

# MISSOURI RIVER BASIN WATER MANAGEMENT OVERVIEW

MARCH 10, 2020

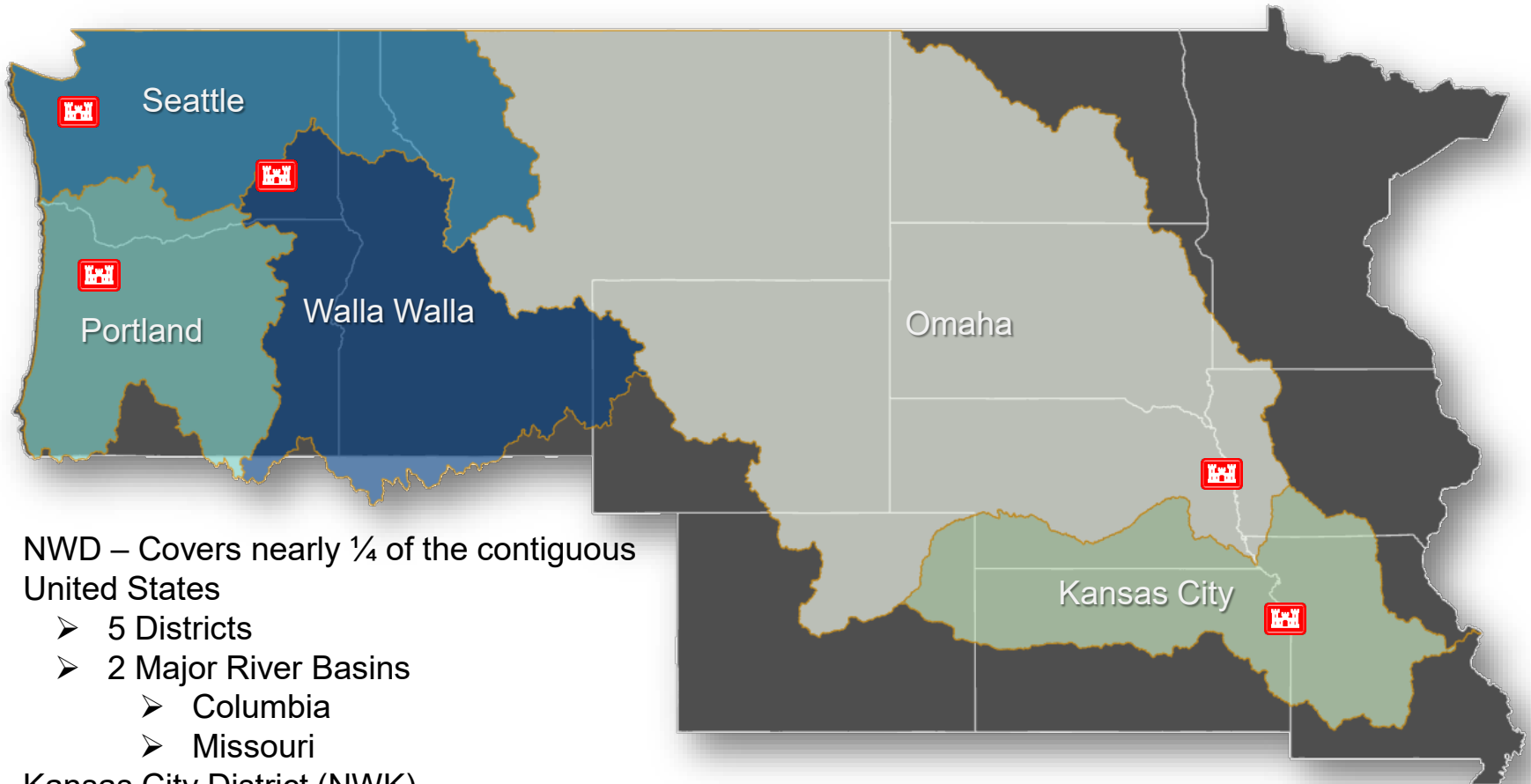
ERIC SHUMATE, P.E.  
HYDROLOGIC ENGINEERING  
KANSAS CITY DISTRICT



US Army Corps  
of Engineers®



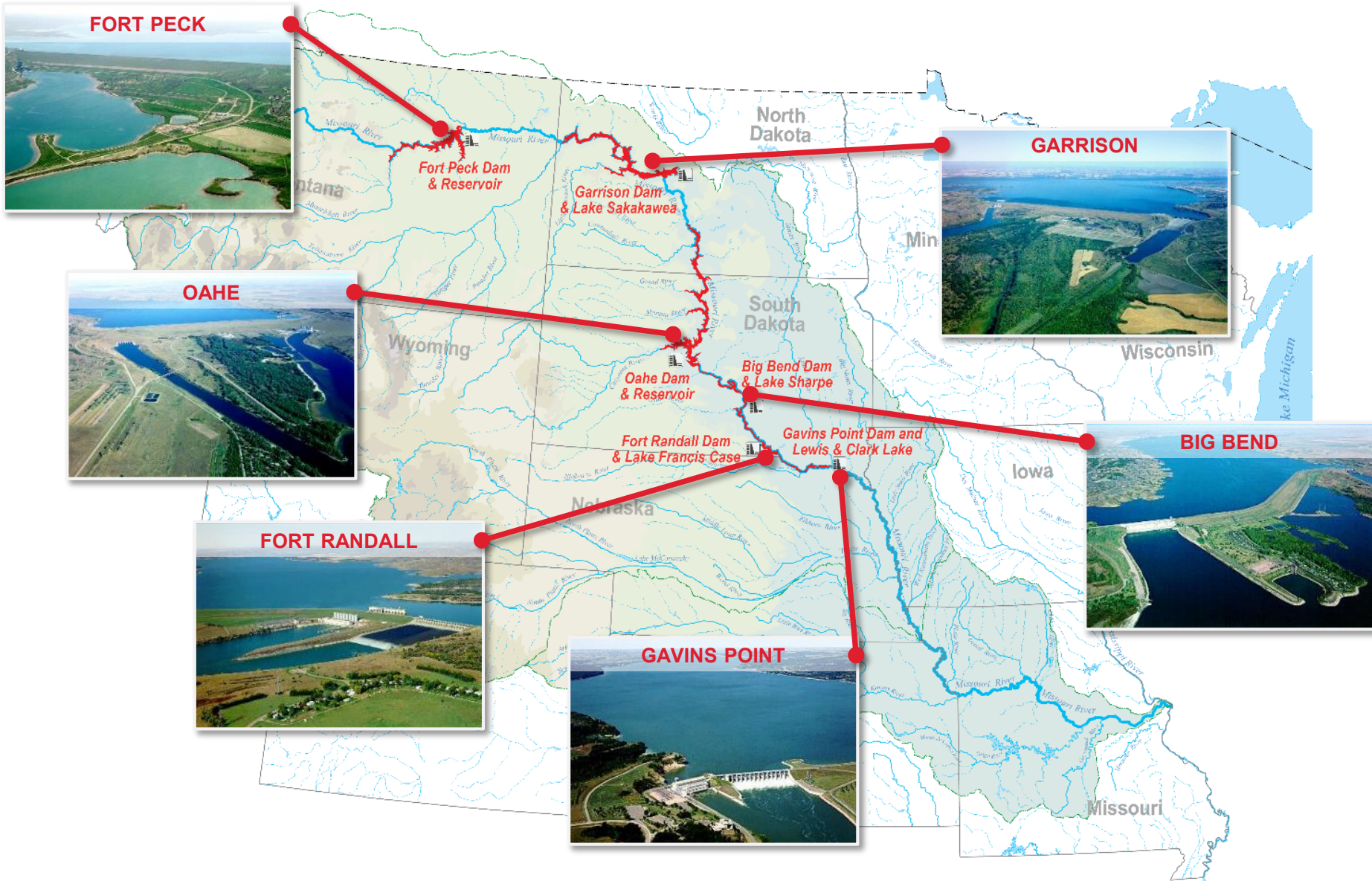
# NORTHWESTERN DIVISION KANSAS CITY DISTRICT



