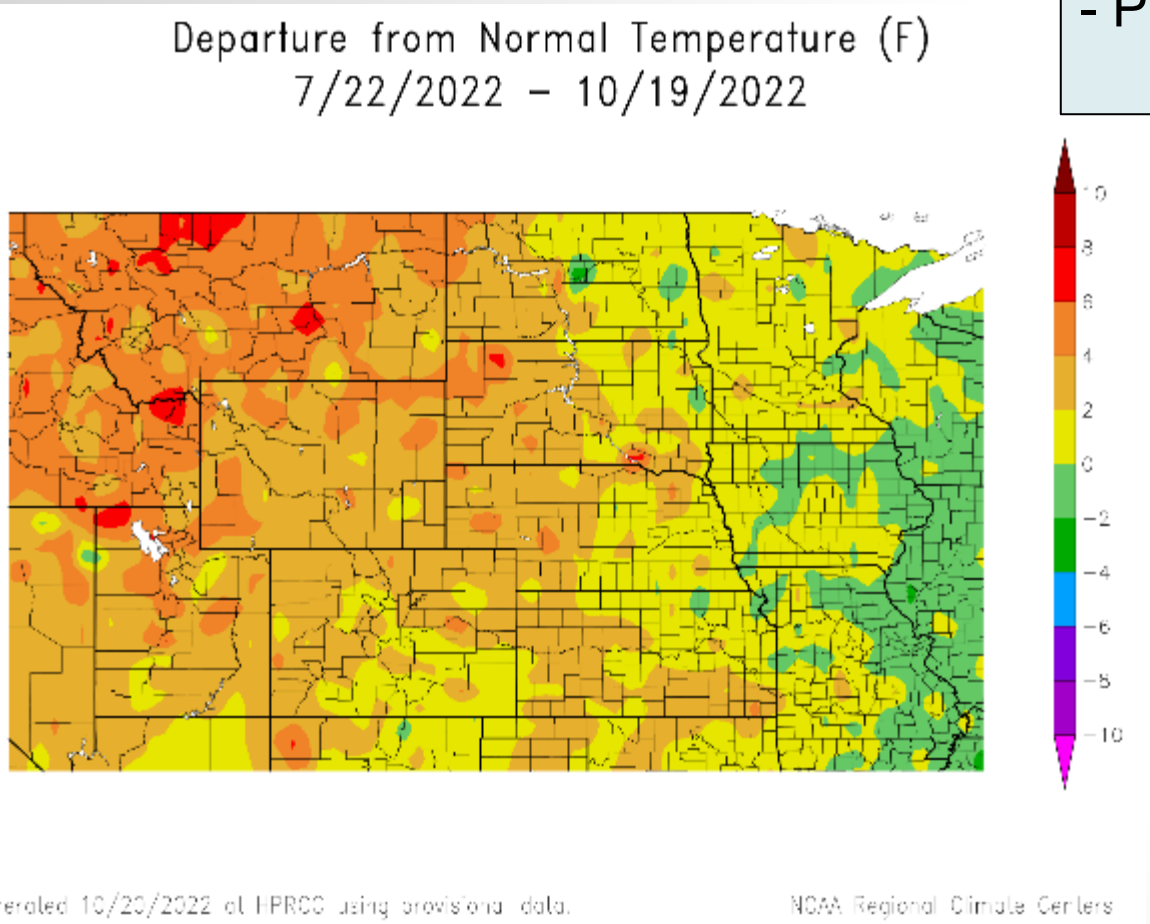
NOAA NWS
October 2022

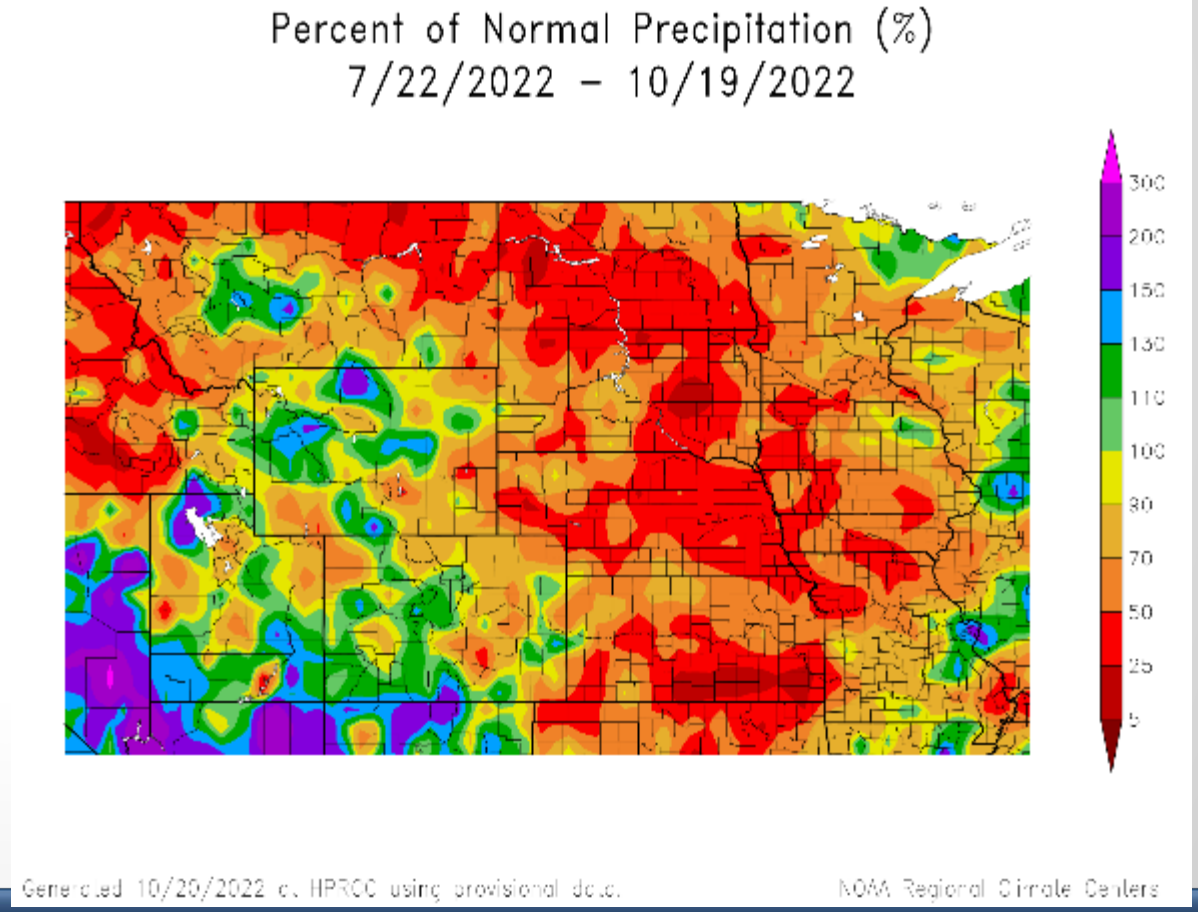
Message from the NWS …

- Observed Temperature & Precipitation
- Temperature and Precipitation Outlooks
- Drought Monitor & Outlook
- Winter Outlook
- Summary / Key Points

Temperature & Precipitation
Previous 3 Months: 07/22/22 – 10/19/22

-Temperature: above normal
- Precipitation: patchy above-normal higher elevations, well-below-normal elsewhere



