

An aerial photograph of a mountainous region, likely in Idaho, showing a white outline of a management area. The terrain is rugged with various shades of brown, green, and grey, indicating different vegetation and geological features. The white outline follows the contours of the mountains and valleys, defining a specific area of interest.

Estimated management action volumes for a range of ESPA storage volume goals

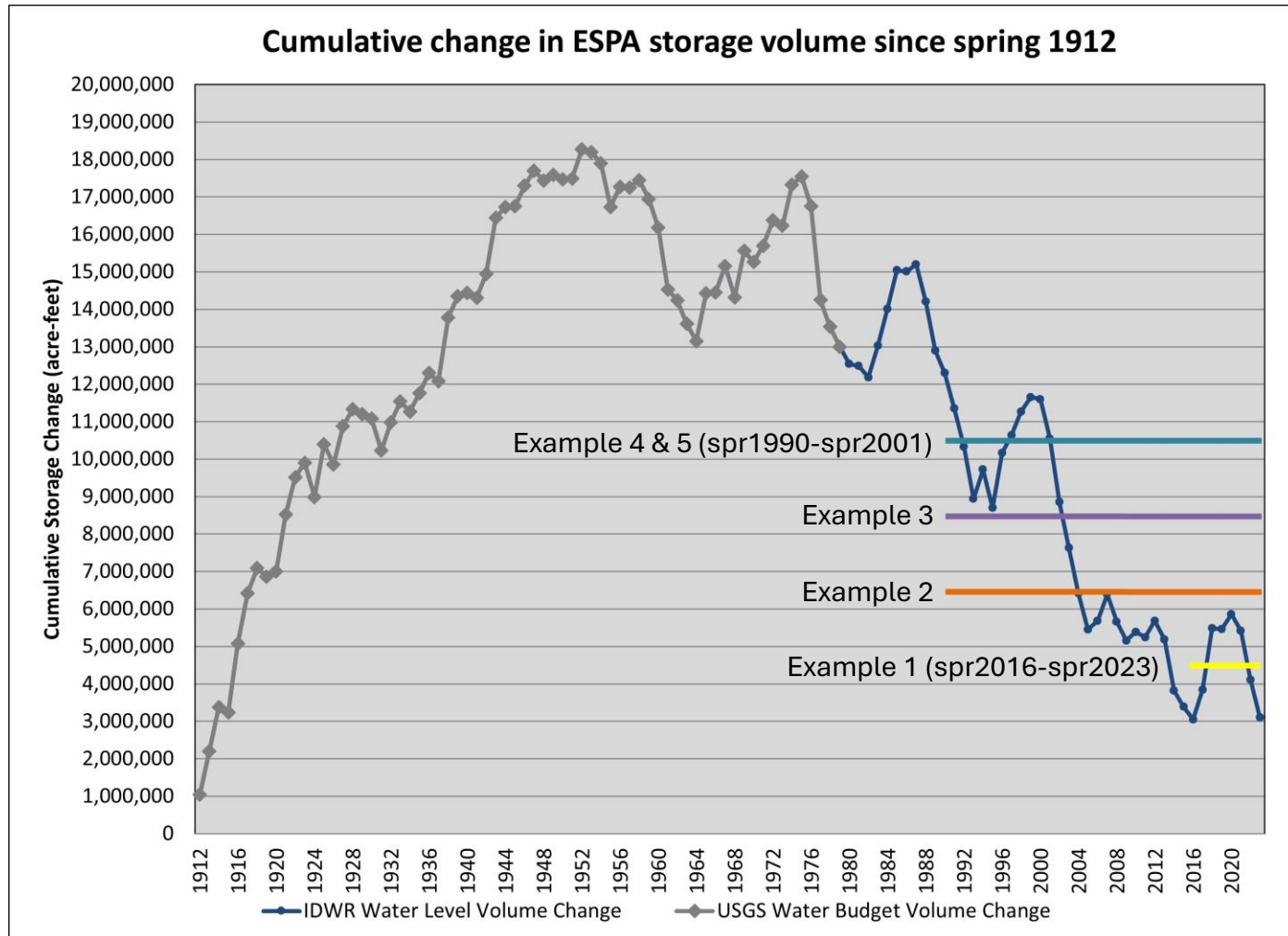
Presented to the ESPA Ground Water Management Area
Management Plan Advisory Committee

