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DEPARTMENT OF
WATER RESOURCES

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*IN THE MATTER OF BINGHAM GROUND WATER DISTRICT'S MITIGATION PLAN FOR THE SURFACE WATER COALITION

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

CM-MP-2024-001

~~IN THE MATTER OF THE DISTRIBUTION OF WATER TO VARIOUS WATER RIGHTS HELD BY AND FOR THE BENEFIT OF A&B IRRIGATION DISTRICT, AMERICAN FALLS RESERVOIR DISTRICT #2, BURLEY IRRIGATION DISTRICT, MILNER IRRIGATION DISTRICT, MINIDOKA IRRIGATION DISTRICT, NORTH SIDE CANAL COMPANY, AND TWIN FALLS CANAL COMPANY~~ *

~~IN THE MATTER OF IGWA'S SETTLEMENT AGREEMENT MITIGATION PLAN~~

Docket No. ~~CM-MP-2023-___~~
~~Docket No. CM-DC-2010-001~~

PETITION FOR APPROVAL OF BINGHAM GROUND WATER DISTRICT'S MITIGATION PLAN FOR THE SURFACE WATER COALITION

Bingham Ground Water District (hereafter "BGWD" or "District") through counsel and on behalf of its members hereby petitions the Director of the Idaho Department of Water Resources ("Department") pursuant to rules 2.14, 102, and 300 of the rules of procedure of the Department for an order approving the mitigation plan set forth below, pursuant to the rule 43 of the Rules for Conjunctive Management of Surface and Ground Water Resources.

I.
PETITIONER INFORMATION AND BENEFITTED WATER RIGHTS

a. The Name and mailing address of the party filing Mitigation Plan.

Bingham Ground Water District
PO Box 1268
Blackfoot, ID 83221

Counsel of Record:
Dylan Anderson
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P.O. BOX 35
Rexburg, ID 83440

b. Water Rights Benefitted. This Mitigation Plan intends to benefit the surface water rights held by or on behalf of Twin Falls Canal Company, North Side Canal Company, A&B Irrigation District, American Falls Reservoir District #2, Burley Irrigation District, Milner Irrigation District, and Minidoka Irrigation District, which are commonly known and hereafter referred to collectively as the Surface Water Coalition (hereafter "SWC").

II.
MITIGATION ACTIVITIES

Mitigation efforts for BGWD will consist of two major activities. The first major activity will consist of permanent groundwater-irrigated acreage reduction that will exceed the maximum benefit of a single-year transient curtailment, and give a yearly benefit equal to the curtailment needed to address the hindcasted 5-year average injury as outlined by data produced by the Department. The second major activity will be a volumetric pumping limit on groundwater rights within BGWD. This pumping limit is designed to address the water balance issues that have been identified by the state, preventing the injury established by the methodology order from increasing.

1. Permanent Acreage Reduction Plan

BGWD's Permanent Acreage Reduction Plan (Plan) allows individual groundwater right holders in the District to be administered under Idaho rules and statutes regarding the time-

priority administration of water rights and conjunctive management of surface and groundwater resources. The Conjunctive Management Rules state that, "… these rules may require mitigation ***or staged or phased curtailment*** of a junior priority use if diversion and use of water by the holder of the junior-priority water right causes material injury, even though not immediately measurable, to the holder of a senior-priority surface or groundwater right in instances where the hydrologic connection may be remote, the resource is large and no direct immediate relief would be achieved if the junior-priority water use was discontinued." IDAPA 37.03.11.20.04. Based on analysis presented by the Idaho Department of Water Resources (Department) and attached as "Exhibit A" a May 1 curtailment of all groundwater rights on the Eastern Snake Plain Aquifer (ESPA) junior to October 11, 1900, which includes roughly 940,000 acres of irrigated ag land, would result in a volume increase of only 97,700 acre-feet in the Near Blackfoot to Minidoka (SWC) reach of the Snake River from April – September of the same year. Exhibit A pg. 13-14. The small benefit of roughly 0.1 acre-foot per acre curtailed in this analysis makes a clear and convincing case that temporary curtailment does not provide "direct immediate relief" of any consequence to the holder of a senior priority right, especially when compared with the magnitude of curtailed groundwater rights. However, based on IDWR's steady state analysis, the permanent reduction of roughly 78,000 acres of groundwater irrigation would result in the same annual benefit of 97,700 acre-feet to the SWC reach gain, or about 1.2 acre-feet of benefit per acre reduced. This is a more reasonable response especially with respect to allowing for the full economic development of the State's water resources. Idaho Code § 42-226. Therefore, this plan proposes to implement a phased, permanent reduction in groundwater-irrigated acres consistent with the IDWR steady state analysis of impacts to the SWC reach gain and CM Rule 20.04.

Plan Description

The Plan will be a phased permanent reduction of groundwater-irrigated acres in the quantity prescribed under the *Sixth Final Methodology Order* to address an actual demand shortfall of 115,000 acre-feet. This demand shortfall figure was determined by taking the maximum 5-year average of the hindcast injury from 2000 through 2022, determined by the Department, shown in Table 1. By interpolating graphical data provided by IDWR this demand shortfall, under steady state response, would require a permanent curtailment of rights junior to May 1982 which would curtail roughly 90,000 groundwater irrigated acres across the ESPA.

Exhibit A pg. 13-14 This represents a 9.6% reduction from the estimated 940,000 groundwater irrigated acres junior to 1900. Within the BGWD this date would curtail 16,139 acres or 10.8% of the total District acres. An even higher curtailment than the ESPA at large.

Year	Nov Actual DS (AF)	5-Yr Avg	Year	Nov Actual DS (AF)	5-Yr Avg
2000	0		2011	0	57,813
2001	243,565		2012	139,524	27,905
2002	31,217		2013	22,588	32,422
2003	0		2014	0	32,422
2004	264,340	107,824	2015	92,246	50,872
2005	0	107,824	2016	7,853	52,442
2006	23,792	63,870	2017	0	24,537
2007	289,065	115,439	2018	10,996	22,219
2008	0	115,439	2019	0	22,219
2009	0	62,571	2020	0	3,770
2010	0	62,571	2021	190,816	40,362
			2022	276,551	95,673

Table 1-November Actual Demand Shortfall Hindcast

Plan Compliance

Reduced Acreage – Non-Use of Groundwater Rights

Groundwater right acres intentionally left unused will be known as non-use acres. Every year at least the equivalent number of acres to a May 1982 curtailment in the District will be non-use acres. A groundwater right must be non-use, meaning no unmitigated groundwater diversion, for an entire irrigation season in order to qualify as acreage reduction. *Any* unmitigated supplemental use of groundwater on a surface water conversion will fully negate the acreage reduction attributed to that groundwater right. (See Mitigation Alternatives to Acreage

Reduction) Non-use water rights will be considered active and not subject to forfeiture under the beneficial use doctrine.

