Drought Plan Development During a Drought:

Lessons Quickly Learned

Quick Background

2012 – Drought in Iowa: interagency coordination in response to conditions

2018 – 2019 Very wet years in Iowa

2020: DRY

2021: DRY

2022: DRY

2023: DRY

Recent Years

2 years

2018-2019: 86.71“ wettest 24 month period ever
2020: 29.28“ 34th driest (bottom third)
2021: 30.84“ 50th driest (middle)
2022: 27.33“ 20th driest (bottom third)
2023: 26.82“ 19th driest

2021–2023: 84.98” 11th driest 36-month period ever

3 years

Meanwhile . . .

Fall 2021 meeting at the State Emergency Operations Center

Discussed water supply
Ongoing drought concerns
Multi-agency

During that meeting . . . “should Iowa have a drought plan?”

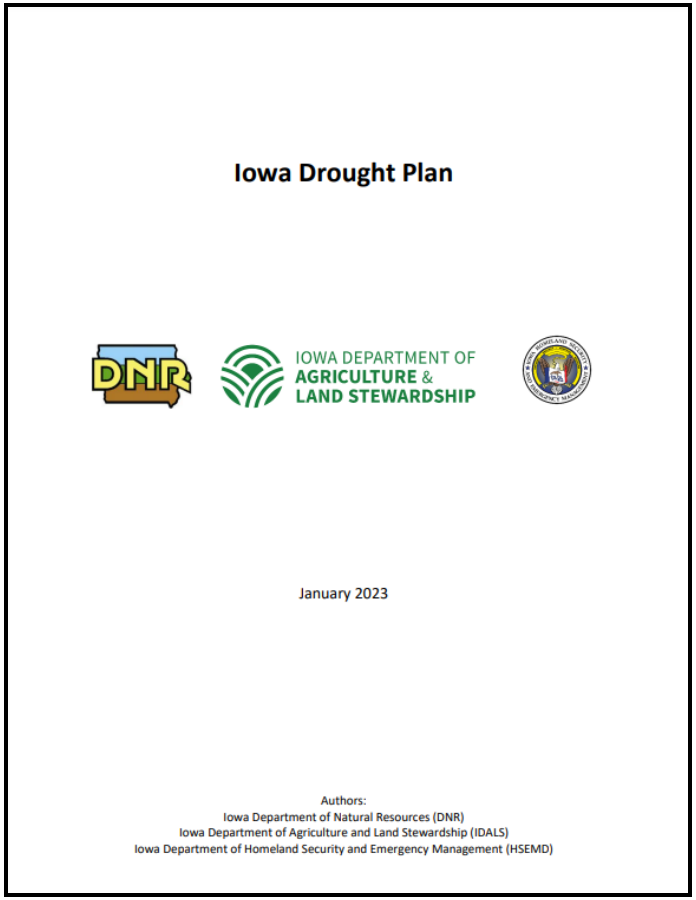
Iowa Homeland Security and Emergency Management (HSEMD)

Iowa Department of Agriculture and Land Stewardship (IDALS) – State Climatologist

Iowa Department of Natural Resources (DNR)