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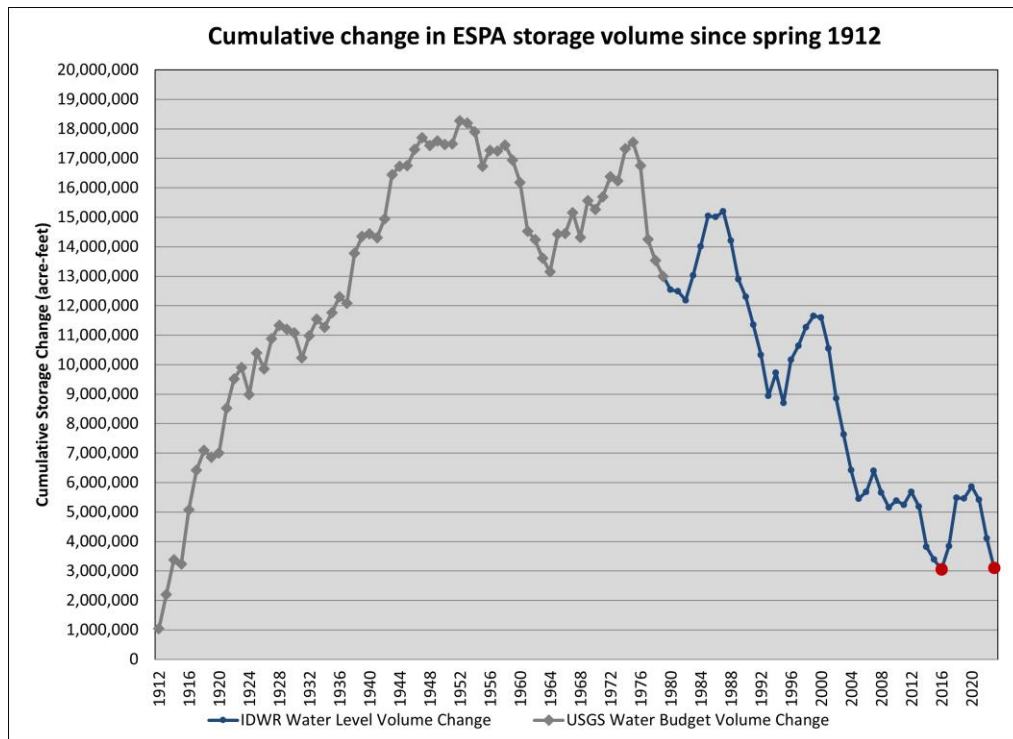
Overview and purpose

- Provide technical information to assist the Advisory Committee with understanding estimated management action volumes needed to meet a range of potential goals for ESPA management
- Potential goals presented as examples:
 1. Maintain recent (2016-2023) aquifer status with no recovery goal
 2. Recovery to increase average aquifer storage content by 2 million AF in 36 years
 3. Recovery to increase average aquifer storage content by 4 million AF in 36 years
 4. Recovery to increase average aquifer storage content by 6 million AF in 36 years
 5. Recovery to increase average aquifer storage content by 6 million AF in 100 years

Maintenance and recovery goal examples



Estimating ESPA water budget imbalance without managed recharge and mitigation



data from Mike McVay, IDWR

Calculated cumulative storage change volume in spring of 2023 was about the same as in spring 2016