- NWD – Covers nearly ¼ of the contiguous United States
  - 5 Districts
  - 2 Major River Basins
    - Columbia
    - Missouri
- Kansas City District (NWK)
  - Lower Missouri and Kansas River Basin
  - 18 Reservoirs (Corps Owned/Operated)
  - ~1500 miles of levees systems



# MISSOURI RIVER MAINSTEM RESERVOIR SYSTEM





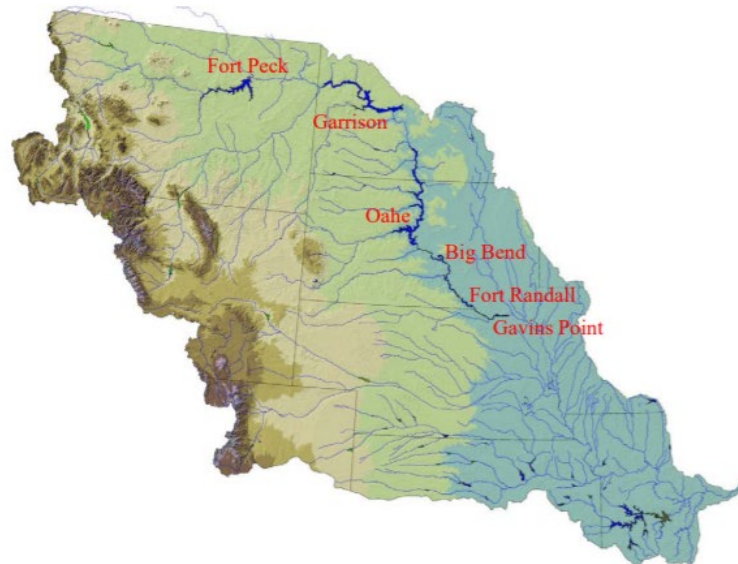
# MASTER MANUAL



**US Army Corps  
of Engineers**®  
Northwestern Division



## Missouri River Mainstem Reservoir System Master Water Control Manual Missouri River Basin



Missouri River Basin Water Management Division  
U.S. Army Corps of Engineers  
Northwestern Division – Missouri River Basin  
Omaha, Nebraska

November 2018



# 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:** Storage and release decisions designed significantly around **Flood Control, Navigation & Water Supply** purposes
- **Authorized Purposes:**