Annual Report of Acreage Reduction

No later than March 15 each year non-use acres must be reported to the Water District 120 Watermaster (Watermaster) in accordance with Idaho Administrative Code 37.02.11.040.04. The report must include the water right numbers, including the non-use acres of each water right, along with a map showing the location and area of non-use. Site verification of non-use will be conducted in June and August each year including the provision of a random sampling of on-site verification with the Watermaster and other interested parties.

Penalty for Non-Compliance

If any non-use acreage is found to be out of compliance, then the deficit to the aquifer must be replaced in at least equivalent volume, on a transient response basis, during the following irrigation season.

Plan Implementation

Phase-In Period

Groundwater right curtailment will be phased-in, pursuant to Conjunctive Management, over a 5-year period starting with the 2024 irrigation season. CM Rules 20.04 & 40.01.a. Non-use acres will increase incrementally each year according to Table 2. After 2028, at least 16,139 acres annually will remain non-use indefinitely and consecutively for as long as this Plan is in effect.

This phase-in schedule is in accordance with CM Rule 40.01.a stating that "regulation of junior-priority groundwater diversion and use where the material injury is delayed or long range may, by order of the Director, be phased-in over not more than a five-year (5) period to lessen the economic impact of immediate and complete curtailment."

Year	Percent Reduction	BGWD Non-Use Acres
2024	2.2%	3,228
2025	4.3%	6,456
2026	6.5%	9,683
2027	8.7%	12,911
2028	10.8%	16,139

Table 2-Acreage Reduction Implementation Schedule

Mitigation Alternatives to Acreage Reduction

Aquifer Recharge for Replacement of Groundwater Diversion

Aquifer recharge for the purpose of replacing groundwater diversions may be accomplished under a steady state analysis of the actual benefit of the recharge to the SWC reach gain, as determined by the ESPAM 2.2 (or currently adopted) groundwater model (Model), during the water year in which the groundwater diversion will occur. Any recharge accomplished for the purpose of mitigating groundwater pumping under this plan must be reported by time and place of the recharge, daily volume (acre-feet per day), source (storage lease or water right), and water quality compliance plan. The steady-state predicted future reach gain impact (SPRI) to the SWC reach will be quantified using the model, categorized by irrigation year, and reported to the Watermaster. The SPRI benefit to the SWC reach gain will then be applied in the same irrigation season directly offsetting diversions from non-use groundwater rights.

Alternatively, in-season mitigation of groundwater diversions may be accomplished by providing recharge of an equal, or greater, volume to the amount diverted, within the same irrigation season, and in the same vicinity as the groundwater point of diversion.

2. Aquifer Stabilization Pumping Limit

To help ensure that long-term aquifer levels remain stable the District will implement a stabilization limit on any groundwater irrigation rights which are still in active use for irrigation.

Basis for Limit

To determine this limit the Department's designated consumptive irrigation requirement (CIR) of 2.3 acre-feet/acre is used as the standard. Estimates have been given that the ESPA is

overdrawn by an average of 300,000 acre-feet each year. The Plan, as previously described, will curtail the District's proportionate share of the acres required to result in a 115,000 acre-foot benefit to the ESPA and SWC reach gains. This leaves a difference of 185,000 acre-feet of overdraft. When applied to the roughly 1 million irrigated acres on the ESPA this results in 0.185 acre-feet/acre of overdraft. Rounding this figure to 0.2 acre-feet/acre and subtracting it from the CIR, the District will limit groundwater irrigation rights that are actively in use to 2.1 acre-feet/acre on a 5-year rolling average.

Enforcement of Pumping Limit

Any water users found to be out of compliance with this limit in any given year will be required by the end of the following irrigation season to provide the volume benefit to the ESPA equal to their excess use.

This Mitigation Plan incorporates by reference any relevant factual positions asserted by IGWA in Dkt. Nos. CM-DC-2010-001, CM-MP-2016-001, CM-MP-2009-007, to the extent these factual positions have not materially changed.

III.
CONCLUSION

The foregoing activities outlined in this plan are supported by the factors outlined in CM Rule 43.03 and are designed to prevent injury to senior rights, and not merely attempt to retrospectively address injury or punish groundwater users. Inasmuch as recharge is used, there is an element to replacement water in this plan, but ultimately, the replacement water in this plan is using less of the water that will go to SWC in compliance with CM Rule 43.03.a-d & h. These assumptions are based wholly on the Department's data and science, and inasmuch as the Department is in compliance with CM Rule 43.03.e-g. This plan does not enlarge any diversions and new wells would automatically be curtailed under the 1982 curtailment date in compliance with CM Rule 43.03 i & l. CM Rule 43.03.n is not applicable. Petitioner is hopeful that SWC

will accept this mitigation plan, but it is otherwise in compliance with the provisions of CM Rule 43.03.

IV.
RELIEF REQUESTED

Based on the foregoing, BGWD and its users hereby request that:

1. IDWR advertise this Mitigation Plan as required under the CM Rules;
2. IDWR hold any hearing as may be required;
3. The Director enter an order approving this Mitigation Plan upon such terms and conditions as may be reasonable and necessary to comply with CM Rule 43

Submitted this 2nd day of January 2024.

DATED: January 2, 2024

/s/ *Dylan Anderson*
DYLAN ANDERSON

CERTIFICATE OF SERVICE

I hereby certify that on this _2nd day of January 2024, I served the foregoing document on the persons below via email as indicated:

/s/*Dylan Anderson*
DYLAN ANDERSON

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Exhibit A

IDAHO DEPARTMENT OF WATER RESOURCES

SWC methodology – calculation of priority dates for curtailment of junior groundwater users

Presented to the SWC Methodology Technical Working Group

Jennifer Sukow, P.E., P.G.

November 28, 2022

Methodology reference

- Curtailment date calculation (Step 2) (Page 36 of Methodology)
  - The ESPA Model will be run to determine the curtailment date which will produce a volume of water equal to the DS in the near Blackfoot to Minidoka reach. The model simulation will be run at steady state within the area of common ground water supply as described by CM Rule 50.01.
- Curtailment date calculation (Step 6) (Page 38 of Methodology)
  - Upon a determination of an additional mitigation obligation, junior ground water users will be required to establish, to the satisfaction of the Director, their ability to secure a volume of storage water pursuant to an approved mitigation plan or to conduct other approved mitigation activities that will deliver the additional mitigation obligation water to the injured members of the SWC at the Time of Need. If junior ground water users fail or refuse to submit this information within fourteen (14) days from issuance of a Step 6 order, the Director will issue an order curtailing junior ground water users.[13] The ESPA Model will be run to determine the priority date to produce the necessary additional mitigation obligation volume within the area of common ground water supply, as described by CM Rule 50.01.