- Spring 2023 ~ 3.10 MAF
- Spring 2016 ~ 3.05 MAF

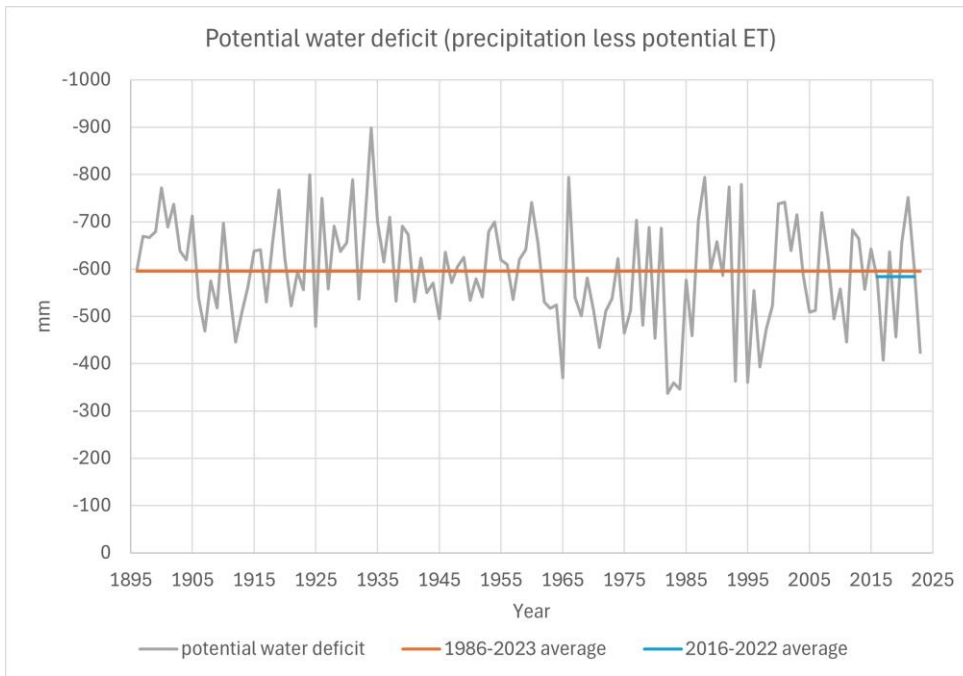
Management actions between spring 2016 and spring 2023 were sufficient to balance the water budget on average

Recent ESPA water budget imbalance without managed recharge and mitigation

- Average management actions – spring 2016 to spring 2023

Entity	Average volume (AF/yr)
IWRB natural flow recharge	283,000
IWRB recharge of donated storage	32,000
IGWA conservation and recharge	312,000
SWID conservation and recharge	93,000
ABID conservation and recharge	4,000
Cities recharge	3,000
sum	727,000
calculated 50,000 AF increase in aquifer storage	-7,000
estimated water budget imbalance	720,000

Climate fluctuation



data from David Hoekema, IDWR

- 2016-2022 climate data indicate slightly lower average potential demand than the long-term average (1896-2023)
- Future management actions will need to adapt to future climate to meet and maintain any aquifer level goal