Flood Control



Navigation



Hydropower



Water Supply



Fish & Wildlife



Irrigation



Water Quality Control

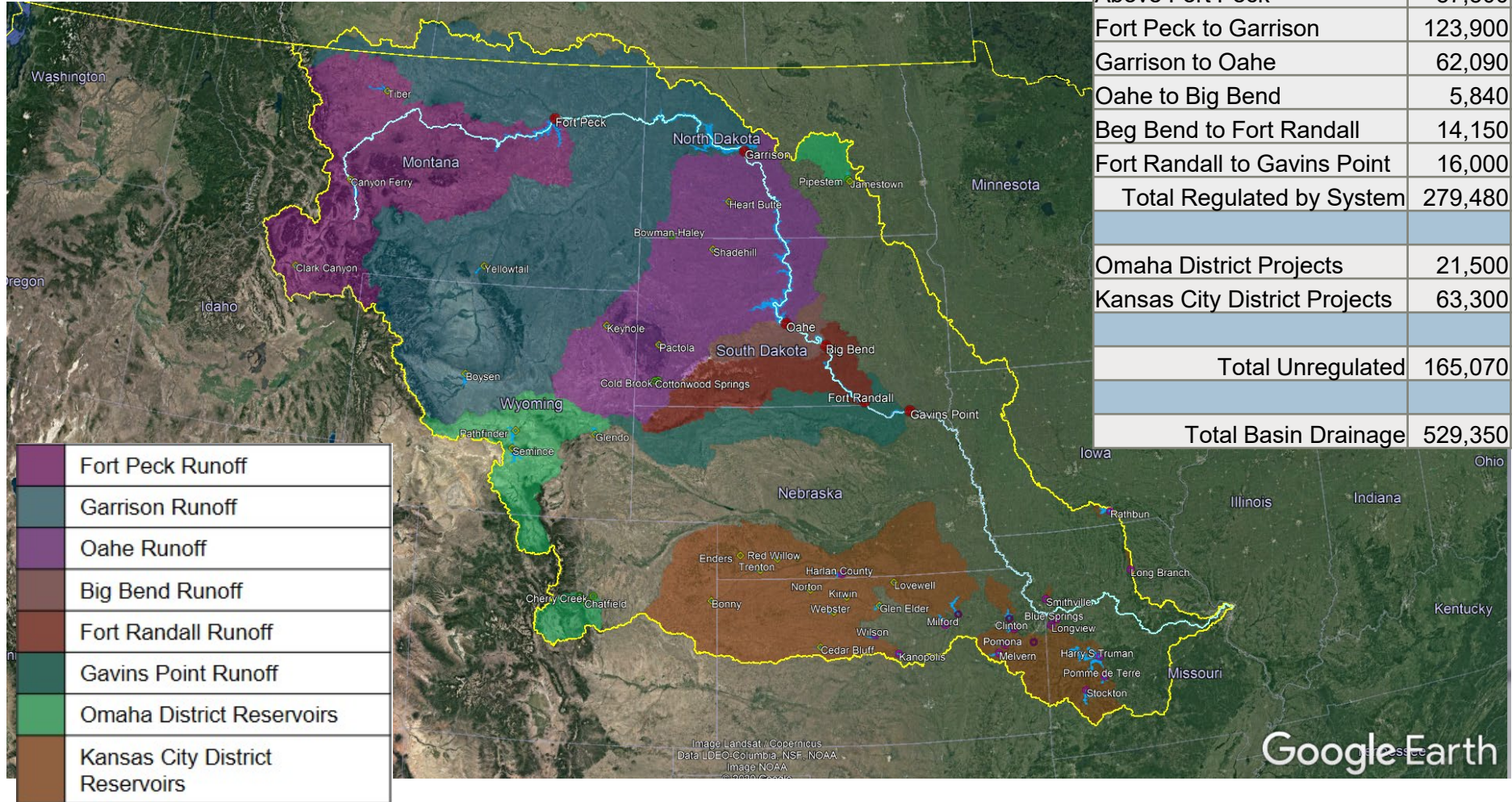


Recreation

- **Federal Laws:** The Corps complies with all federal laws.



# MISSOURI RIVER BASIN REGULATED WATERSHEDS



	Fort Peck Runoff
	Garrison Runoff
	Oahe Runoff
	Big Bend Runoff
	Fort Randall Runoff
	Gavins Point Runoff
	Omaha District Reservoirs
	Kansas City District Reservoirs

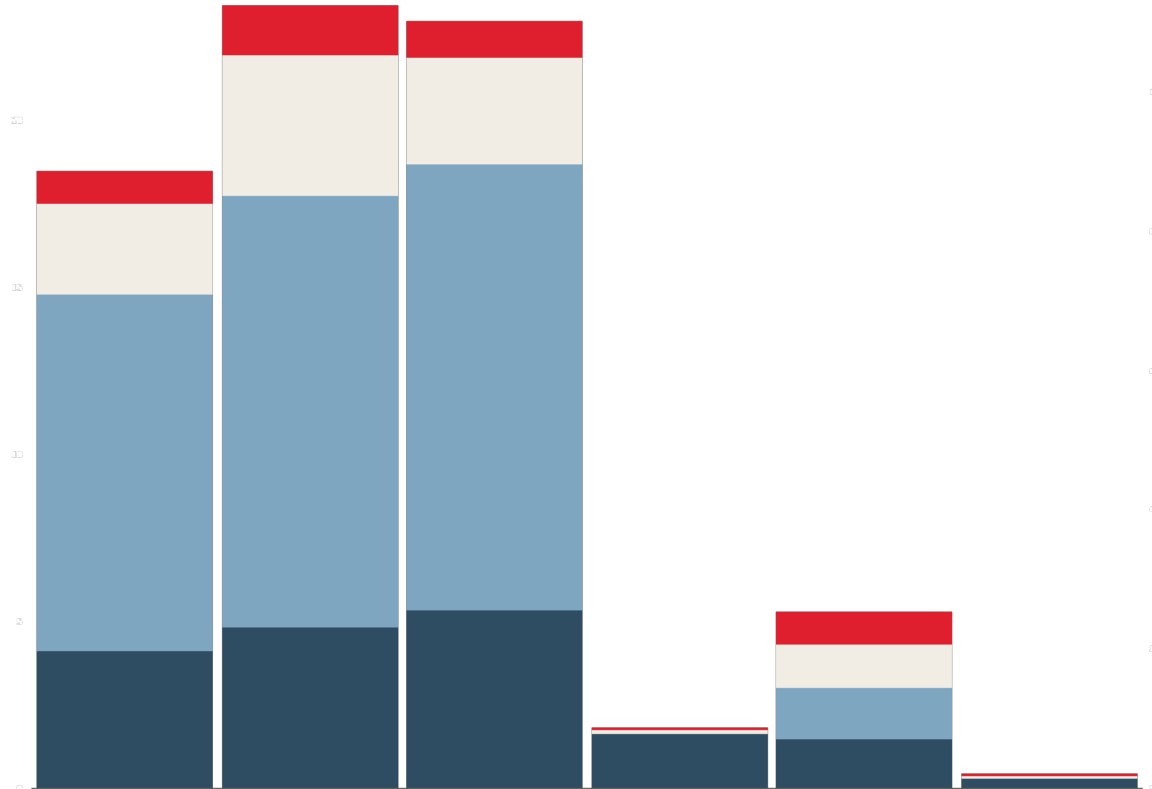
Reach	Drainage Area (mi <sup>2</sup> )
Above Fort Peck	57,500
Fort Peck to Garrison	123,900
Garrison to Oahe	62,090
Oahe to Big Bend	5,840
Beg Bend to Fort Randall	14,150
Fort Randall to Gavins Point	16,000
<b>Total Regulated by System</b>	<b>279,480</b>
Omaha District Projects	21,500
Kansas City District Projects	63,300
<b>Total Unregulated</b>	<b>165,070</b>
<b>Total Basin Drainage</b>	<b>529,350</b>

Image Landsat / Copernicus  
 Data LDEO-Columbia NSF, NOAA  
 Image NOAA  
 ©2020 Google