Methodology reference

- Curtailment for carryover shortfall (Step 9) (Page 39 of Methodology)
  - Fourteen (14) days following the issuance by the Department of reasonable carryover shortfall obligations, junior ground water users will be required to establish, to the satisfaction of the Director, their ability to supply a volume of storage water or to conduct other approved mitigation activities that will provide water to the injured members of the SWC equal to the reasonable carryover shortfall for all injured members of the SWC. If junior ground water users cannot provide this information, the Director will issue an order curtailing junior ground water rights.

Presentation outline

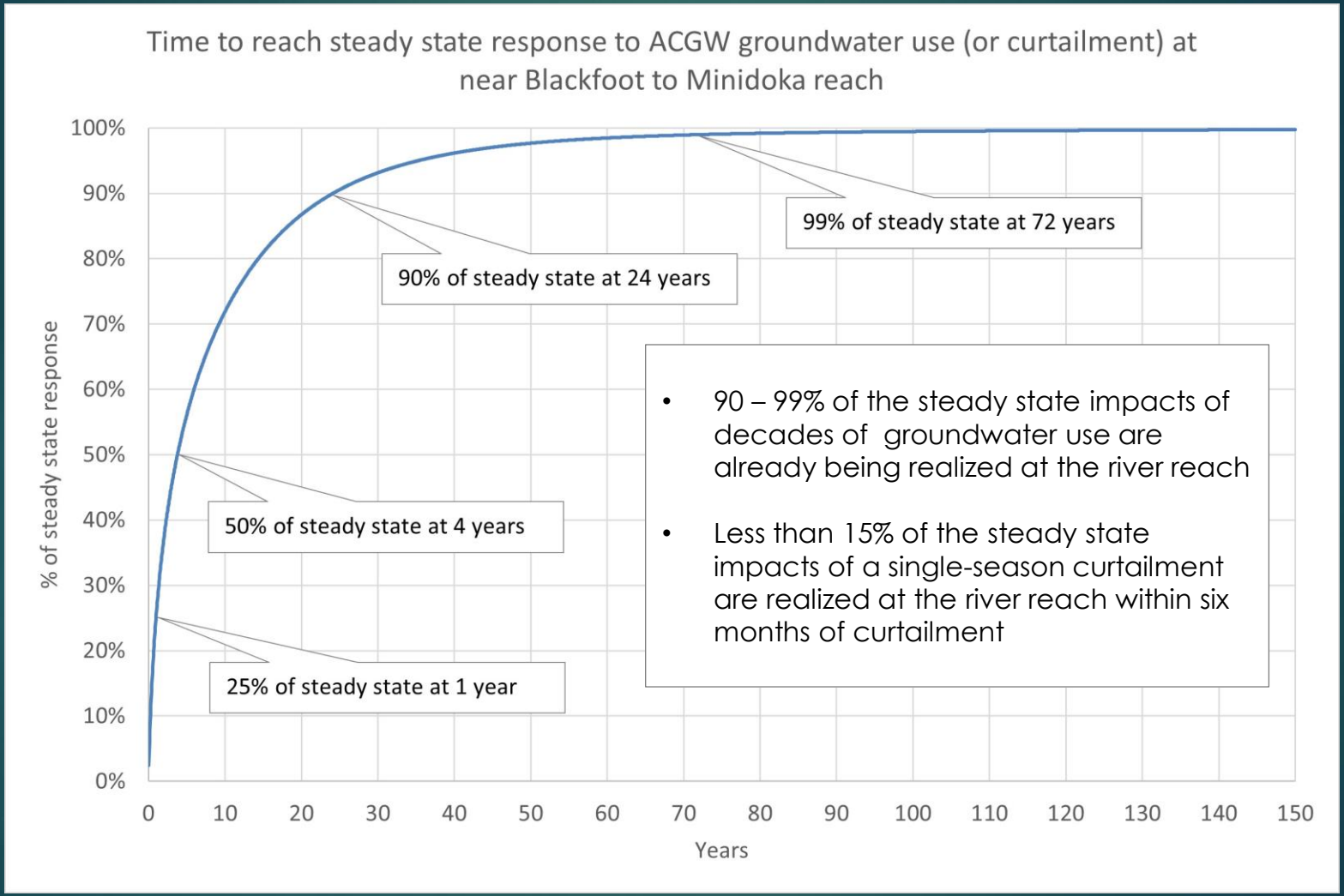
- Steady state vs. transient model simulations
- Transient model results for curtailment priority dates in 2022 orders
- Examples of transient model simulations for calculation of curtailment priority dates
  - Assumptions for transient model simulations
  - Comparison of priority dates and acres curtailed for various shortfall volumes
  - Transient analyses for water years 2021-2022

Steady state vs. transient model simulations

- Merriam-Webster definition of *steady state*
  - a state or condition of a system or process that does not change in time

- Steady state ESPAM simulation for calculation of curtailment priority date
  - Predicts long-term response to continuous curtailment of groundwater use at a constant rate for an infinite number of years
  - Result is a prediction of the long-term average annual impact of curtailment on the near Blackfoot to Minidoka reach
  - Curtailments ordered as prescribed in methodology order are not continuous or long-term
  - Groundwater use does not occur at a constant rate throughout the year