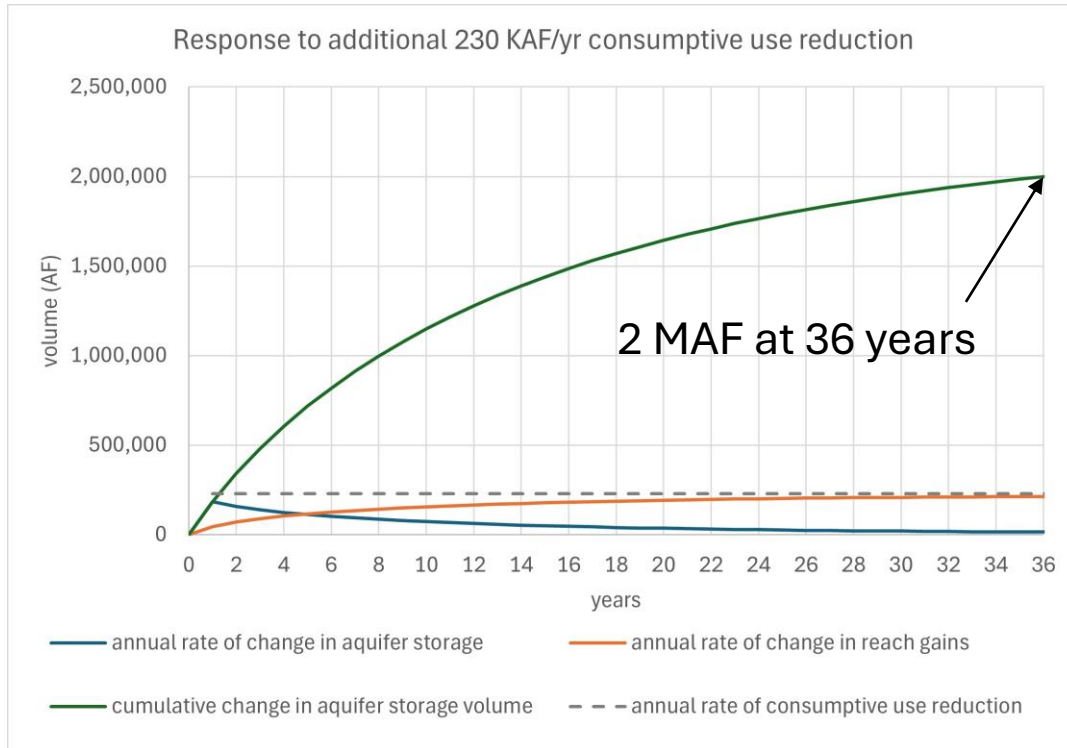
Example goal #1: maintain recent average aquifer level with no recovery

- Estimated aquifer management actions = 720 KAF/yr
 - Estimate is based on water level observations and reported aquifer management action volumes from spring 2016 through spring 2023
 - Assumes average climate conditions similar to 2016-2022
 - Assumes 2016-2022 average incidental recharge is maintained
 - These assumptions also apply to example goals #2-5

Aquifer recovery estimates

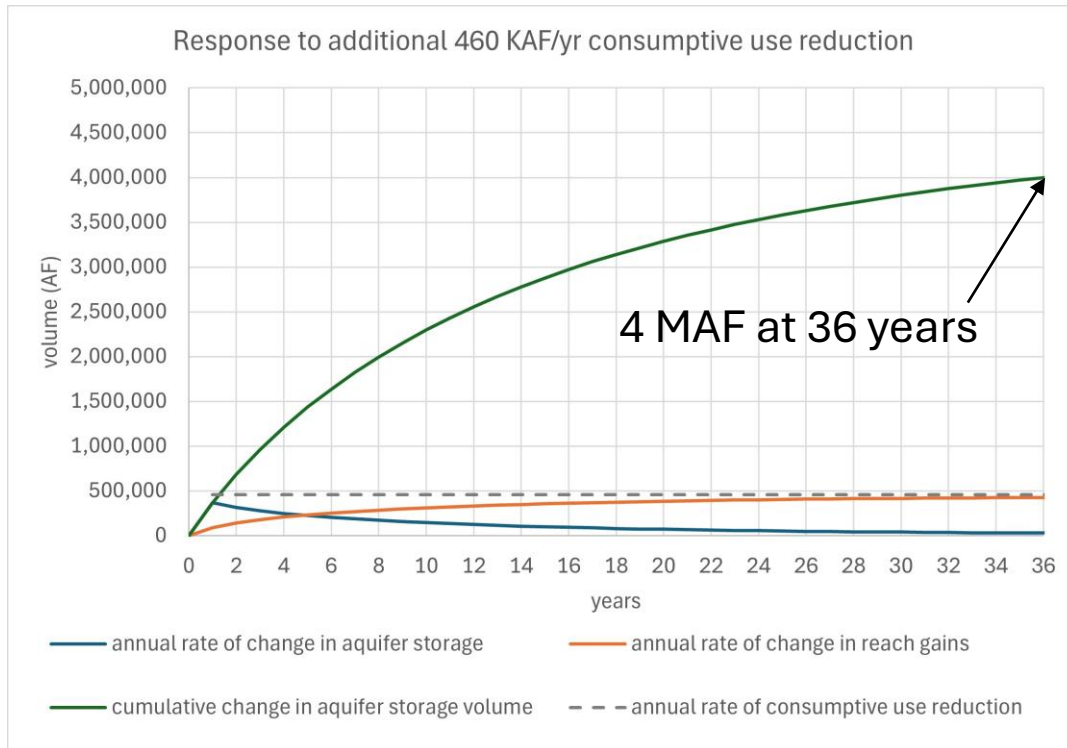
- Additional management actions beyond the 2016-2022 average of 720 KAF/yr will be needed to attain aquifer recovery
- Aquifer response to additional management actions was estimated using ESPAM2.2
 - Analysis assumes additional mitigation actions have the same spatial distribution as groundwater pumping
 - Analysis assumes future natural recharge and incidental recharge continue at 2016-2022 averages