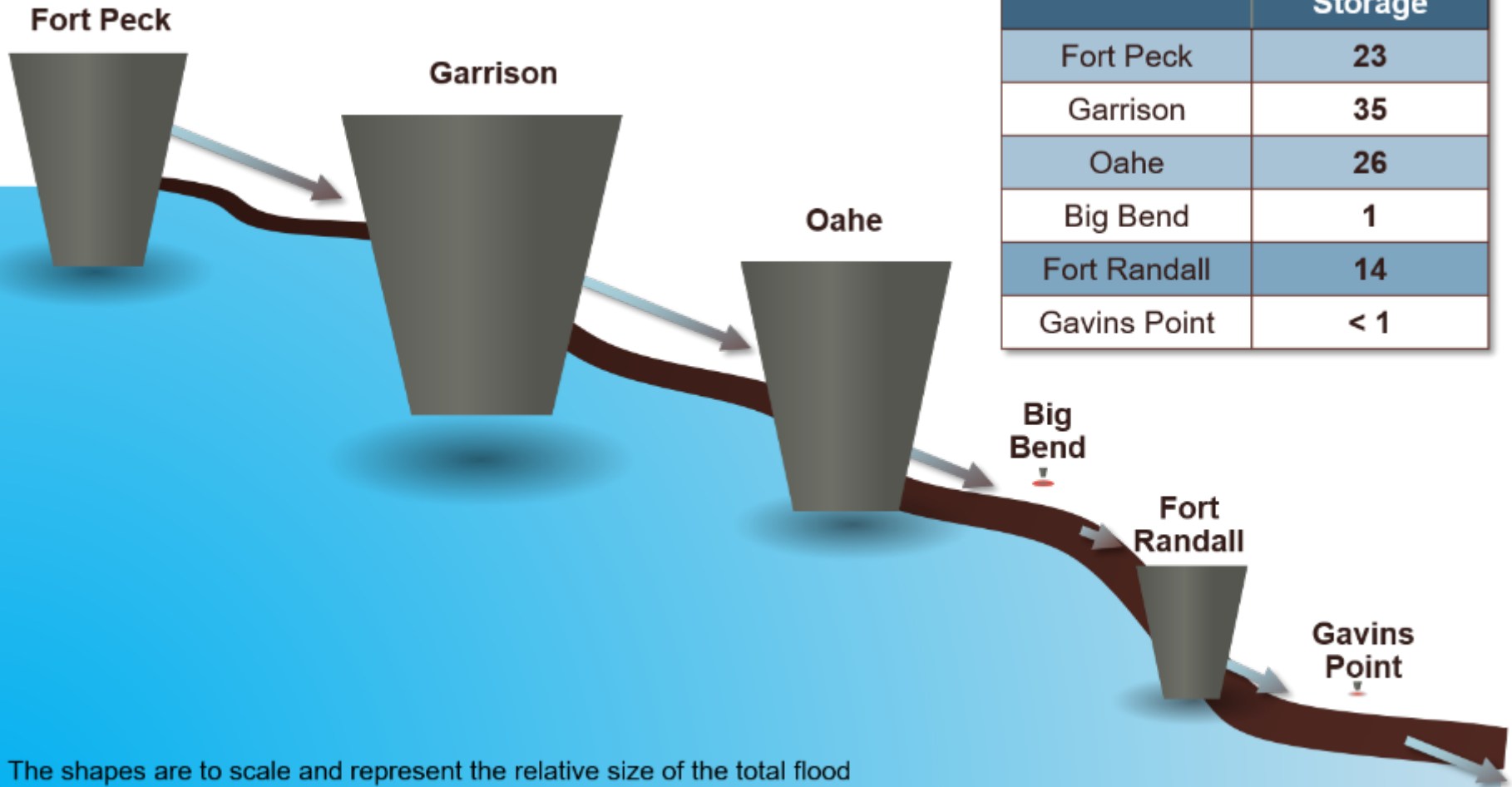
# MAINSTEM PROJECTS - STORAGE



	Fort Peck	Garrison	Oahe	Big Bend	Fort Randall	Gavins Point
■ Exclusive Flood	0.971	1.495	1.107	0.061	0.986	0.054
■ Annual Flood	2.704	4.211	3.208	0.118	1.306	0.079
■ Carryover	10.7	12.951	13.353		1.532	
■ Permanent	4.088	4.794	5.315	1.631	1.469	0.295
Gross Storage in MAF	18.463	23.451	22.983	1.81	5.293	0.428
72.4 MAF System Storage	25%	32%	31%	3%	8%	1%
Accumulative %	25	57	88	91	99	100