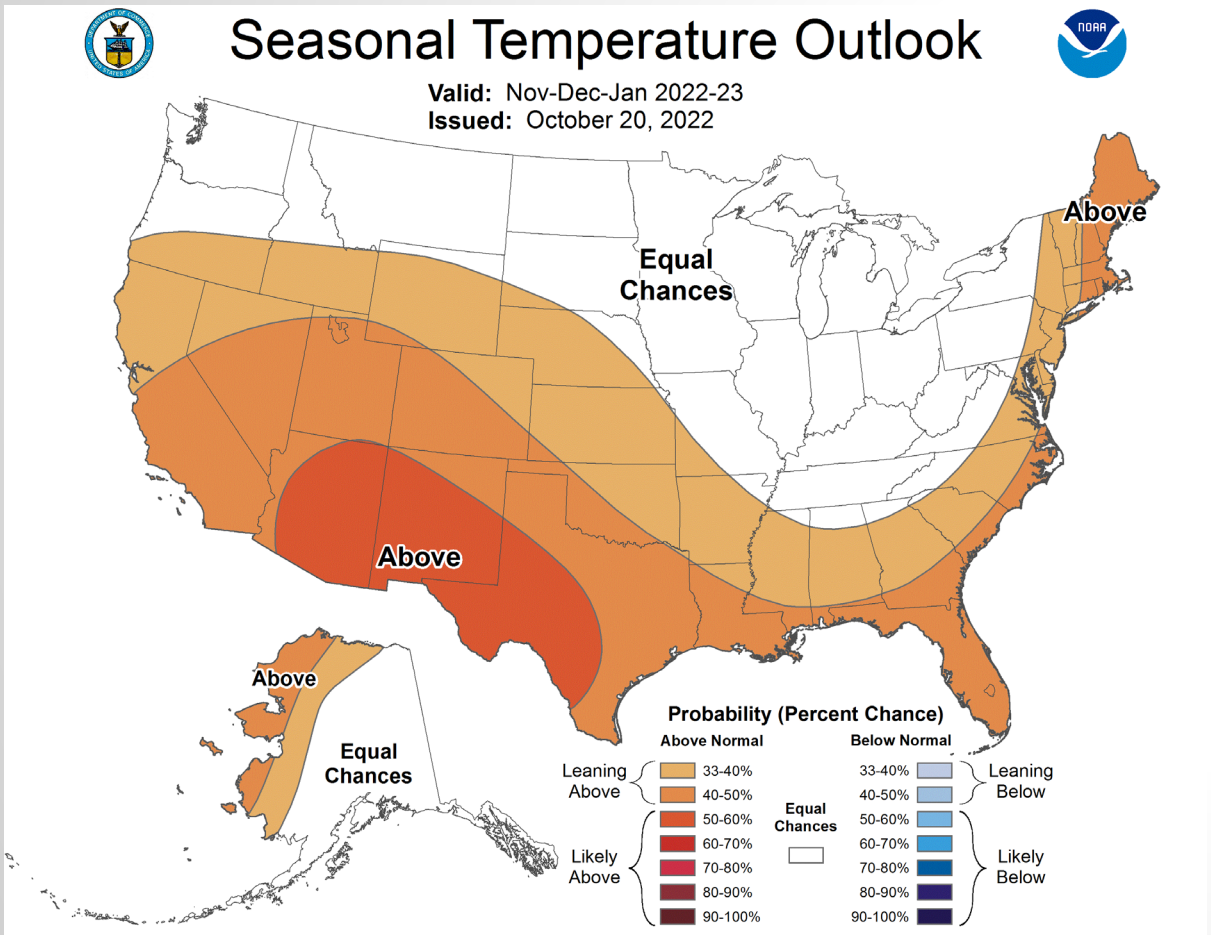


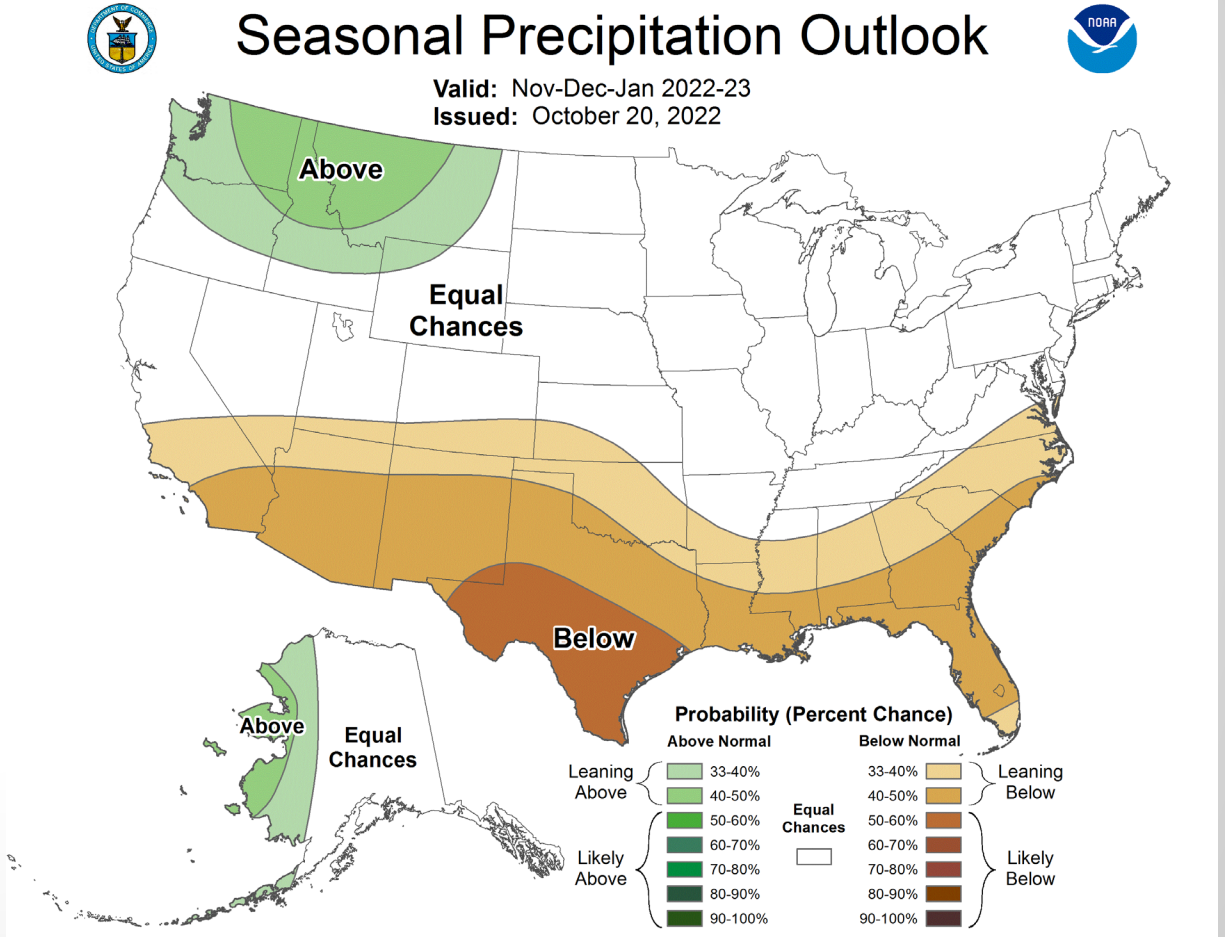
https://hprcc.unl.edu/maps.php?map=ACISClimateMaps

November-December-January Temperature & Precipitation Outlook

http://www.cpc.noaa.gov/

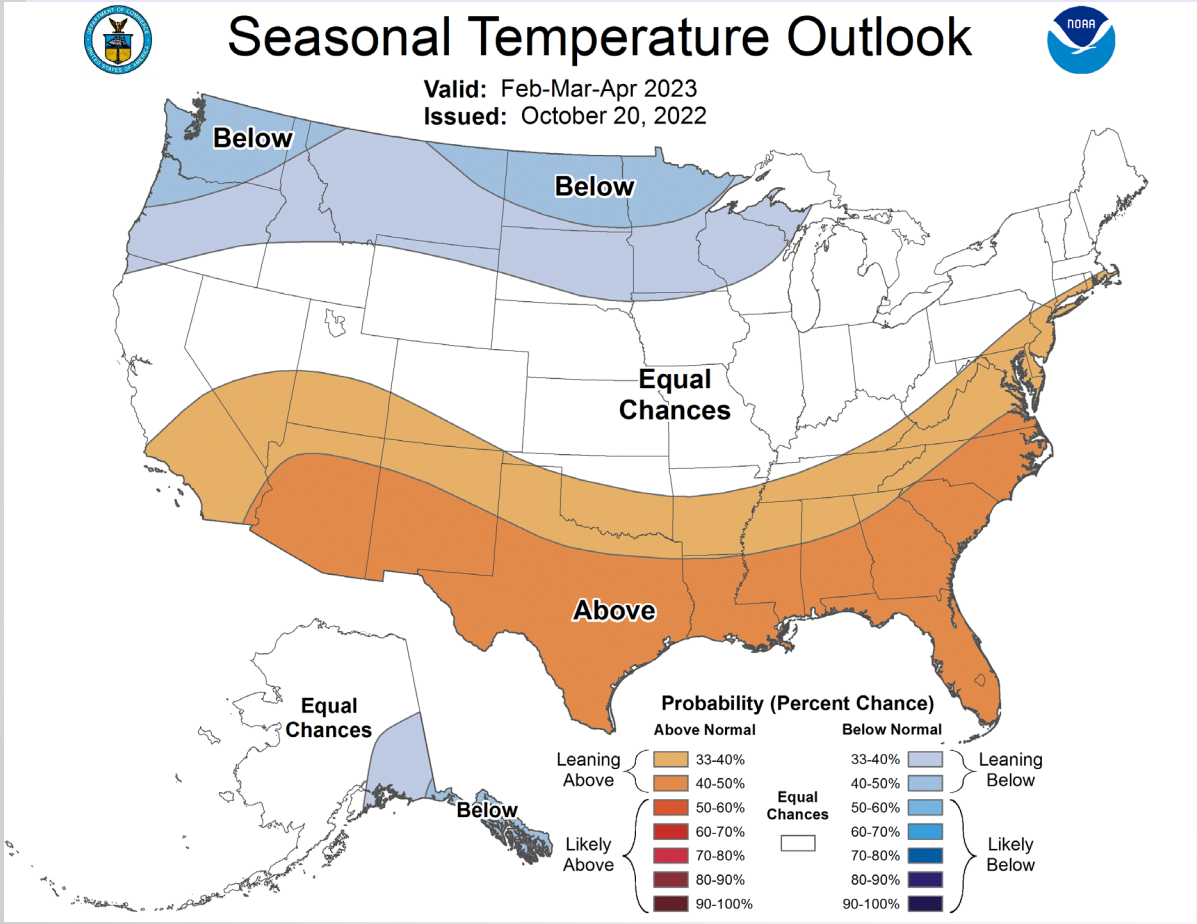
Temperature leans warm south, equal chances north
Precipitation leans above-normal northwest, equal chances elsewhere