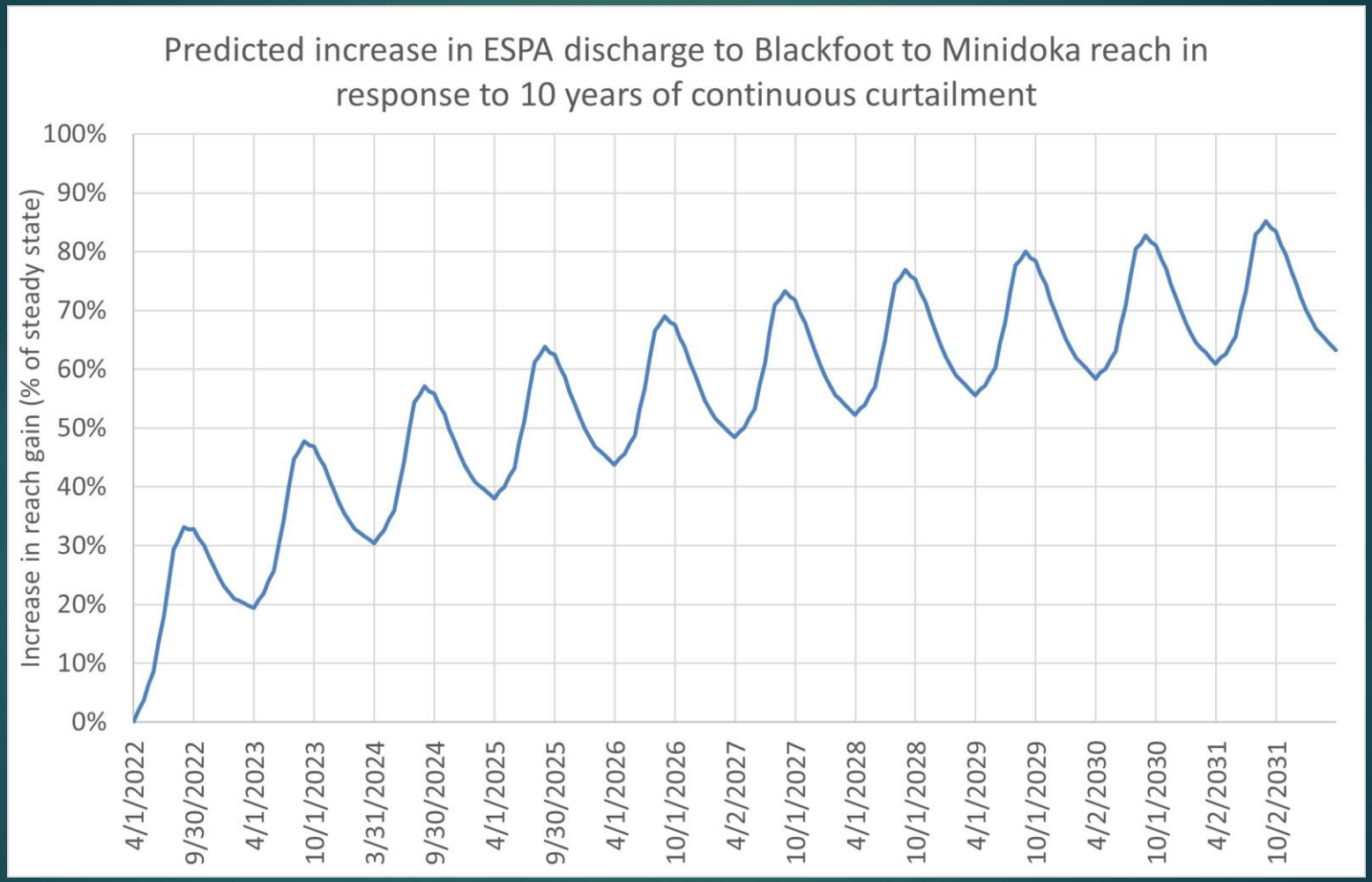
How long does it take to approach steady state conditions?



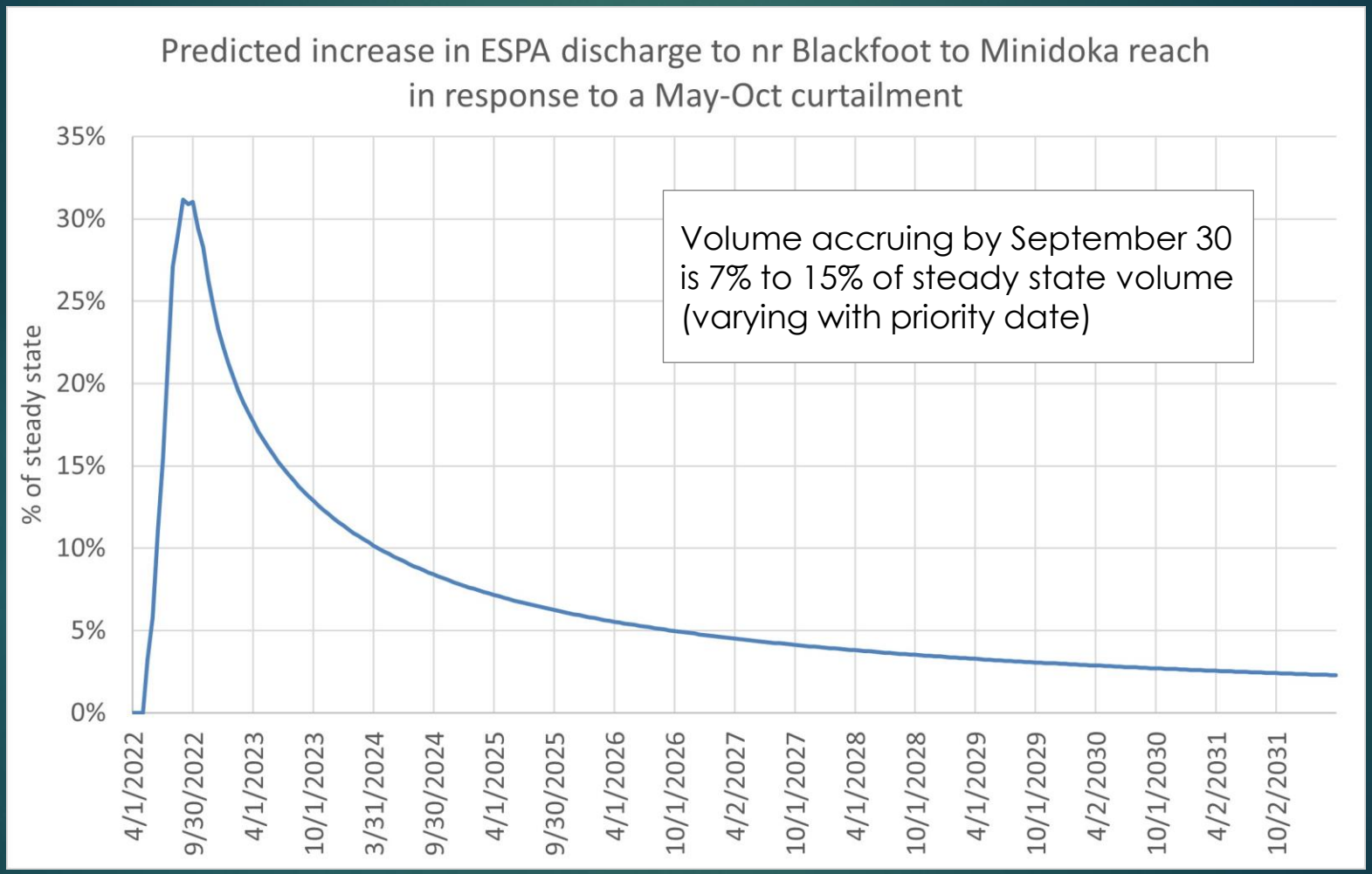
Steady state vs. transient model simulations