# MISSOURI RIVER MAINSTEM RESERVOIR SYSTEM FLOOD CONTROL STORAGE

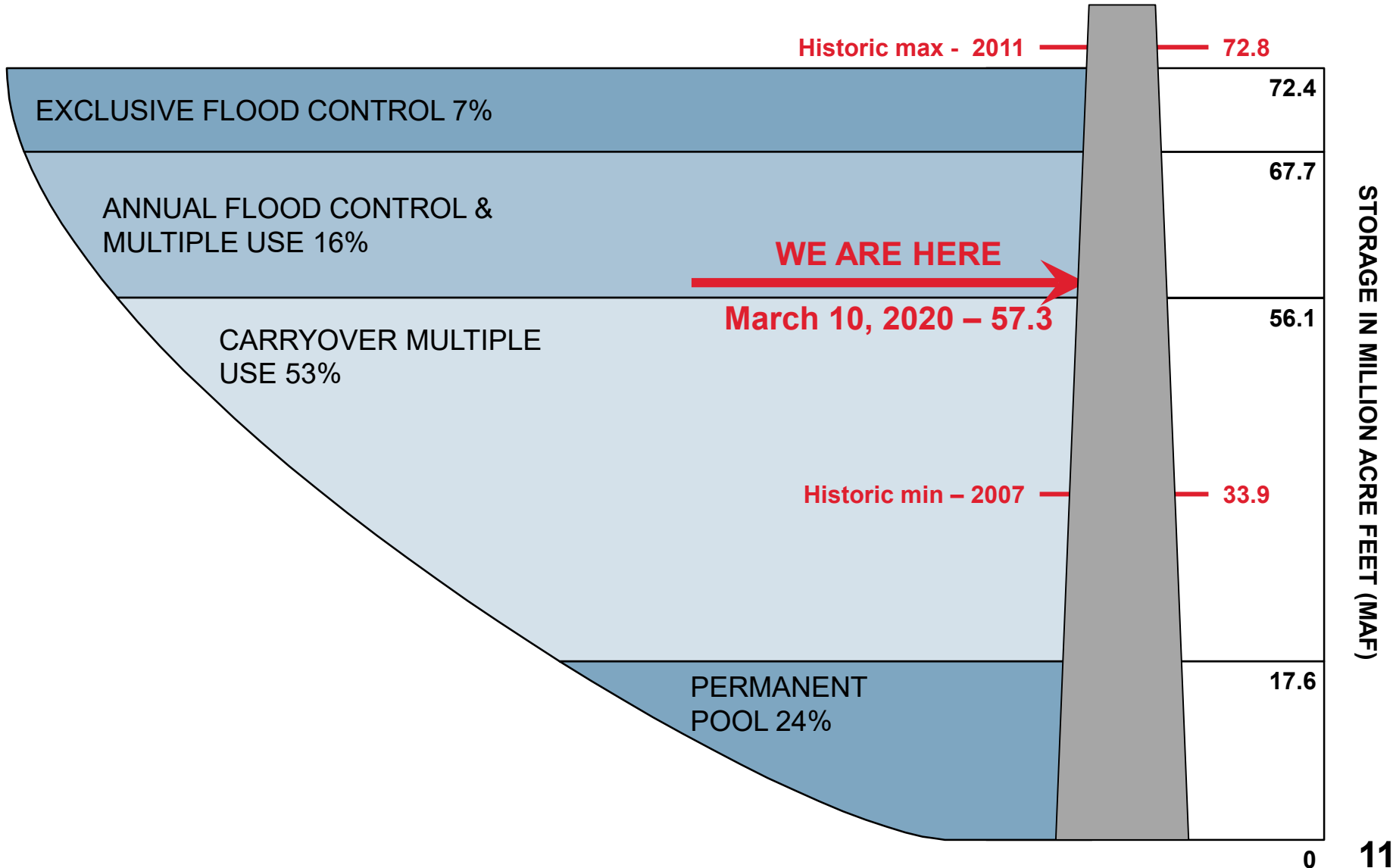


The shapes are to scale and represent the relative size of the total flood control storage (annual + exclusive) at the six mainstem projects.