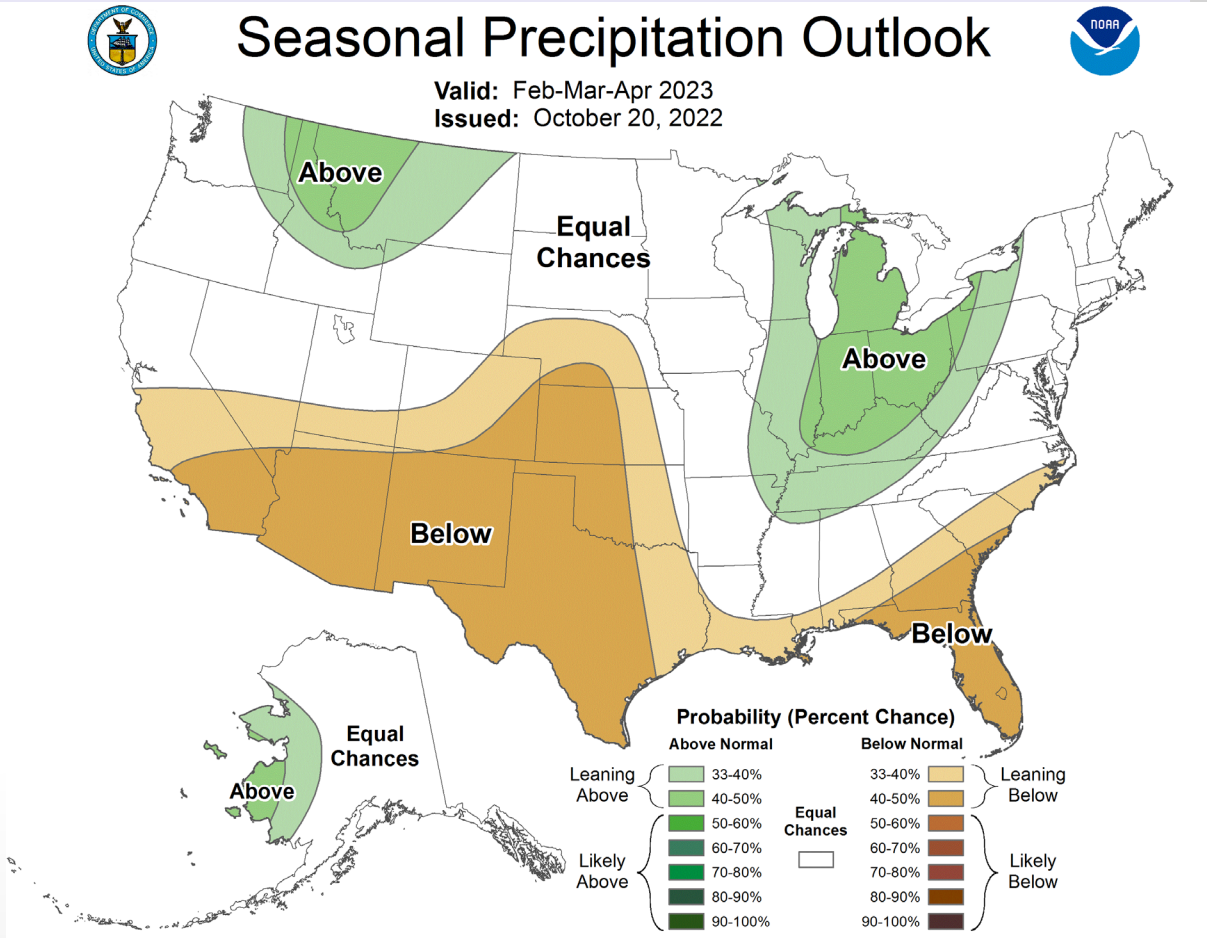




February-March-April 2023
Temperature & Precipitation Outlook

Temperature leans colder northern basin, equal chances southern basin
Precipitation leans above normal MT Rockies, below normal southern plains, equal chances elsewhere





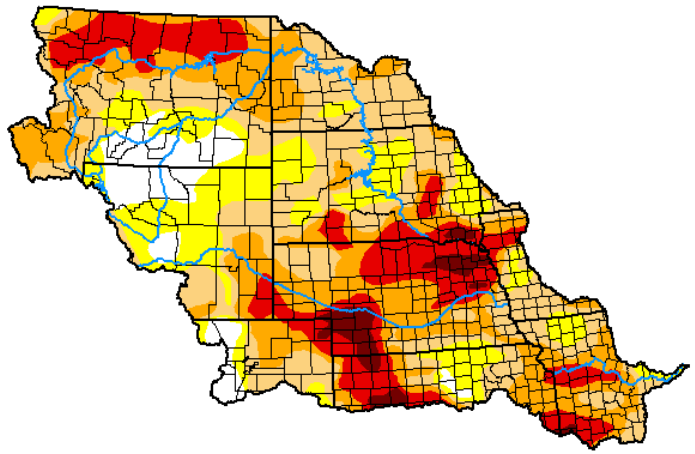
http://www.cpc.noaa.gov/

Drought Status & Outlook

75% of the basin categorized as being in drought
Drought likely to persist, if not expand

U.S. Drought Monitor

Missouri Watershed



October 18, 2022
(Released Thursday, Oct. 20, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	7.14	92.86	75.37	44.93	18.61	2.70
Last Week 10-11-2022	8.83	91.17	71.54	42.72	15.47	2.59
3 Months Ago 07-19-2022	38.40	61.60	41.22	21.92	5.66	0.18
Start of Calendar Year 01-04-2022	15.74	84.26	62.23	43.38	20.60	3.80
Start of Water Year 09-27-2022	7.52	92.48	71.41	38.49	12.94	2.43
One Year Ago 10-19-2021	16.71	83.29	65.82	44.04	26.36	5.07

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

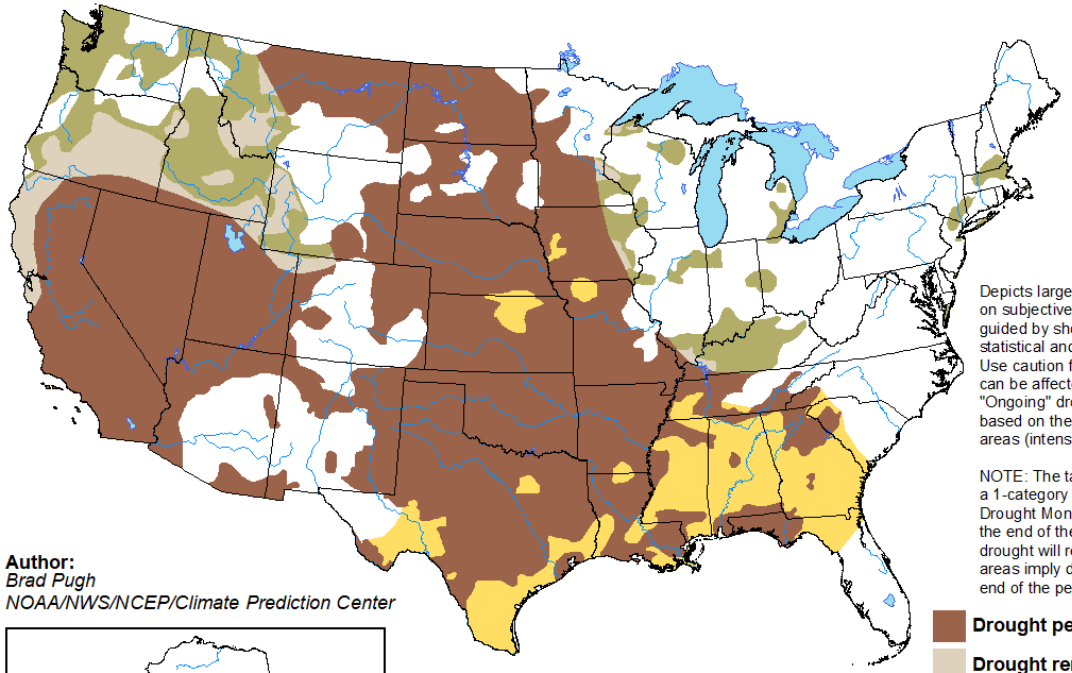
Author:
Adam Hartman
NOAA/NWS/NCEP/CPC

droughtmonitor.unl.edu

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for October 20, 2022 - January 31, 2023
Released October 20, 2022



Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

- **Drought persists**
- **Drought remains but improves**
- **Drought removal likely**
- **Drought development likely**

Author:
Brad Pugh
NOAA/NWS/NCEP/Climate Prediction Center

http://go.usa.gov/3eZ73

NOAA/NWS Winter Outlook

NOAA released its 2022-2023 US Winter Outlook last Thursday, 20 October.

https://www.noaa.gov/news-release/us-winter-outlook-warmer-drier-south-with-ongoing-la-nina

Or simply web search "US Winter Outlook"

NOAA expects La Nina conditions to prevail for the third winter in a row.