As a result – Iowa Drought Plan was written

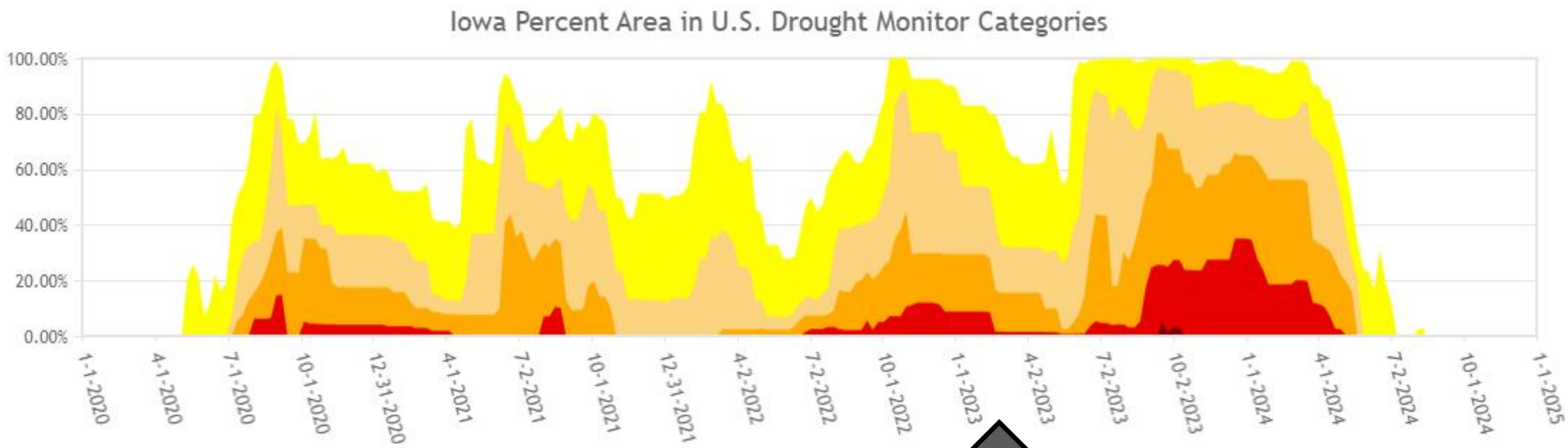
- Started in October 2021
- Completed and endorsed in January 2023



The idea was this . . .

Let's start using the plan in 2023 – which surely cannot be another drought year . . .

Instead:



From the U.S. Drought Monitor website, https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx, 8-15-2024

Implementation of the State of Iowa's first ever drought plan during what proved to be a very difficult drought period.

For example: West Lake – sole water supply for the City of Osceola – reached 290 day supply in fall 2023

So . . . what did we learn?

Lesson #1:

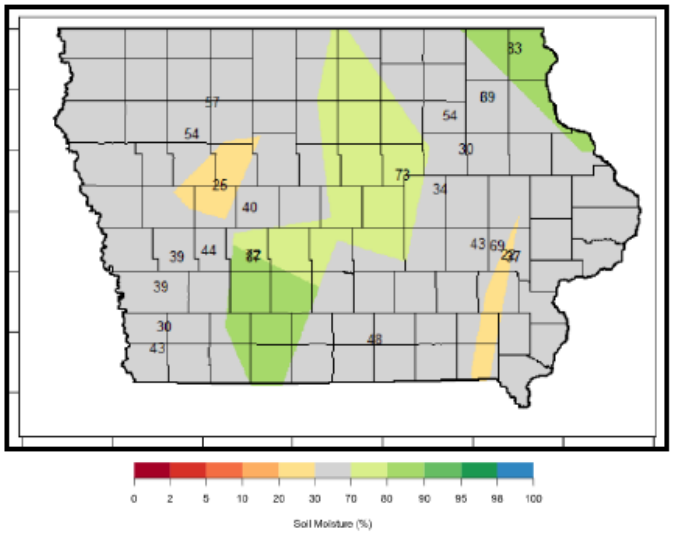
Better late than never.

Lesson #2:

We have a good plan, but areas needing improvement showed up quickly.

NOVEMBER SOIL MOISTURE

Soil moisture conditions showed degradation in November, with overall soil moisture remaining low in much of the state. Drier soil conditions exist in western Iowa, with conditions moving from wet to normal in south and central Iowa over the past month.



Soil moisture and shallow groundwater data is lacking, and was really needed during the drought.

Lesson #3:

Having a data-driven plan and data-driven drought criteria is important in communication during a drought.

Date: April 4, 2024

OVERALL RATING	SSI-30	SSI-365			
1 ↑	*+-0.62 ↓*	*-0.60 ↓*	77% No Designation 25% D0 for 4 weeks	Mar: 2.34 143% 90 Day: 3.75 102%	3 months: +0.7 6 months: +1.0
2 ↑	*-1.18 ↓*	*-1.11 ↓*	Full D0 for 4 weeks 60% D1 for 4 weeks 20% D2 for 4 weeks <5% D3 for 4 weeks	Mar: 3.01 154% 90 Day: 4.48 116%	3 months: +0.6 6 months: +0.5
3 ↑	*-2.14 ↓*	*-0.84 ↓*	97% D0 for 4 weeks 82% D1 for 4 weeks 75% D2 for 4 weeks 40% D3 for 4 weeks	Mar: 2.28 105% 90 Day: 4.62 100%	3 months: +0.4 6 months: +0.2
4 ↑	*-1.34 ↓*	*-1.52 ↓*	Full D0 4 weeks 88% D1 for 4 weeks <5% D2 for 4 weeks	Mar: 2.47 127% 90 Day: 4.17 105%	3 months: +0.1 6 months: -0.3
5 ↑	*-1.91 ↓*	*-1.64 ↓*	95% D0 4 weeks 84% D1 4 weeks 50% D2 4 weeks 6% D3 for 4 weeks	Mar: 2.43 111% 90 Day: 5.17 109%	3 months: +0.6 6 months: +0.2