# MISSOURI RIVER MAINSTEM SYSTEM STORAGE ZONES AND ALLOCATIONS





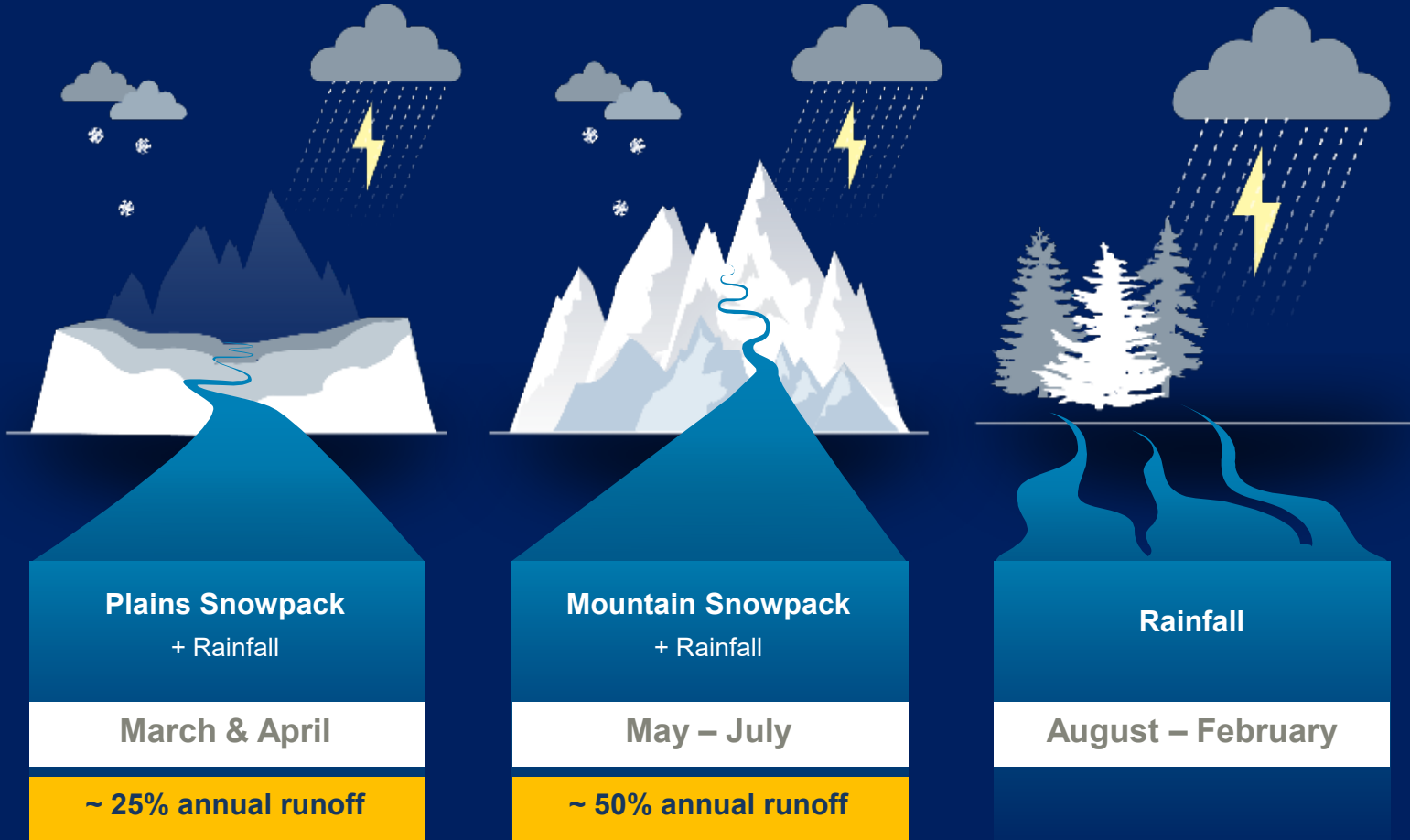
## CURRENT CONDITIONS AND 2020 OUTLOOK



# MISSOURI RIVER BASIN – RUNOFF ABOVE SIOUX CITY, IA



**Average Annual Runoff** ~ 25.3 million acre-feet  
**March Forecasted 2020 Runoff** ~ 36.9 million acre-feet



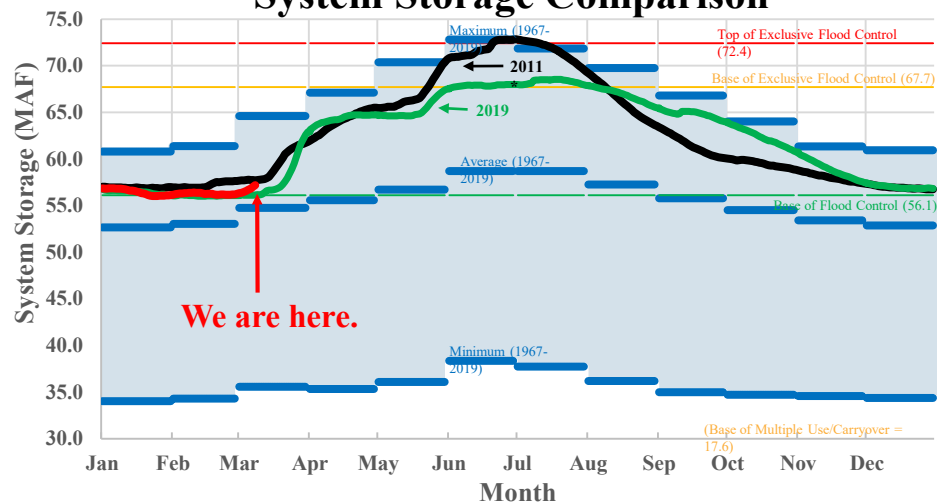
# Missouri River Basin – Update – 10 March 2020

## Mainstem Reservoir Status:

- ❖ System storage is 57.3 MAF; 15.1 MAF of flood control storage is available. Runoff from plains snowmelt has begun entering the System, and we expect it to continue over the next weeks.
- ❖ The majority of the remaining plains snowpack is in eastern and central North Dakota (lower right quadrant).
- ❖ Mountain snowpack is slightly above average.
- ❖ Public meetings are scheduled throughout the Basin April 6-14 ([click here](#)).
- ❖ Refer to the 3-Week Forecast ([click here](#)) for the most up-to-date System information – pool levels, inflows and releases.
- ❖ The Gavins Point release is currently 35,000 cfs, about twice average for this time of year. The schedule and forecasted Missouri River flows and stages can be found here:

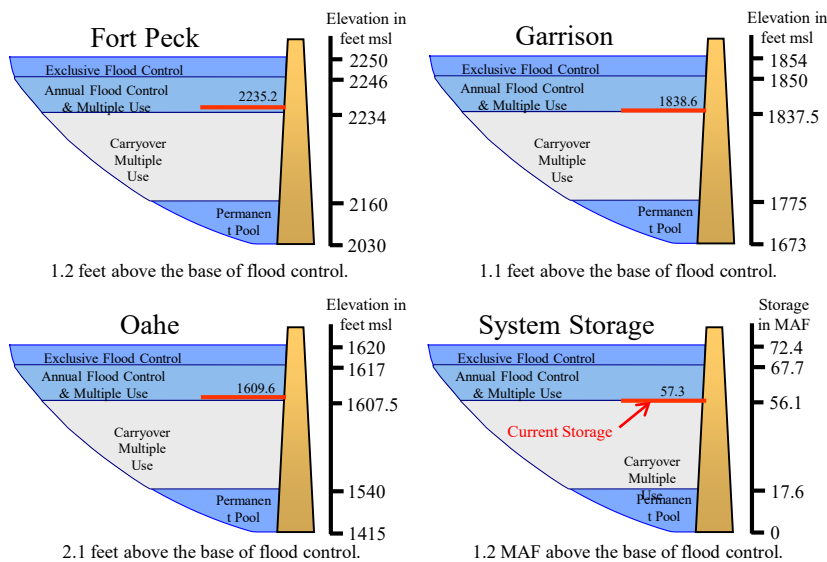
[Click Here](#) for Missouri River releases, flows & stages

## System Storage Comparison



\*In January 2011, the Base of Flood Control was 56.8 MAF, and the Top of Exclusive Flood Control was 73.1 MAF.