For the Missouri River basin, the typical winter La Nina pattern leads to:

- Increased chances for below-normal temperatures across the upper basin, and
- Increased chances for an above-normal snowpack in the northern Rockies

Key Points Going Forward

- **Another very dry and warm year has led to continued soil moisture deficits and persistent drought.**
- **Warmer-than-normal temperatures are expected to continue through the end of the year for at least the southern half of the basin. Colder-than-normal temperature trends for the northern half of the basin beginning late winter—early spring 2023.**
- **While chances do favor a wet winter for the northern Rockies, the remainder of the basin is either expected to be drier-than-normal; or in the best case, equal chances for above-, near-, or below-normal precipitation (just no clear picture).**
- **NOAA's 2022-2023 U.S. Winter Outlook calls for La Nina conditions to prevail again this winter (as it did the previous 2 winters). For the Missouri River Basin, La Nina's typically lead to colder-than-normal conditions in the north, and an above-normal snowpack in the northern Rockies. No guarantees though!**
- **National Weather Service will issue Spring Flood Outlooks beginning in February 2023.**

Next monthly North Central Climate Summary & Outlook Webinar, December 15, 2022
https://attendee.gotowebinar.com/register/2871399225061558288

SYSTEM OVERVIEW AND UPPER BASIN RUNOFF

OUR MISSION

REGULATE MISSOURI RIVER MAINSTEM RESERVOIRS

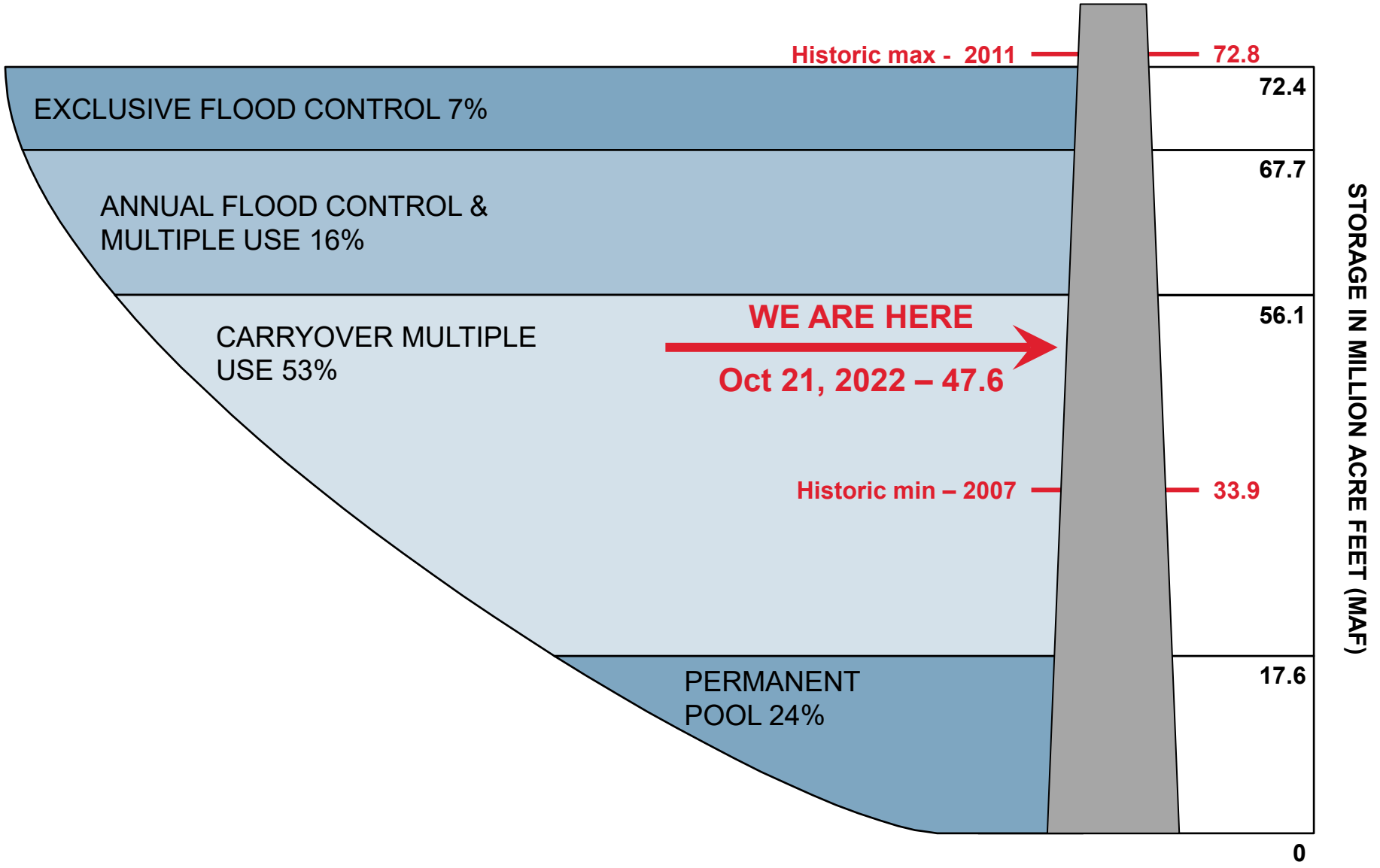
- **Priority:** Life and Safety
- **Operational Decisions:** Driven by Annual Runoff Conditions

  Water captured in System flood control storage zones each year must be evacuated prior to the start of the following year's runoff season.
- **Master Manual:** Operational decisions designed significantly around **Flood Control, Navigation & Water Supply** purposes
- **Authorized Purposes:**

Flood Control | Navigation | Hydropower | Water Supply | Fish & Wildlife | Irrigation | Water Quality Control | Recreation

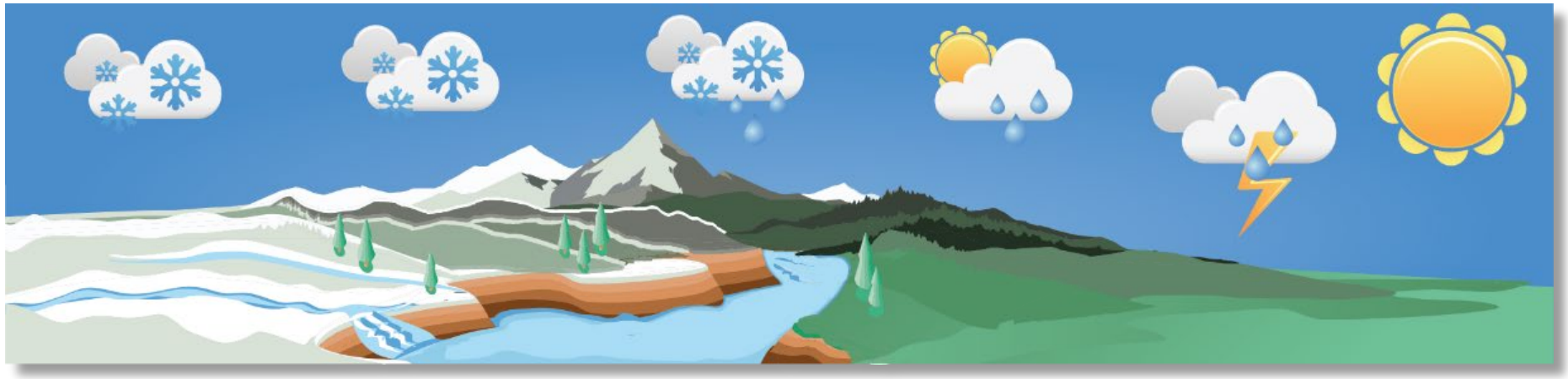
- **Federal Laws:** the Corps complies with all federal laws.
  - *The Corps does not store more water in the System for Threatened and Endangered Species.*