- Merriam-Webster definition of *transient*
  - passing especially quickly into and out of existence
- Transient ESPAM simulation for calculation of curtailment priority date
  - Predicts timing and magnitude of response to time-varying changes in aquifer stress resulting from short-term curtailment of groundwater use to address a predicted shortfall
  - Result is a prediction of the timing and magnitude of the response to time-varying curtailment of groundwater use

Steady state vs. transient model simulations



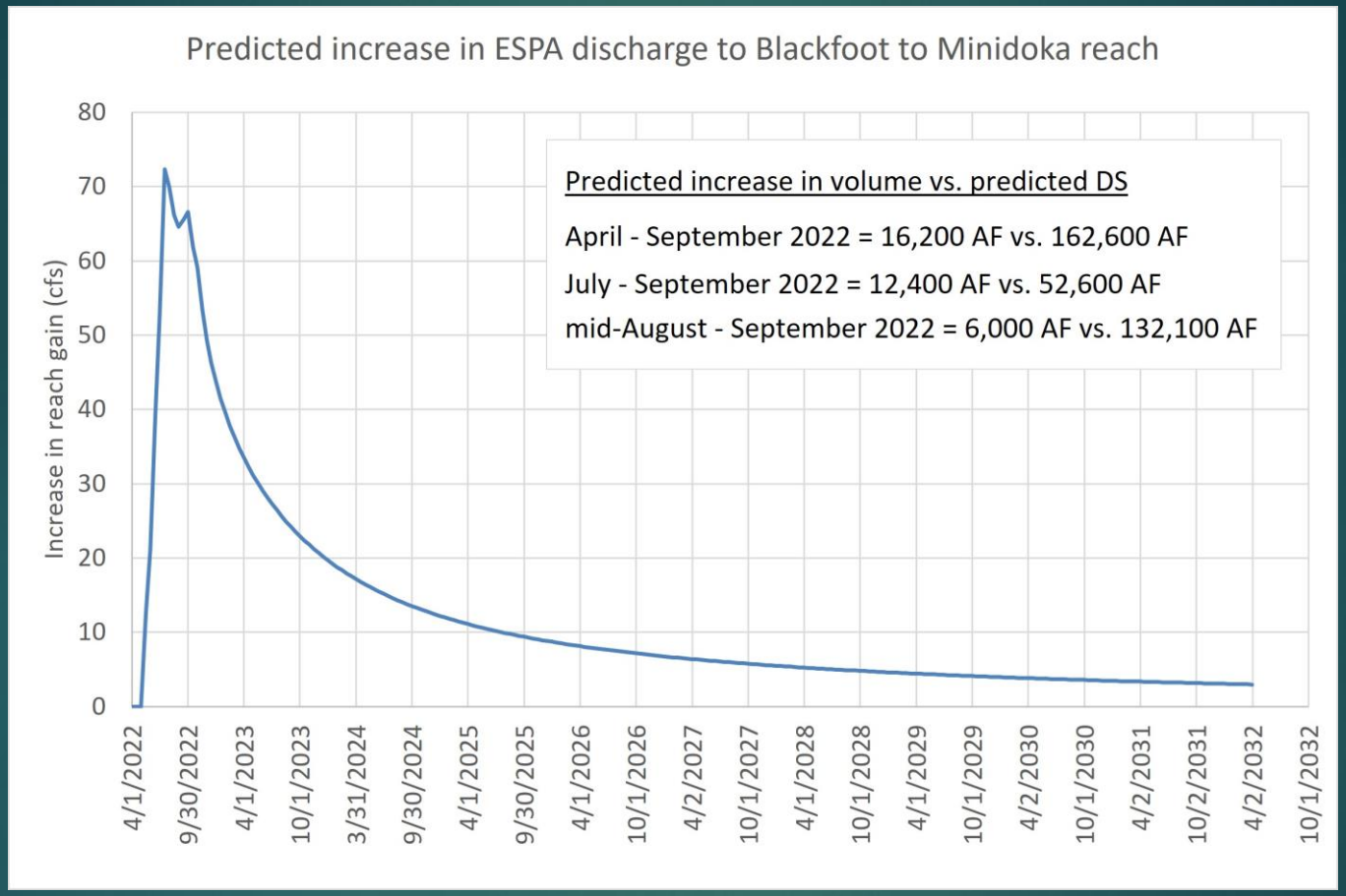
Steady state vs. transient model simulations



Transient simulation of curtailments ordered in 2022

- 2022 curtailments ordered
  - Curtailment priority dates were calculated based on steady state response at near Blackfoot to Minidoka
  - April 1 DS forecast of 162,600 AF → curtailment junior to December 25, 1979 beginning May
  - July 1 DS Forecast of 52,600 AF → curtailment reduced to junior to March 12, 1989 in July
  - Time of Need Forecast of 132,100 AF → curtailment increased to junior to March 25, 1981 in August
- Transient simulation of these curtailment dates was performed to compare volumes predicted to accrue to near Blackfoot to Minidoka during this season with the predicted DS volumes