	Streamflow - SSI	USDM	Precipitation	SPI
Normal	USGS rated as normal flow, or SSI above noted levels.	No designation, or D0 for three weeks or less	Greater than 75% of normal for three to six months	SPI: > -0.9
Watch	SSI-30 or SSI-365 for region between <-1-<-1.5	D0 (Four weeks) D1 (one week)	≤ 70% of normal (three months)	-1.0 to -1.4 (three months)
Warning	SSI-30: <-1.5-<-2 SSI-365: <-1.5	D2 (Four weeks)	>51% to 60% of normal (six months)	-1.5 to -1.9 (three months)
Emergency	SSI for individual river <-2 SSI-365 <-2: Expect drought duration of year or more	D3-D4 (one week) D2 (eight weeks)	≤ 50% of normal (six months) ≤ 25-50% of (three months)	≤-1.6 (six months) ≤-2.0 (three months)

Lesson #4:

Drought may be slow to develop, but people sometimes want answers really really quickly.

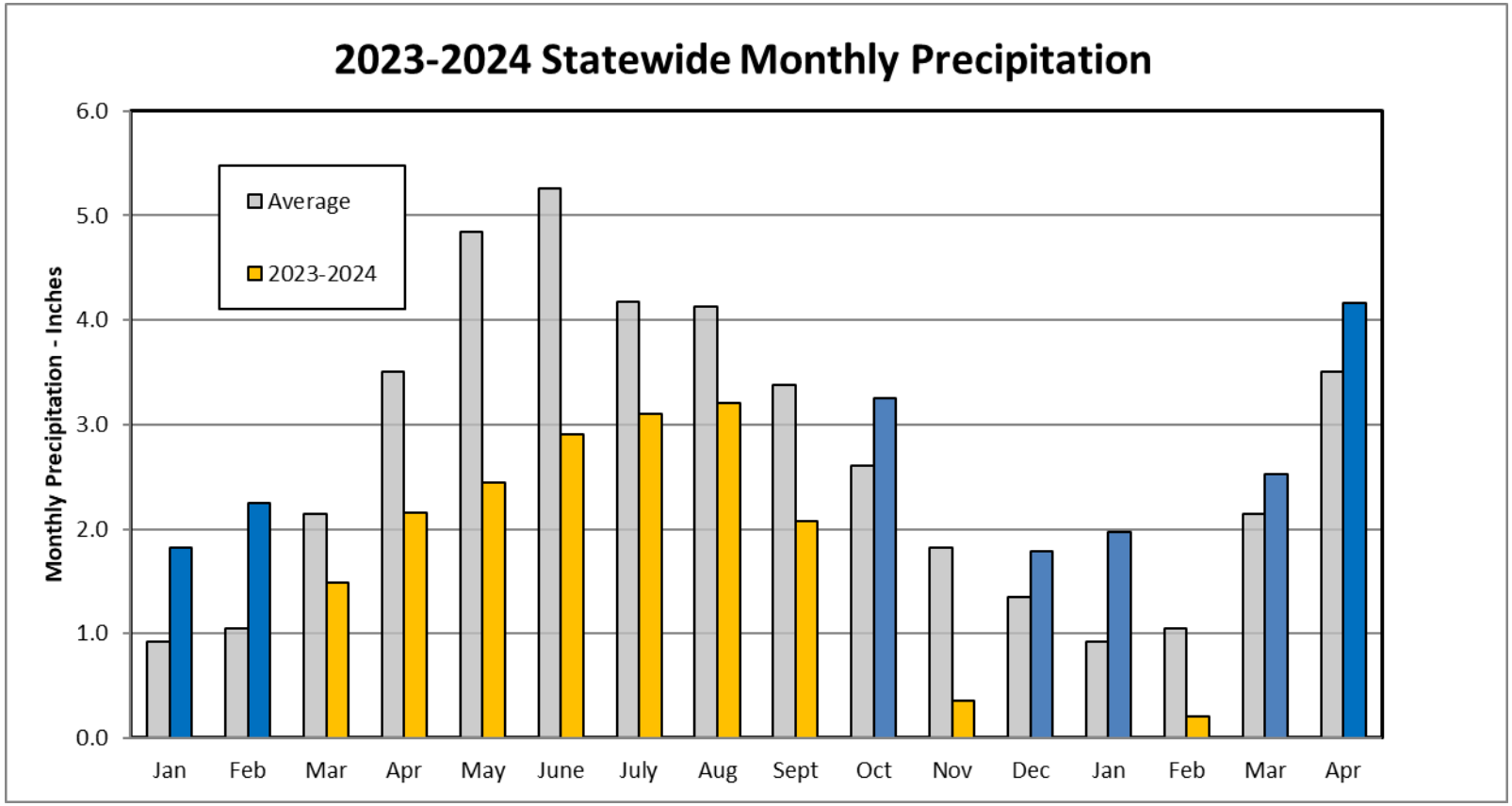
Lesson #5:

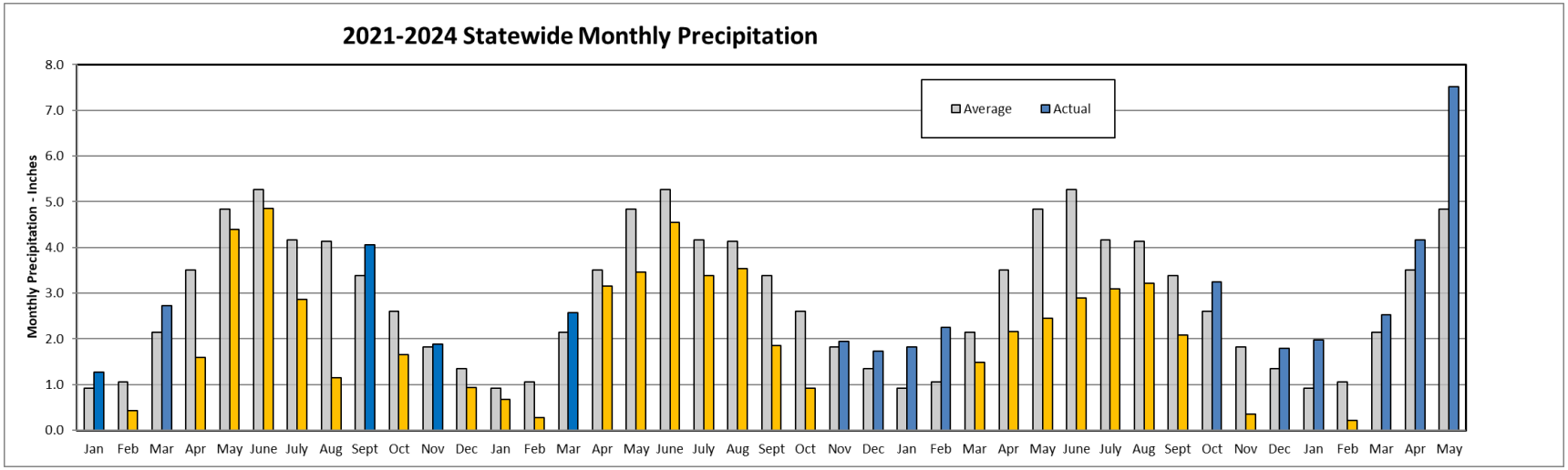
The Iowa Drought Plan was very useful in determining when the state exited drought.

Lesson #6:

Effective and consistent communication of drought conditions was aided by our drought plan – especially across state agencies.