MISSOURI RIVER MAINSTEM SYSTEM STORAGE ZONES AND ALLOCATIONS



RUNOFF COMPONENTS

PLAINS SNOWPACK **MOUNTAIN SNOWPACK** **RAINFALL**



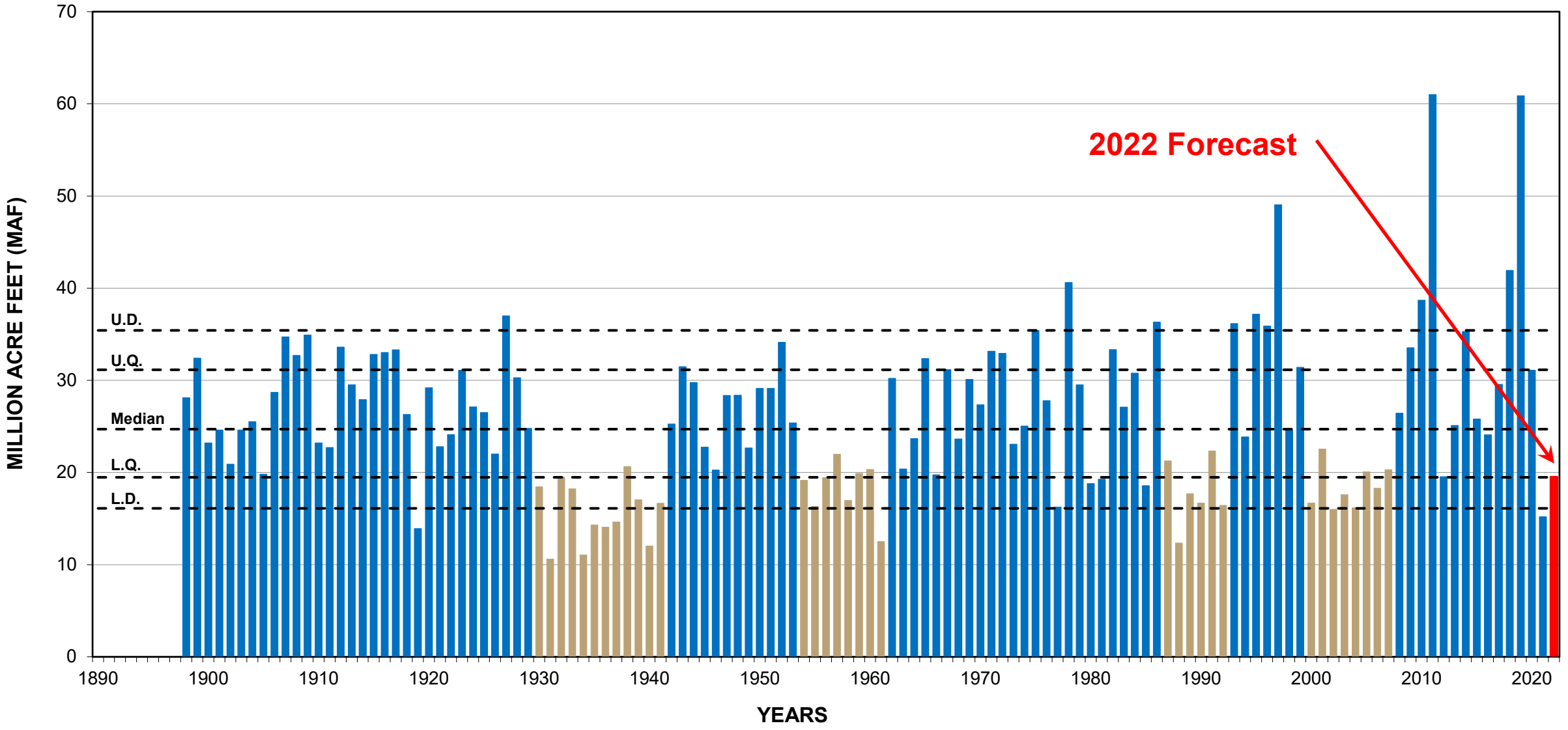
2022 FORECAST* = 19.5 MILLION ACRE FEET (MAF)

(AVERAGE ANNUAL RUNOFF IS 25.7 MAF)

***OCTOBER 1 FORECAST**

OUR FORECAST FOR 2023 RUNOFF WILL BE INITIATED IN JANUARY 2023.

ANNUAL RUNOFF ABOVE SIOUX CITY, IA

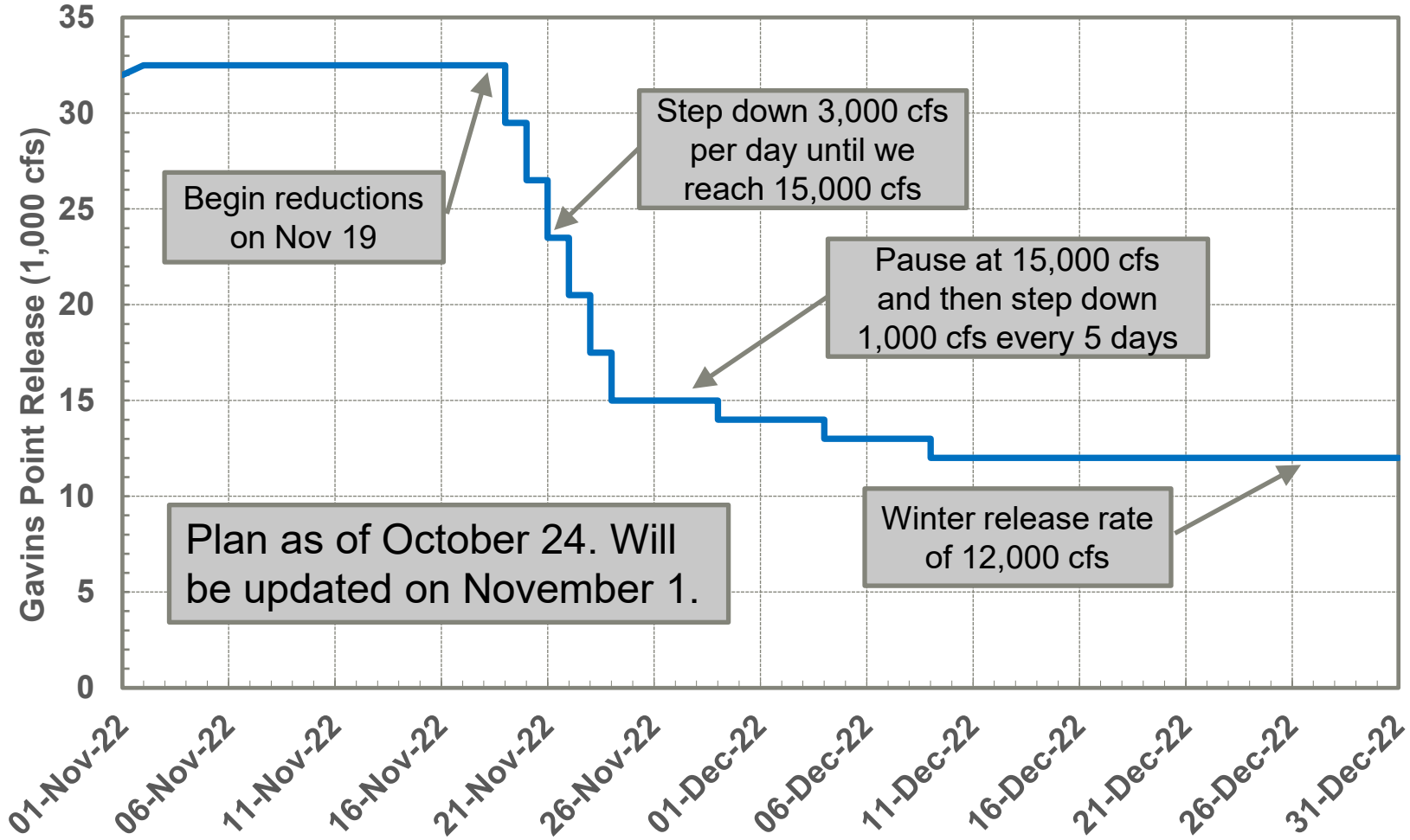


FALL / WINTER RELEASES

- Gavins Point Dam releases will be reduced to winter rate starting around November 19.
- Corps will closely monitor channel/ice conditions between reservoirs and downstream of Gavins Point Dam.
- Gavins Point winter releases are based on the September 1 System storage check; minimum rate (12,000 cfs).
- Expected average monthly releases (in 1000 cfs):

	Nov	Dec	Jan	Feb
• **Fort Peck**	4.0	5.5	6.0	6.0
• **Garrison**	14.0	17.4	23.0	23.0
• **Gavins Point**	25.9	12.5	12.5	12.5

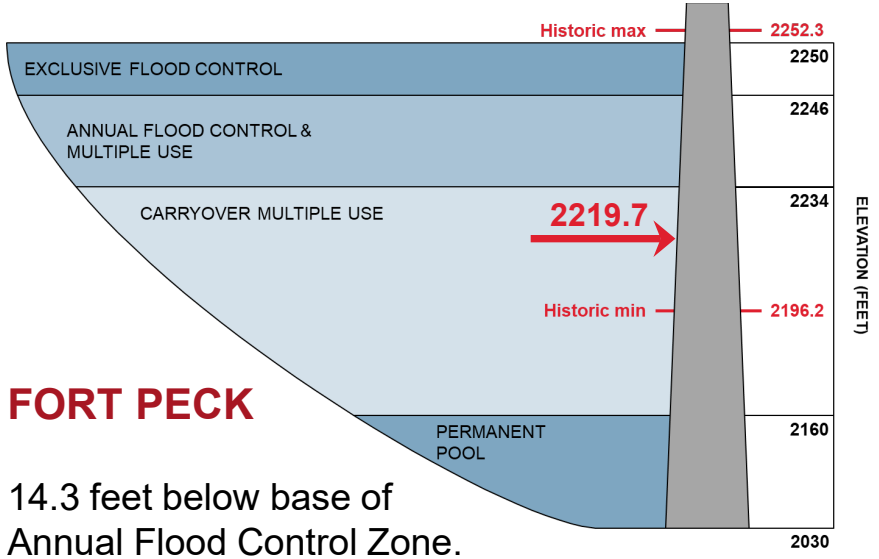
2022 Fall-Winter Gavins Point Dam Release Forecast



Location	Closing Date
Sioux City	November 19
Omaha	November 21
Kansas City	November 24
Mouth	November 28