Transient simulation of curtailments ordered in 2022

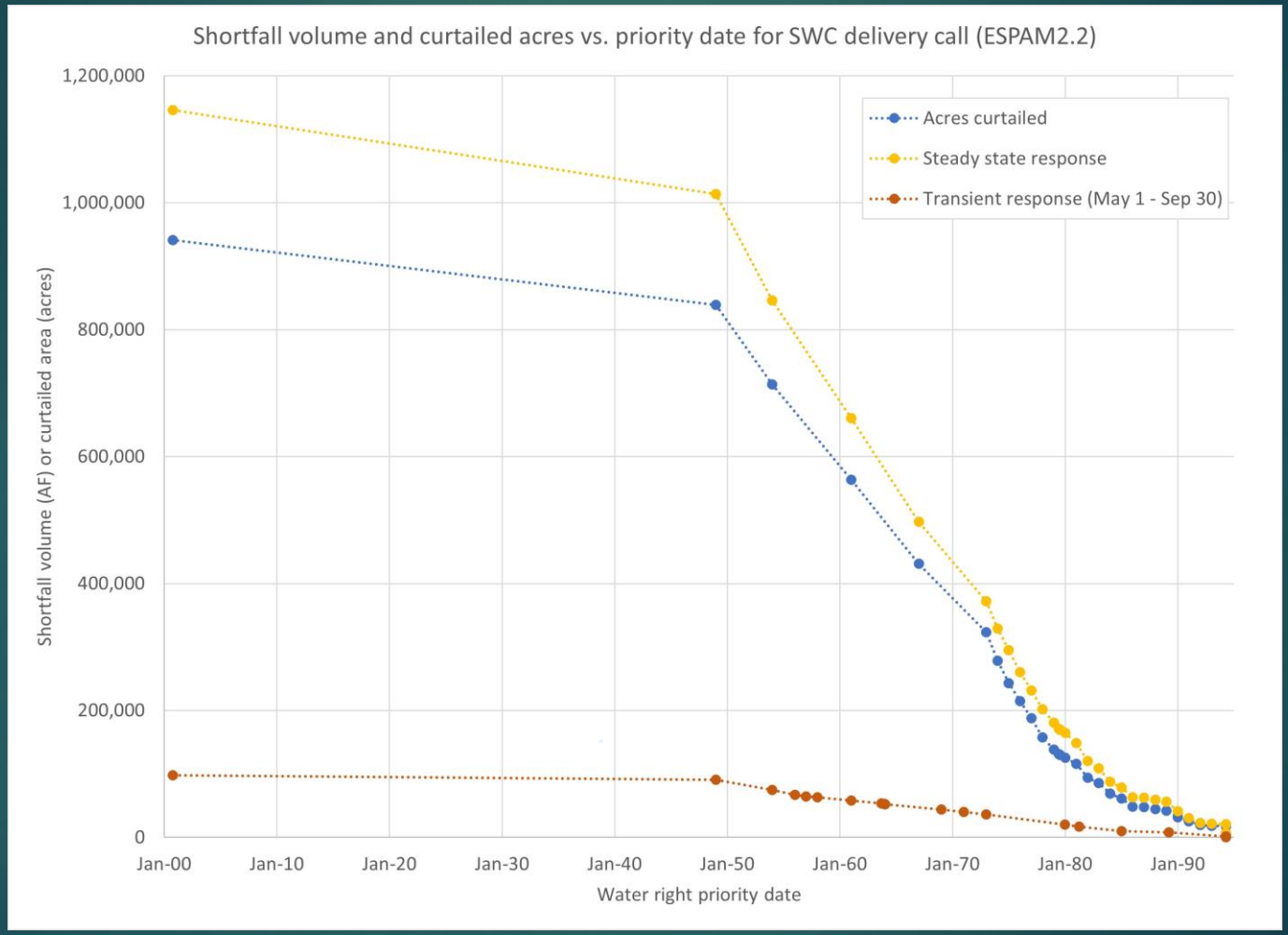


- Volume that would accrue from the ordered curtailments during the period of each shortfall is much less than the predicted shortfall
- Increases in reach gain would continue to accrue in future water years

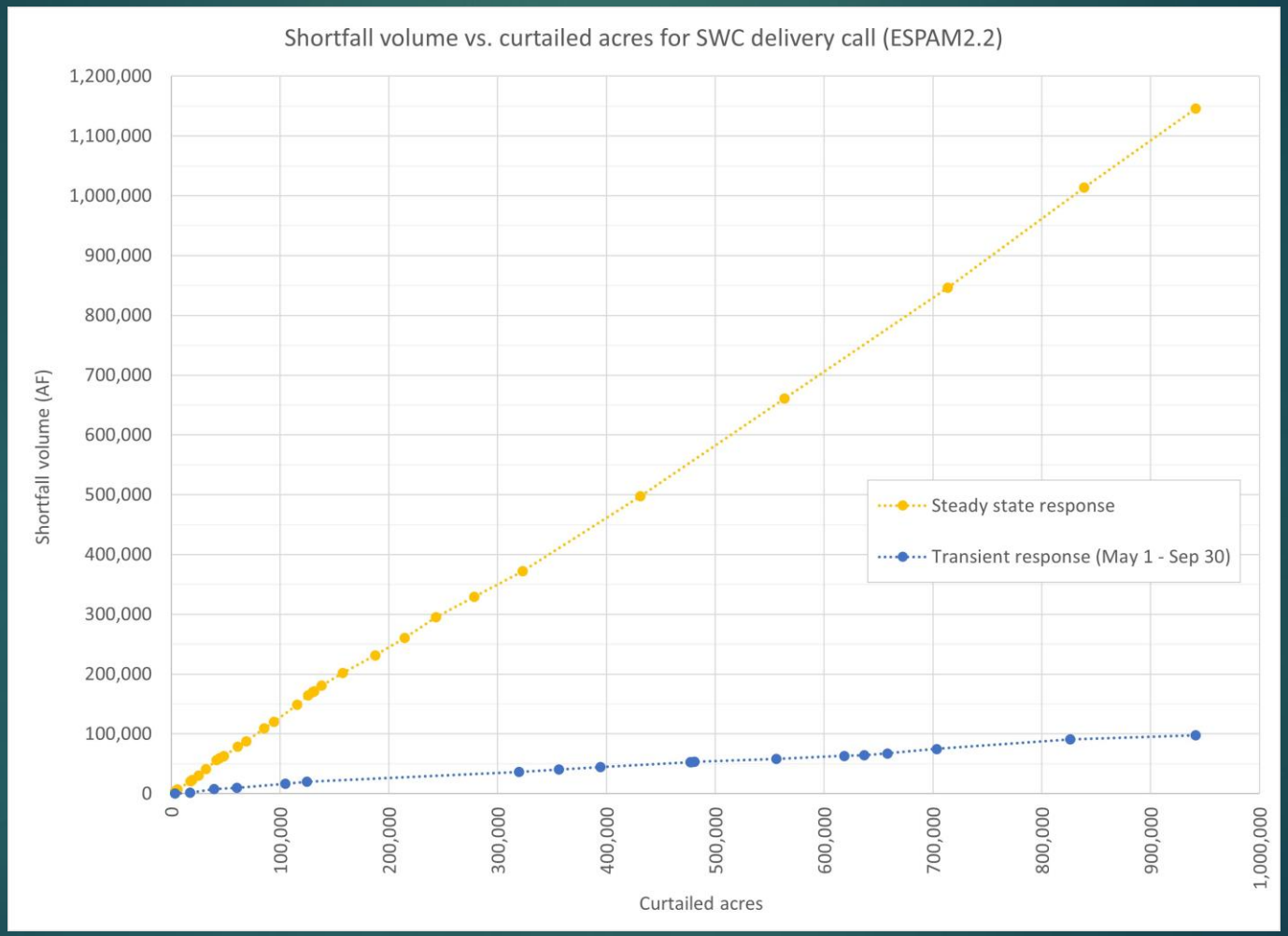
Assumptions for example transient model simulations