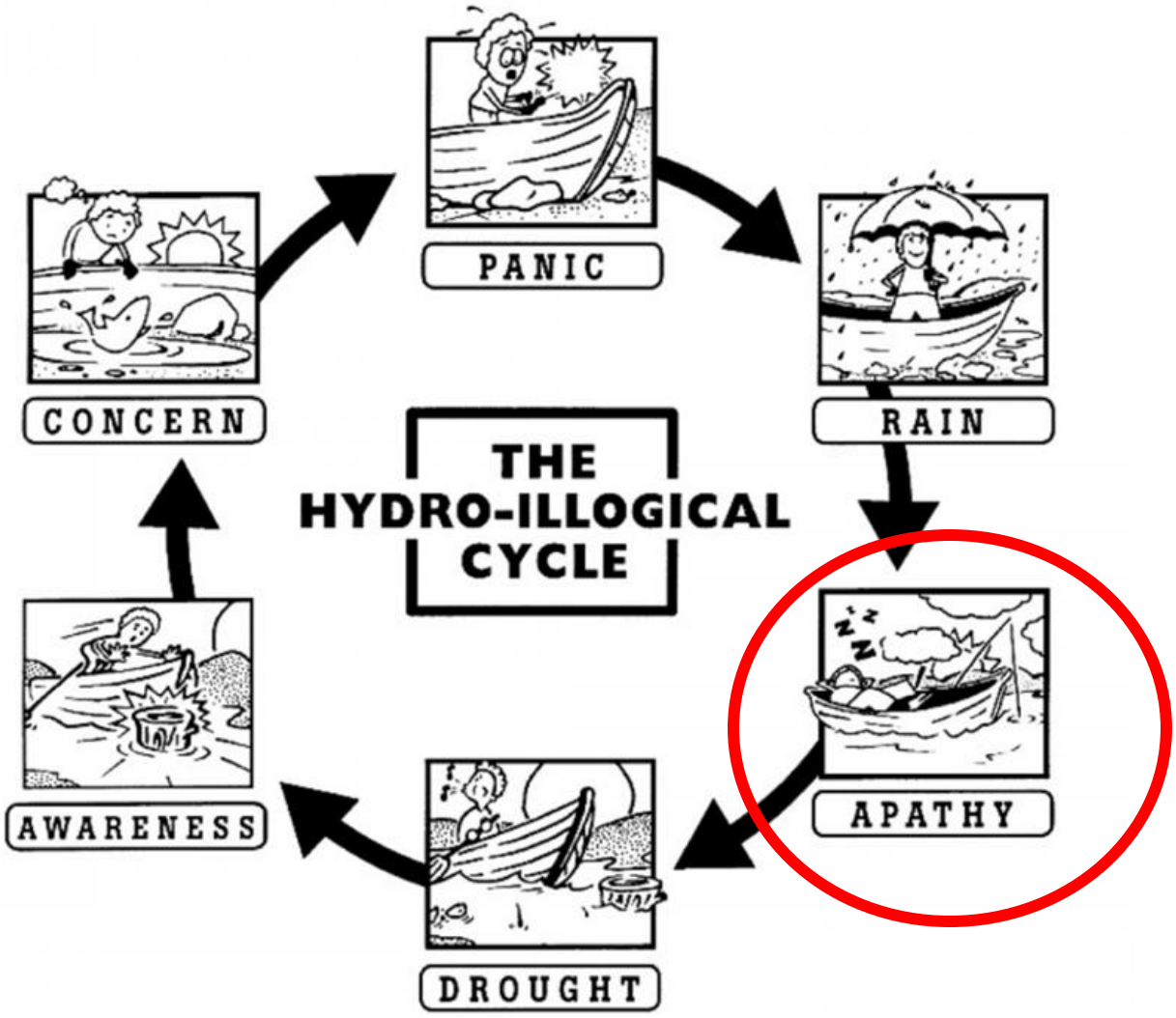
Simple graphics to illustrate complex concepts:




2021-2024 Statewide Monthly Precipitation
Monthly Precipitation - Inches
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Average
Actual
Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec Jan Feb Mar Apr May

Lesson #7:

Apathy is very quick!


THE HYDRO-ILLOGICAL CYCLE
PANIC
RAIN
APATHY
DROUGHT
AWARENESS
CONCERN

During the drought – what did you wish you had done?

Another drought will be here sometime – maybe sooner, maybe later . . .

Start working on your resiliency plans for that inevitable time . . .

Conclusion:

We are better off for having a drought plan.

We learned a great deal in its first time use.

We will get better as time goes by.

Partners are essential – state, federal, others.

Questions
Comments
Ideas

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