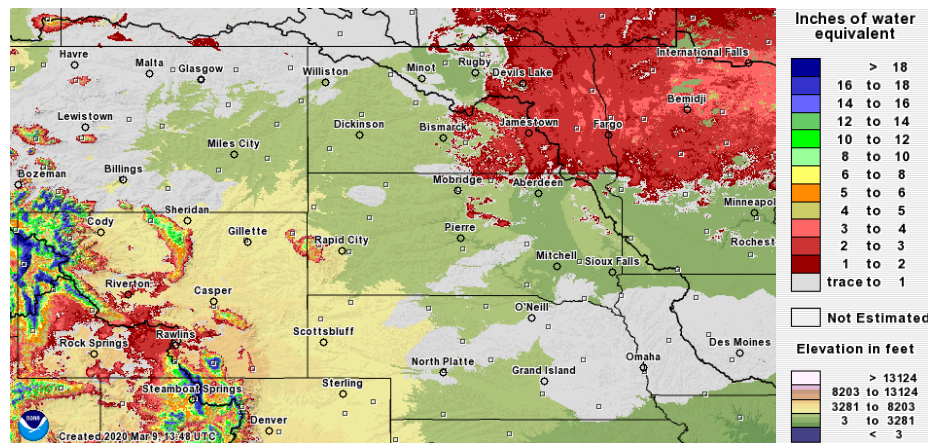
## Current Reservoir Levels



[Click Here](#) for Latest 3-Week Forecast

[Click Here](#) for Comparison Plots

## Plains Snowpack March 10, 2020



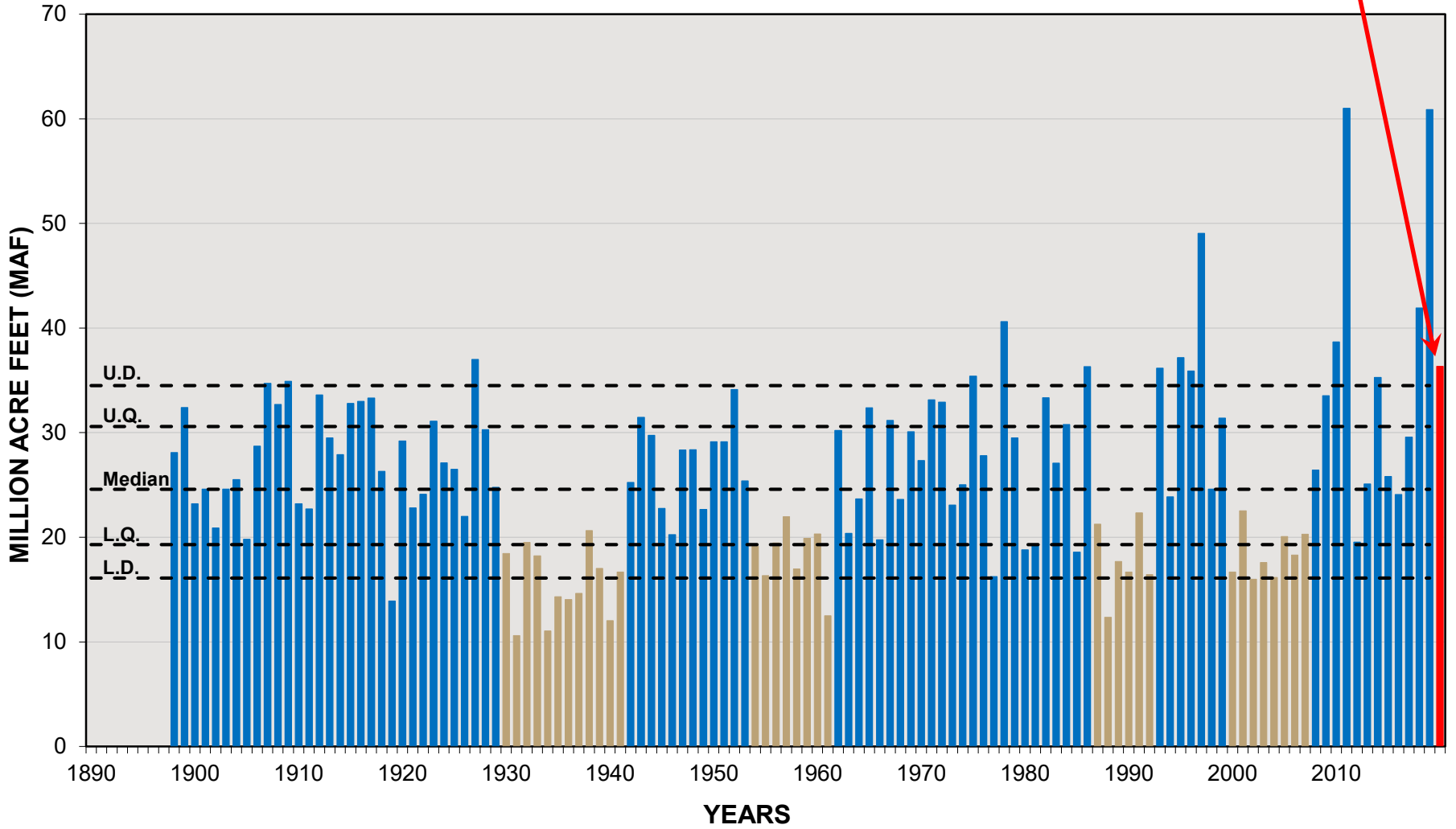
\*Source: <https://www.nohrsc.noaa.gov>



# ANNUAL RUNOFF ABOVE SIOUX CITY, IA



2020  
Forecasted





# 2020 SYSTEM OUTLOOK



- 2020 Upper Basin Runoff Forecast
  - **36.9 MAF (March 1<sup>st</sup>)**
  - If Realized – 9<sup>th</sup> Highest on Record
  - Based on Current Conditions, Existing Trend, and Outlooks
  - Weighted Toward the Lower System Projects
- Runoff Forecast is not a Flood Forecast
  - Time to Plan not Panic
- Will Remain Aggressive



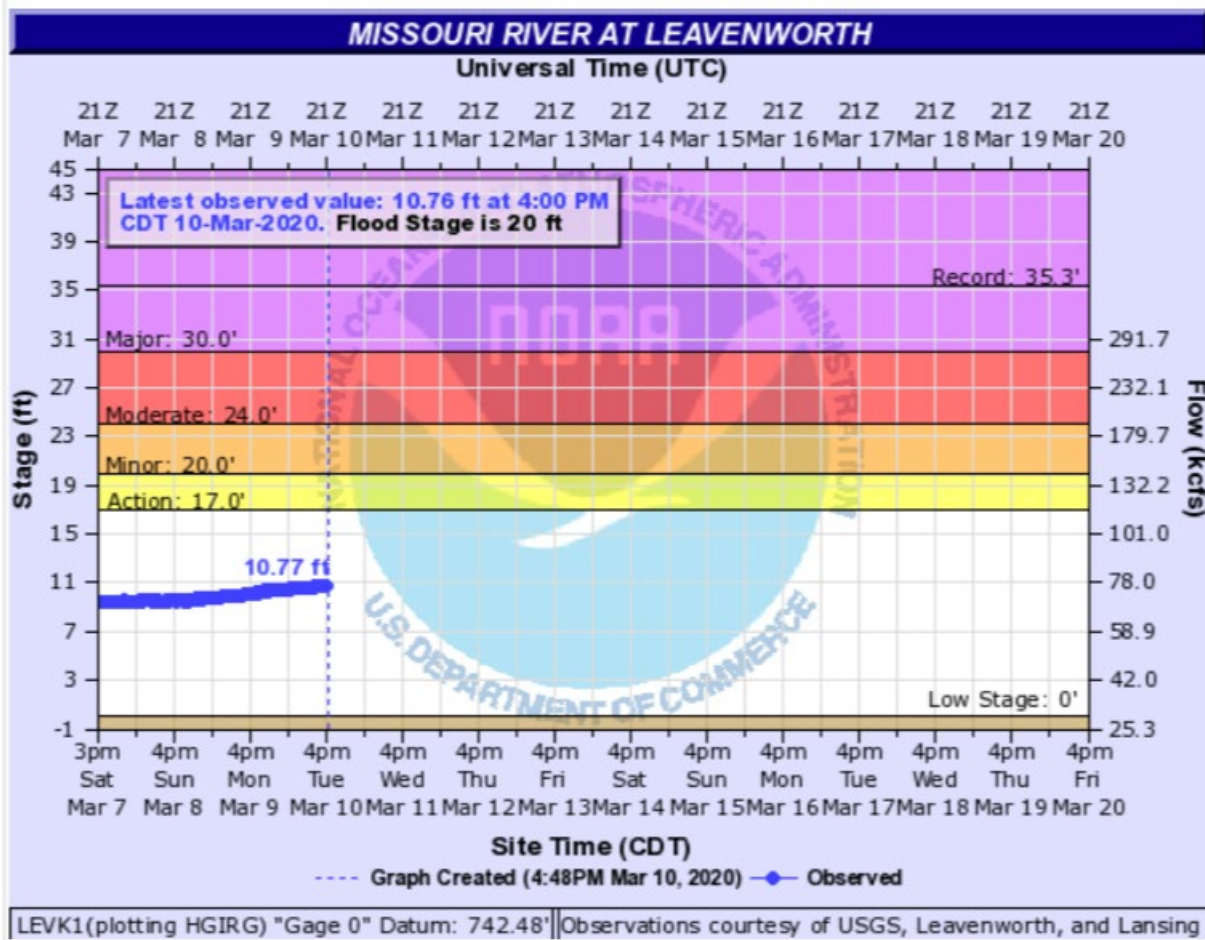
# FORECASTED SYSTEM RELEASES

(February 1, 2020 Forecast)