- Continue to use methods documented in "Curtailment Scenario" report (Sukow, 2021) https://research.idwr.idaho.gov/files/projects/espam/browse/ESPAM22_Reports/Scenarios/CurtScen22_FinalwApp.pdf
  - Use average monthly ET and precipitation from WY2009-WY2018 instead of average annual values
- Analysis of municipal curtailment continues to use methods described in 2015 IDWR staff memo for Rangen delivery call (Sukow, 2015) https://idwr.idaho.gov/wp-content/uploads/sites/2/legal/CM-MP-2014-007/CM-MP-2014-007-20150123-Staff-Memo-Cities-2nd.pdf
  - Five-year average pumping rates within ACGW are updated each year based on reported annual pumping volumes
- Curtailment for April forecast begins ~ May 1
- Curtailment priority date revision for July forecast goes into effect ~ July 16 if April DS > July DS
- Curtailment priority date revision for July forecast goes into effect ~ August 1 if April DS < July DS
- Curtailment priority date revision for Time of Need (mid-August) forecast goes into effect ~ September 1
- Target for transient calculation is a modeled benefit at near Blackfoot to Minidoka equal to DS volume accruing between DS forecast date and September 30
- Earliest curtailment priority date is junior to October 11, 1900 (TFCC and NSCC natural flow water rights)

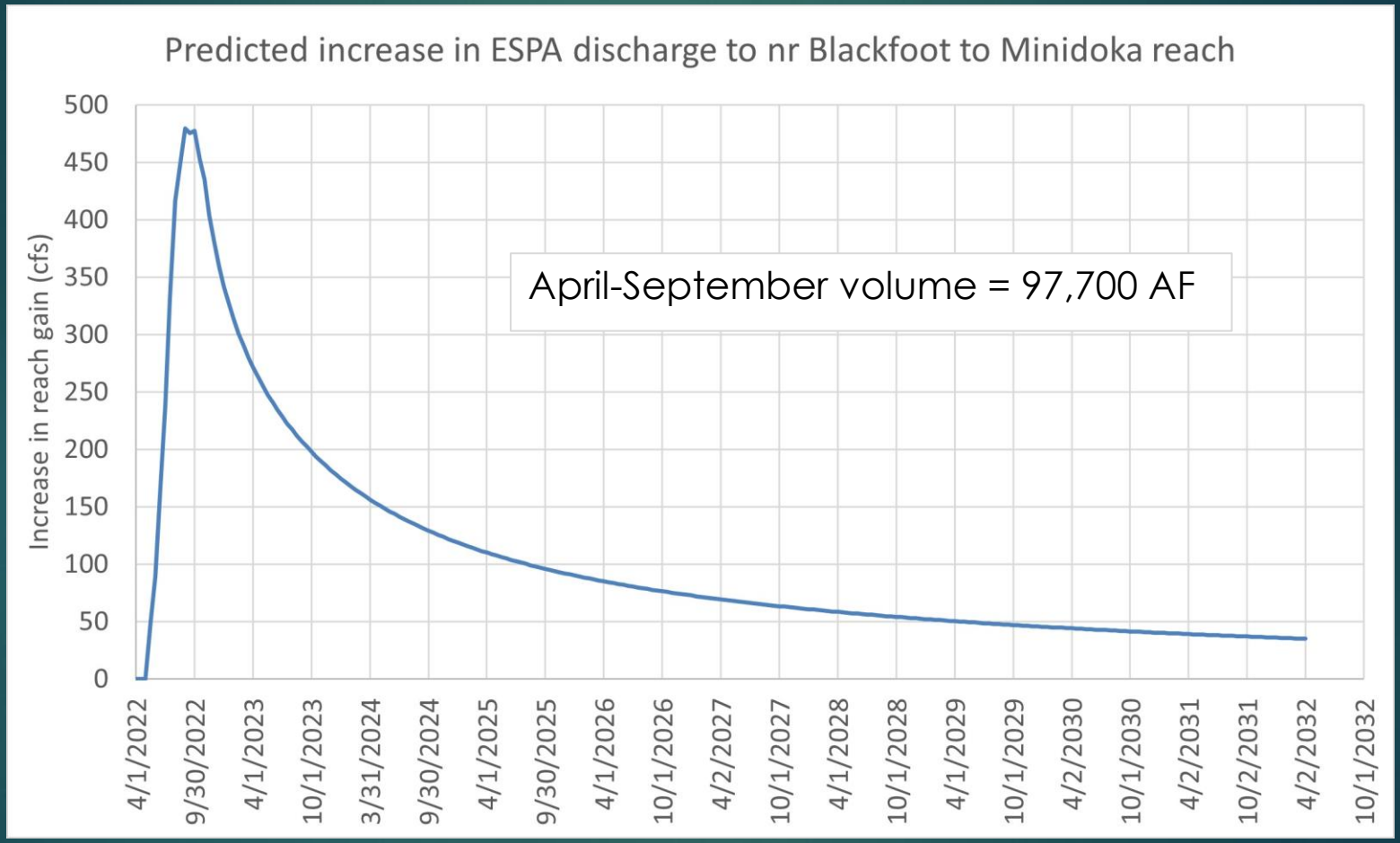
Comparison of priority dates calculated for April DS forecasts (May 1 curtailment)