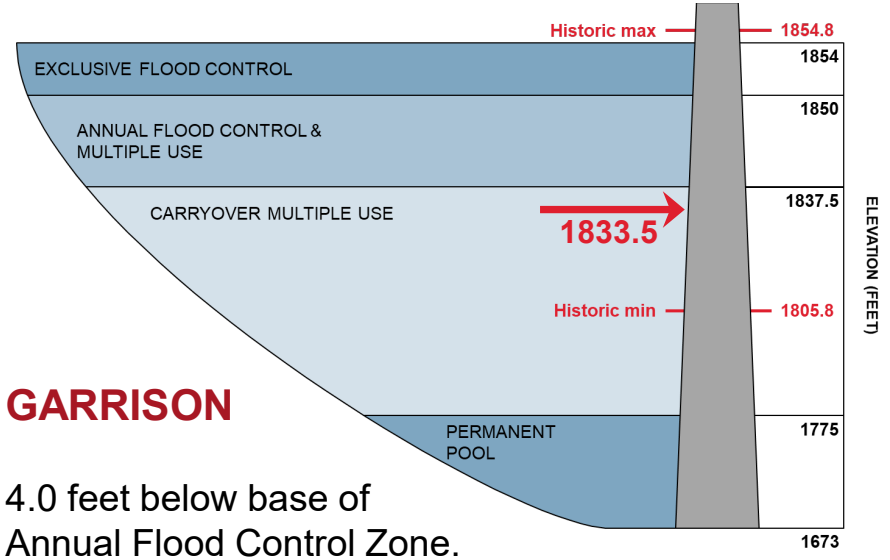
RESULTS OF 2022 REGULATION AND PLANNED OPERATION FOR AUTHORIZED PURPOSES IN 2023

CURRENT RESERVOIR LEVELS – OCT 21, 2022



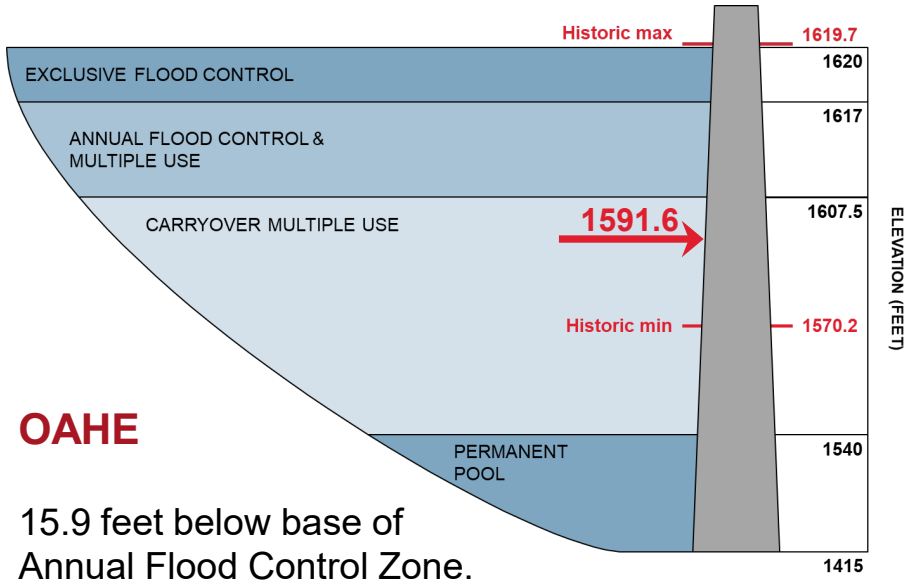
FORT PECK

14.3 feet below base of
Annual Flood Control Zone.



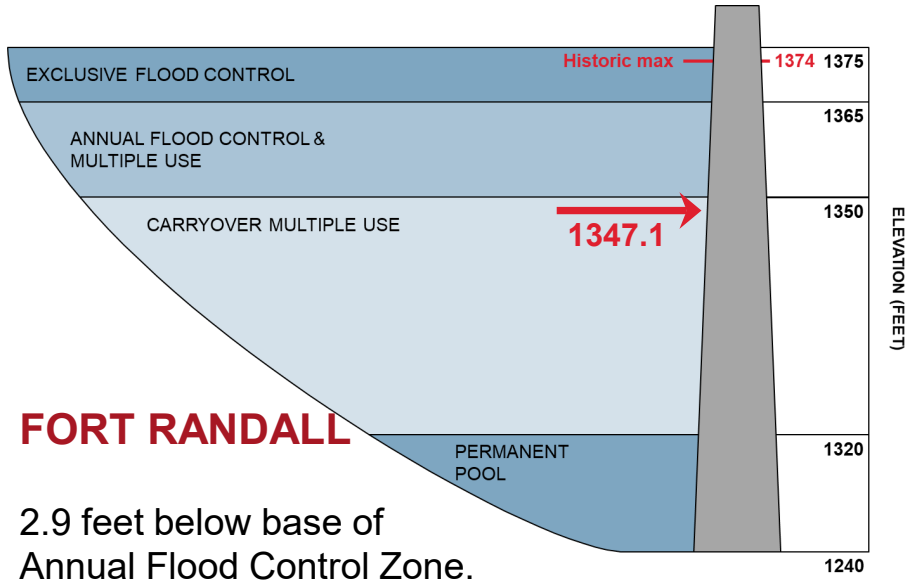
GARRISON

4.0 feet below base of
Annual Flood Control Zone.



OAHE

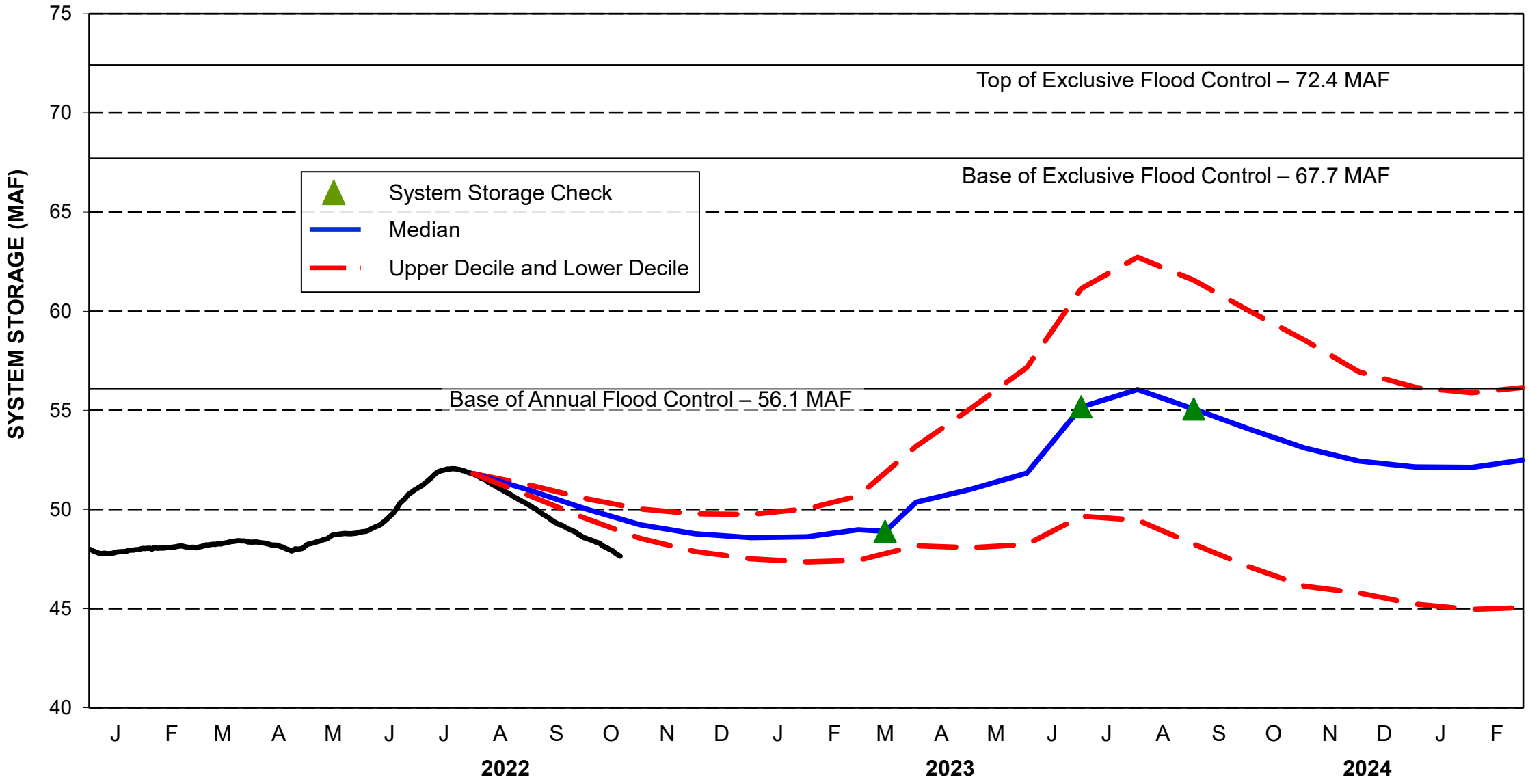
15.9 feet below base of
Annual Flood Control Zone.