Month	Average Monthly Releases (kcfs)		
	Basic	Lower Basic	Upper Basic
April	33.0	26.7	48.2
July	37.0	31.6	66.0
August	42.5	31.8	66.0
October	42.5	32.0	59.0

- Full service navigation support for all scenarios.



### Historic Crests

- (1) 35.34 ft on 07/28/1993
- (2) 31.30 ft on 03/23/2019 (P)
- (3) 30.80 ft on 06/30/2011
- (4) 28.66 ft on 06/01/2019
- (5) 26.82 ft on 05/09/2007

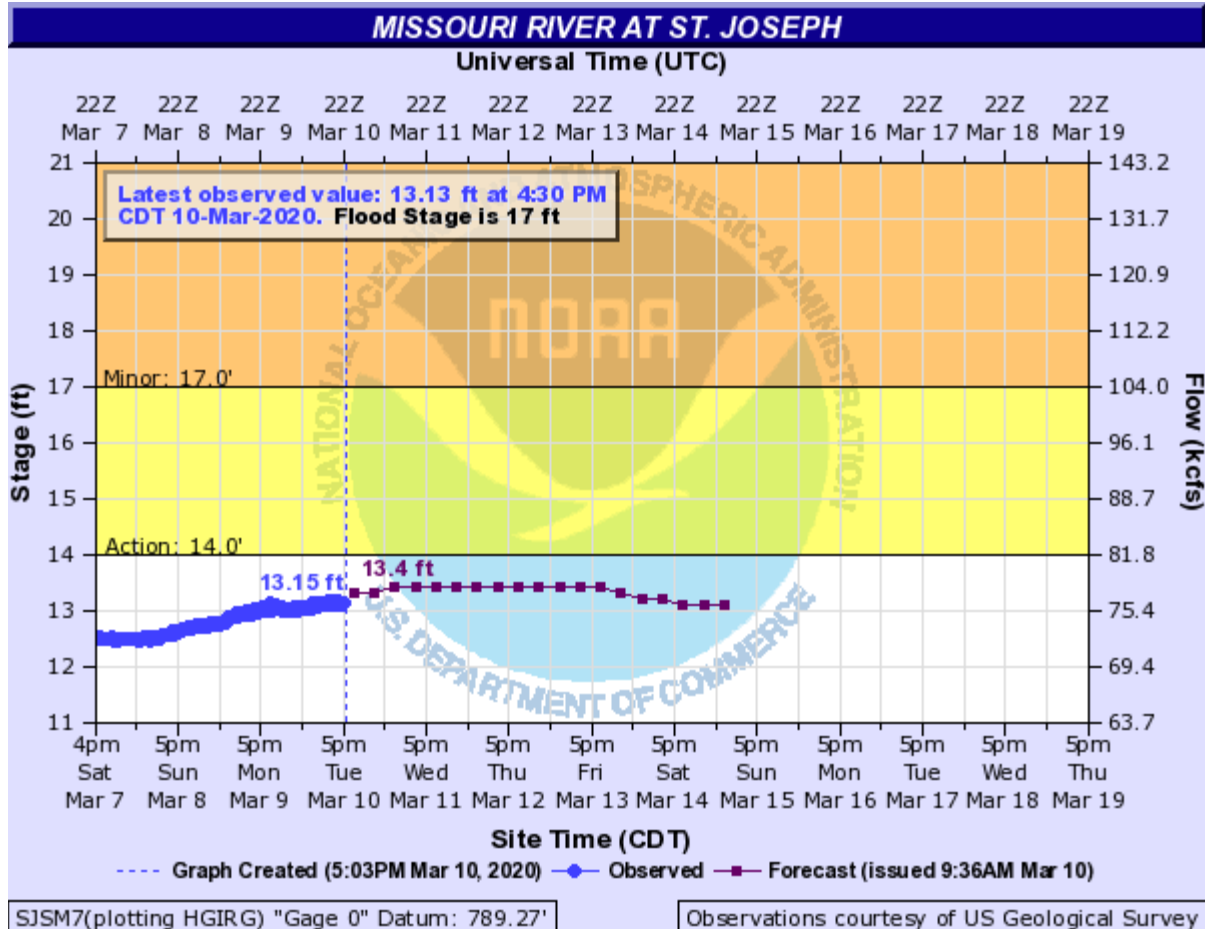
#### Flood Impacts & Photos

Collapse

If you notice any errors in the below information, please contact our Webmaster

- 25.15 Water overtops the levee north of Fort Leavenworth.
- 23.4 The Hildebrandt Island north of Fort Leavenworth begins to flood and families in this area need to evacuate.
- 22.3 Water enters Riverfront Park in Leavenworth. In addition, 2nd Street at the waste water treatment plant is closed due to high water. Persons should vacate the park to avoid the loss of life and property. ~165 kcs
- 20 Lowland flooding occurs along the east and west banks of the river.







# COMMUNICATIONS



- Monthly Stakeholder Calls
  - January through July
  - Federal, State and Local Governments & Media
  - Over 900 Invitees
- Spring and Fall Public Meetings
  - April 8<sup>th</sup>,  
Paradise Point Golf Course  
18212 Golf Course Rd.  
Smithville, Missouri  
11 a.m. CT
- Missouri River Basin Water Management website:  
<http://www.nwd-mr.usace.army.mil/rcc/current.html>
- Weekly Update (usually on Tuesday)



# QUESTIONS





# CONTACT INFORMATION



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