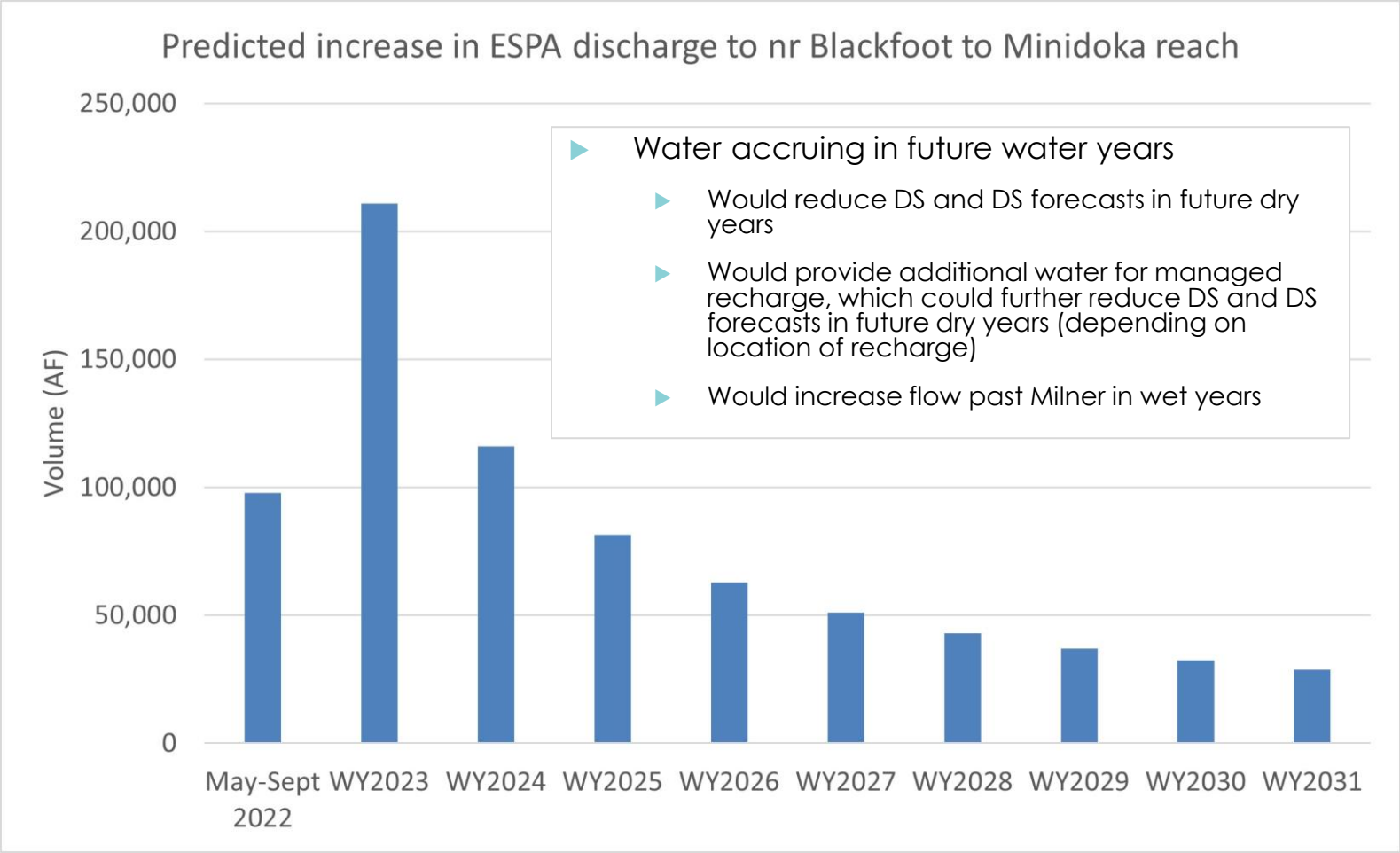
Comparison of priority dates calculated for April DS forecasts (May 1 curtailment)



Predicted response to May 1 curtailment of water rights junior to October 11, 1900



Predicted response to May 1 curtailment of water rights junior to October 11, 1900



Transient analyses for 2021 shortfall volumes

- April DS forecast = 40,500 AF
  - Curtail junior to **January 11, 1971** starting May 1
    - May 1 – Sep 30 predicted response = 40,500 AF
- July DS forecast = 170,000 AF
  - Increase curtailment to junior to **October 11, 1900** starting August 1
    - Jul 1 – Sep 30 predicted response = 44,400 AF
- Time of Need DS forecast = 142,700 AF
  - Maintain curtailment junior to **October 11, 1900**
    - Aug 16 – Sep 30 predicted response = 27,400 AF
- Carryover shortfall forecast = 64,600 AF
  - Curtail junior to **April 19, 1961** starting January 1
    - Jan 1 – Sep 30 predicted response = 64,700 AF

Transient analysis for 2021 carryover shortfall

- Calculation target is volume accruing between date of curtailment and September 30 of the next irrigation season
- Carryover shortfall forecast = 64,600 AF
  - Curtail junior to **April 19, 1961** starting January 1
    - Jan 1 – Sep 30 predicted response = 64,700 AF

Transient analyses for 2022 shortfall volumes

- April DS forecast = 162,600 AF
  - Curtail junior to **October 11, 1900** starting May 1
    - May 1 – Sep 30 predicted response = 97,700 AF
- July DS forecast = 52,600 AF
  - Decrease curtailment to junior to **March 13, 1981** starting July 16
    - Jul 1 – Sep 30 predicted response = 52,600 AF
- Time of Need DS forecast = 132,100 AF
  - Increase curtailment to junior to **October 11, 1900** starting September 1
    - Aug 16 – Sep 30 predicted response = 27,200 AF

Comparison of priority dates calculated using transient and steady state analyses

Forecast	Steady state date	Transient date	Steady state acres	Transient acres
April 1, 2021	1990	1/11/1971	~30,000	357,000
July 1, 2021	7/18/1979	10/11/1900	130,300	941,400
August 15, 2021	1981	10/11/1900	~110,000	941,400
Final net DS	1976	10/11/1900	~200,000	941,400
Carryover 2021	6/29/1985	4/19/1961	55,300	539,700
April 1, 2022	12/25/1979	10/11/1900	124,700	941,400
July 1, 2022	3/12/1989	3/31/1981	39,300	104,700
August 15, 2022	3/25/1981	10/11/1900	105,000	941,400

Range of priority dates using steady state simulations:
1976 – 1990 (30,000 to 200,000 acres)

Range of priority dates using transient simulations:
1900 – 1981 (105,000 to 940,000 acres)

Conclusions

- Steady state simulations are appropriate for evaluating the impact of aquifer stresses that have been applied for decades (i.e. groundwater pumping, continuous curtailment to same date every year)
- Transient simulations are appropriate to evaluate the impacts of aquifer stresses applied for short periods of time (i.e. short-term curtailments with varying priority dates)
- Steady state simulations of continuous curtailment do not simulate the short-term curtailments prescribed in the SWC methodology
- Transient simulations better simulate the short-term curtailments prescribed in the SWC methodology

Conclusions

- Short-term curtailments in response to in-season predictions of DS are inadequate to provide water during the time of need for several of the shortfall volumes predicted in 2021-2022
- Curtailments sufficient to provide water during the time of need would also provide water to reduce shortfalls in future dry years, but would result in additional flow past Milner in future wet years