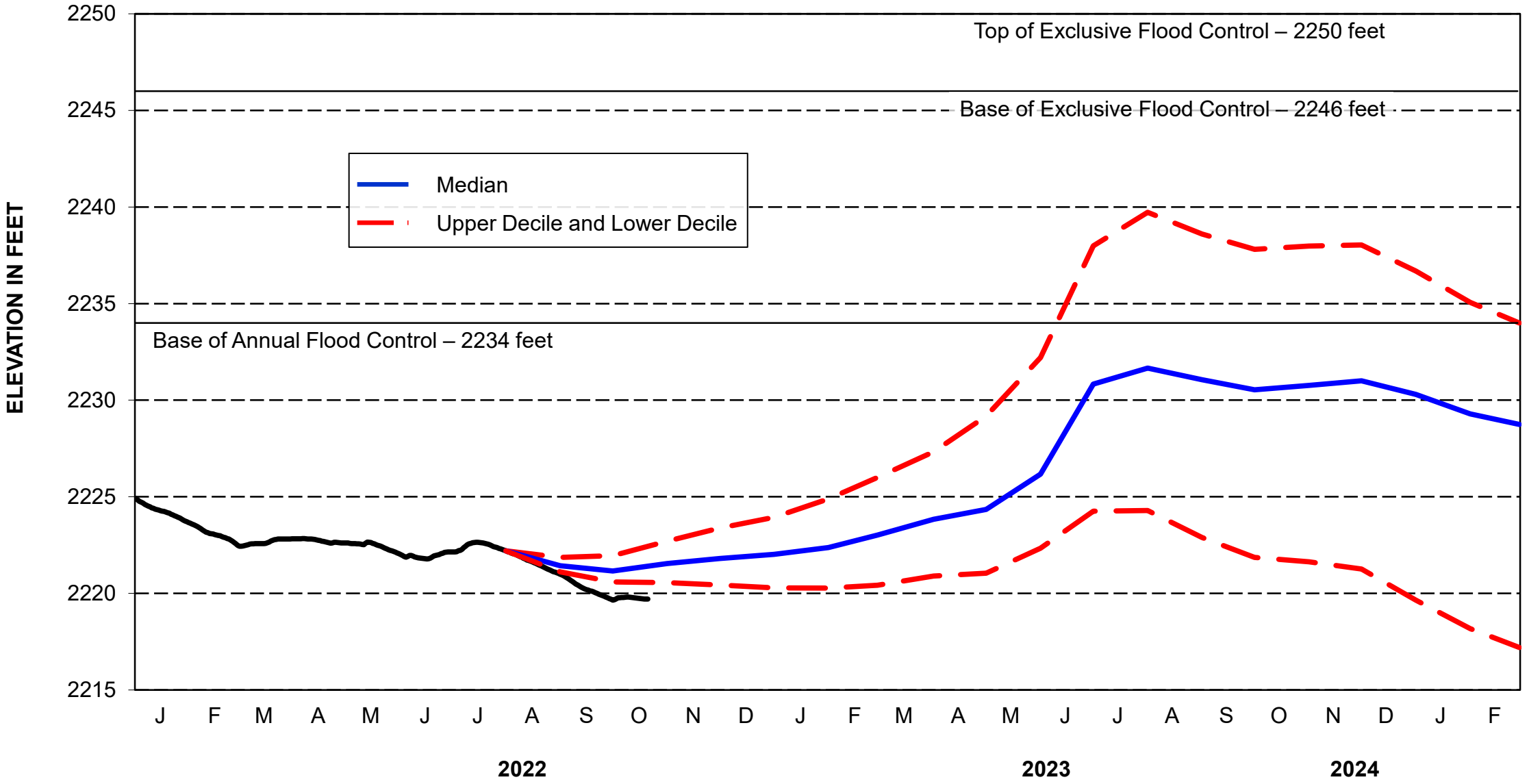
FORT RANDALL

2.9 feet below base of
Annual Flood Control Zone.

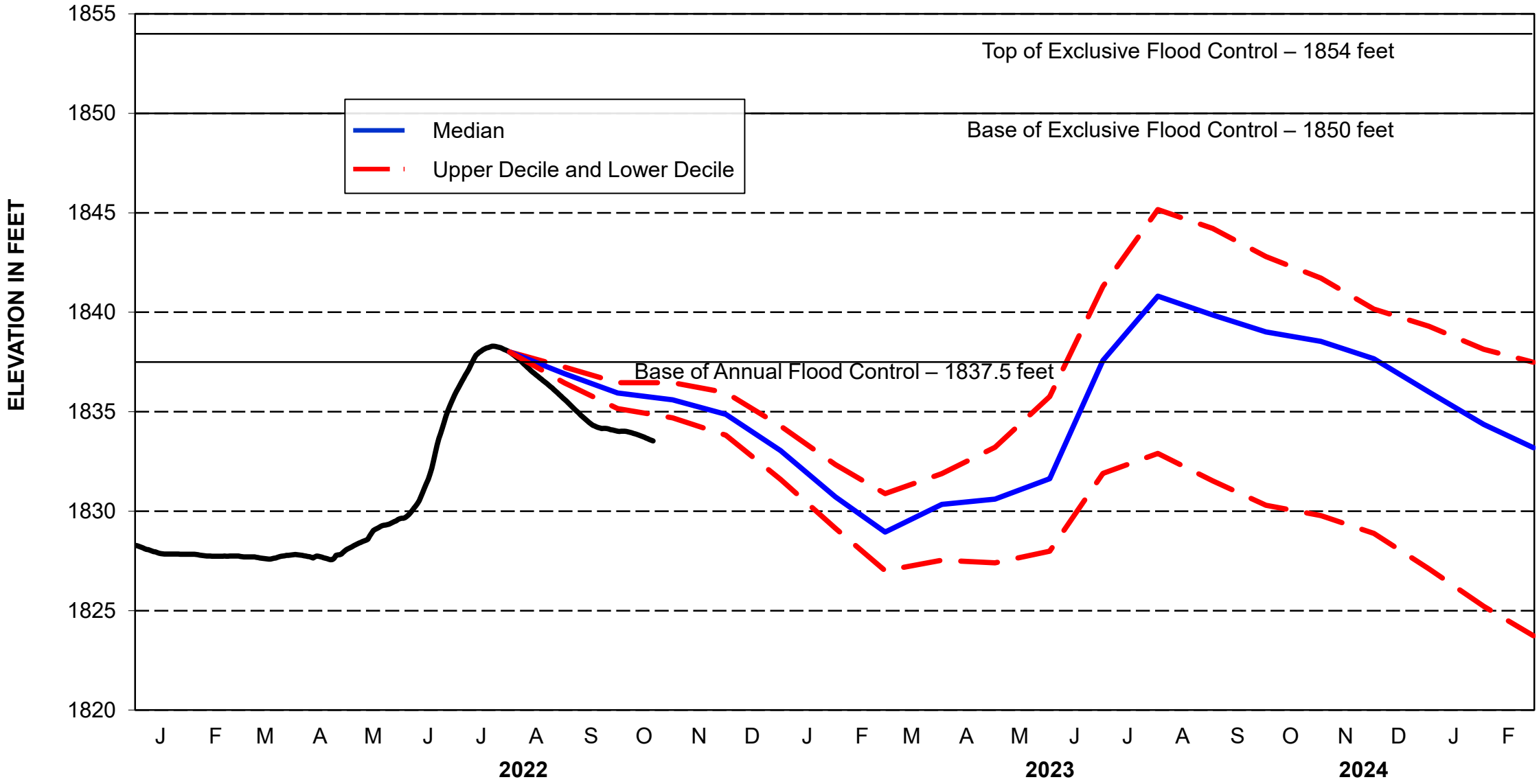
SYSTEM STORAGE - 2022-2023 DRAFT AOP



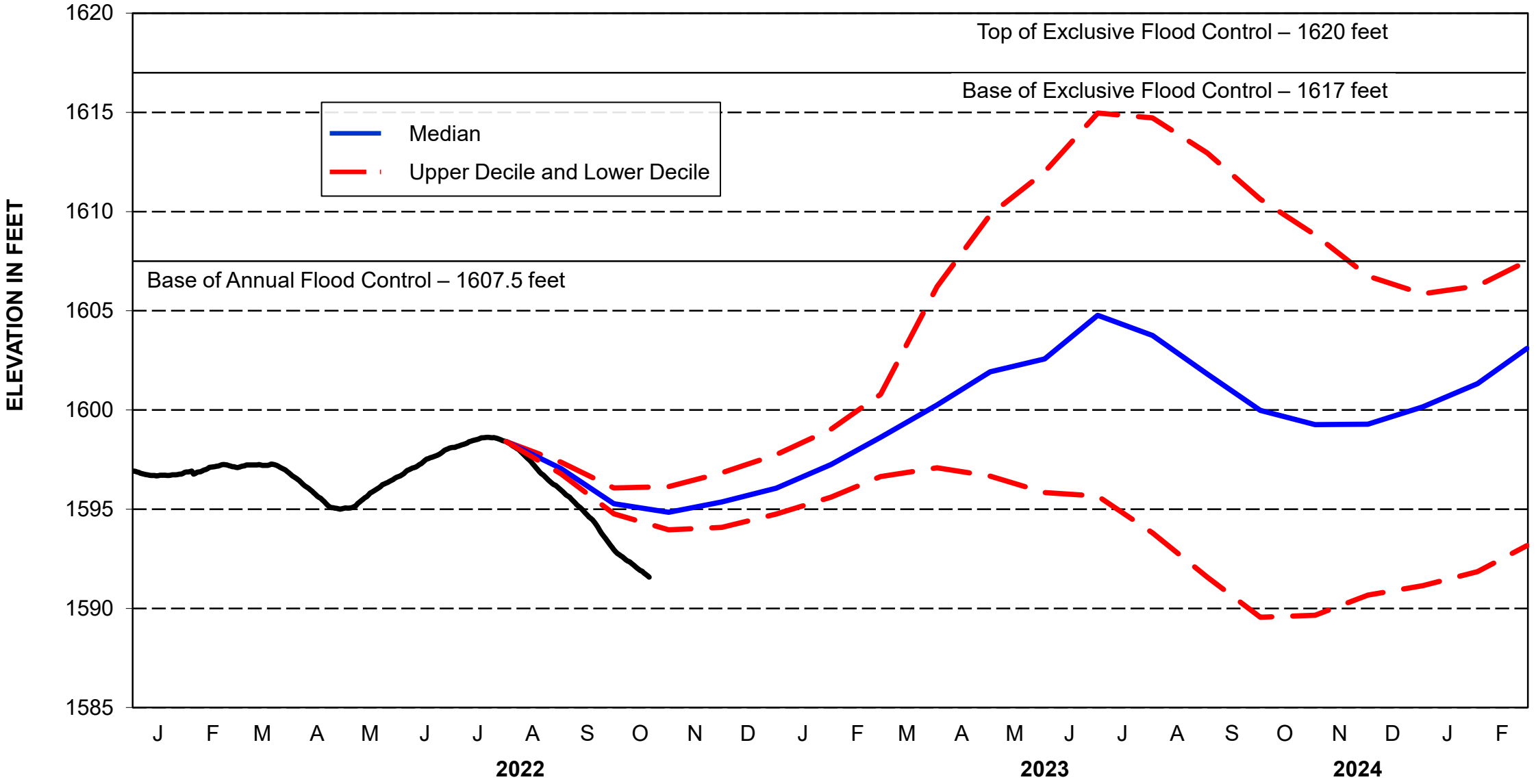
FORT PECK - 2022-2023 DRAFT AOP



GARRISON - 2022-2023 DRAFT AOP



OAHE - 2022-2023 DRAFT AOP

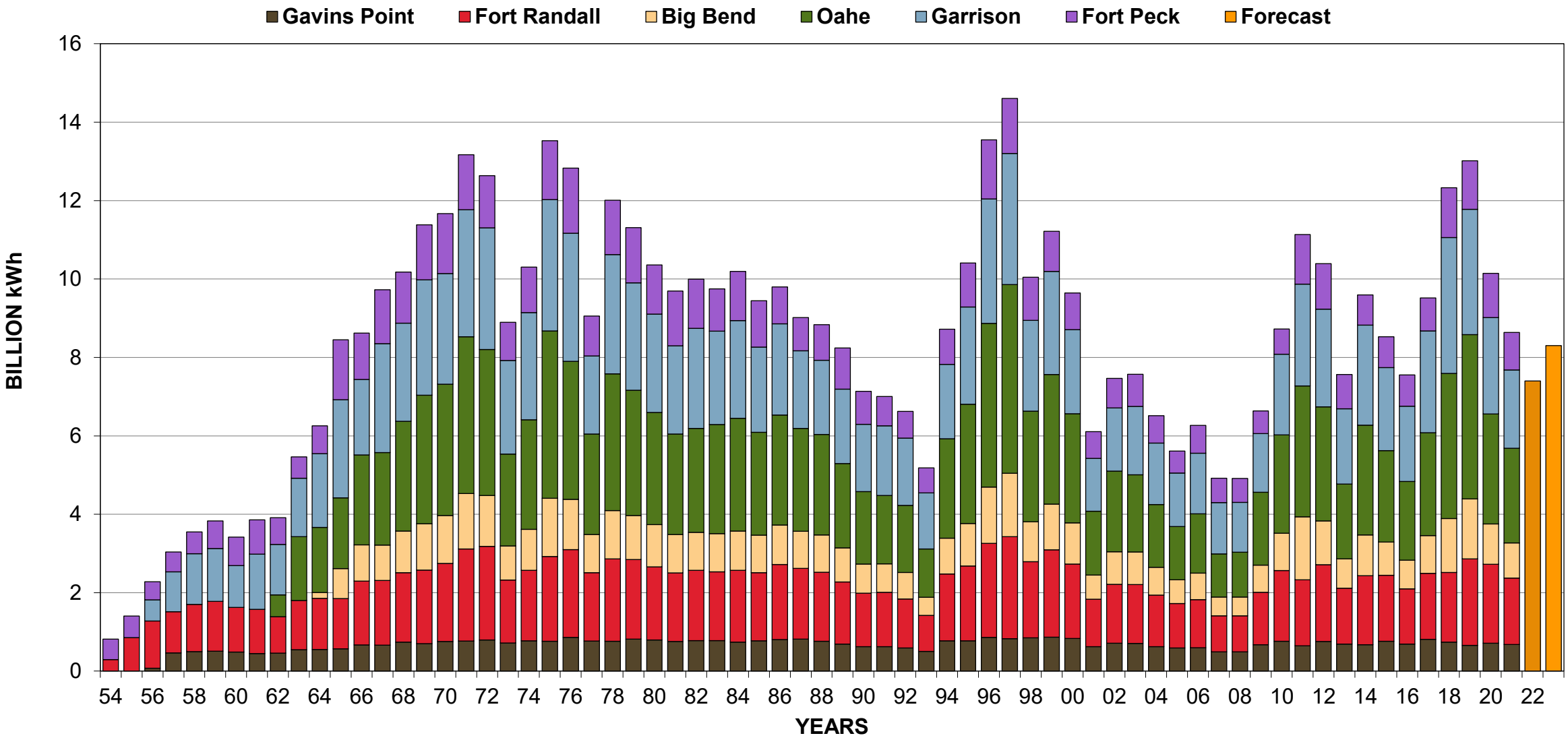


FLOOD CONTROL

- 2021-2022
  - Flood damages prevented 2021 - $200 million
  - System storage peaked on July 20 at 52.1 MAF, 4 MAF below the base of the System's flood control storage zone

- 2023
  - All scenarios start next year's runoff season below the base of the annual flood control zone
  - Flooding can still occur due to downstream rainfall
  - Ability to reduce downstream stages diminishes as you move downstream due to increased travel times and uncontrolled drainage area

HYDROPOWER


Gavins Point
Fort Randall
Big Bend
Oahe
Garrison
Fort Peck
Forecast
BILLION kWh
0
2
4
6
8
10
12
14
16
54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10 12 14 16 18 20 22
YEARS

NAVIGATION

- 2022 – Reduced flow support – minimum service to 500 cfs above minimum service
- 2023 – March 15 storage check
  - Minimum service for lower quartile and lower decile runoff
  - Slightly above minimum service for median runoff
- 2023 – July 1 storage check
  - Full service(+), 10-day extension for upper quartile and upper decile runoff
  - Intermediate flow support median runoff (1,700 cfs below full service)
  - Minimum service and shortened seasons for lower quartile and lower decile runoff
    - Lower quartile – 3-day shortening, lower decile – 11-day shortening

WATER SUPPLY – WATER QUALITY
IRRIGATION – RECREATION

- 2022
  - Below average elevations and releases
  - Water supply intakes, recreation areas, irrigation and marinas
  - Gavins Point winter releases of 12,000 cfs

- 2023
  - Some access issues may be expected depending on runoff
  - Gavins Point winter releases of 12,000 cfs with median runoff

FISH AND WILDLIFE

- Steady to rising pool levels at upper three reservoirs during forage fish spawn
  - Favor Fort Peck and Oahe if runoff not sufficient
- Minimize periods of zero releases at Fort Randall, to the extent possible
- Coldwater habitat will be monitored

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…

Pallid Sturgeon
Listed “Endangered” 1990

Piping Plover
Listed “Threatened” 1986

THREATENED AND ENDANGERED SPECIES
PIPING PLOVER

- 2022
  - ➢Highest count of adult piping plovers in 30 years of monitoring
  - ➢Nest success high
  - ➢Productivity down from 2021 (main decrease at Lake Sakakawea)
- 2023
  - ➢Gavins Point releases
    - ❖ Steady release – flow to target
    - ❖ Daily release cycle
  - ➢Intra-day peaking patterns – Garrison & Fort Randall
  - ➢Measures to minimize take

THREATENED AND ENDANGERED SPECIES
PALLID STURGEON

Fort Peck Dam test release EIS Record of Decision signed Nov. 2021

- Identifies and compares alternative test releases from Fort Peck
- Purpose of test flows is to evaluate the potential for achieving pallid sturgeon spawning and recruitment on the upper Missouri River
- Test flows will not be implemented in 2023 mainly due to the current low reservoir level

SUMMARY

- Water conservation measures continue
- All designated flood storage (16.3 MAF) available to start 2023 runoff season + more than 9 MAF of conservation storage
- Will closely monitor mountain and plains snowpack accumulation this winter
- Service level for 2023 navigation season likely to be below full service, possibly minimum service

THANK YOU!

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Email: Missouri.Water.Management@usace.army.mil

Website: www.nwd-mr.usace.army.mil/rcc/

nwd.usace.army.mil/MRWM

Search: Corps Missouri River on Google

QUESTIONS ?

US Army Corps of Engineers
Northwestern Division

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