Example goal #2: recovery to increase average aquifer storage content by 2 million AF in 36 years



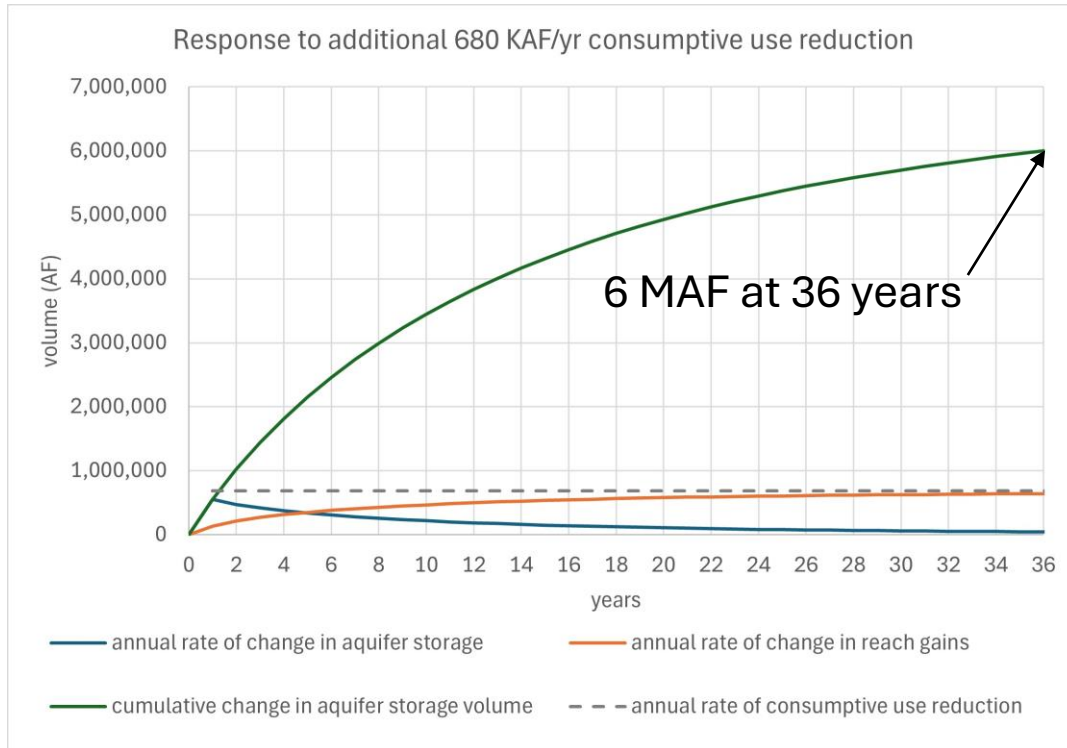
- 230 KAF/yr additional reduction in consumptive use or equivalent management actions
- 950 KAF/yr total management actions

Example goal #3: recovery to increase average aquifer storage content by 4 million AF in 36 years



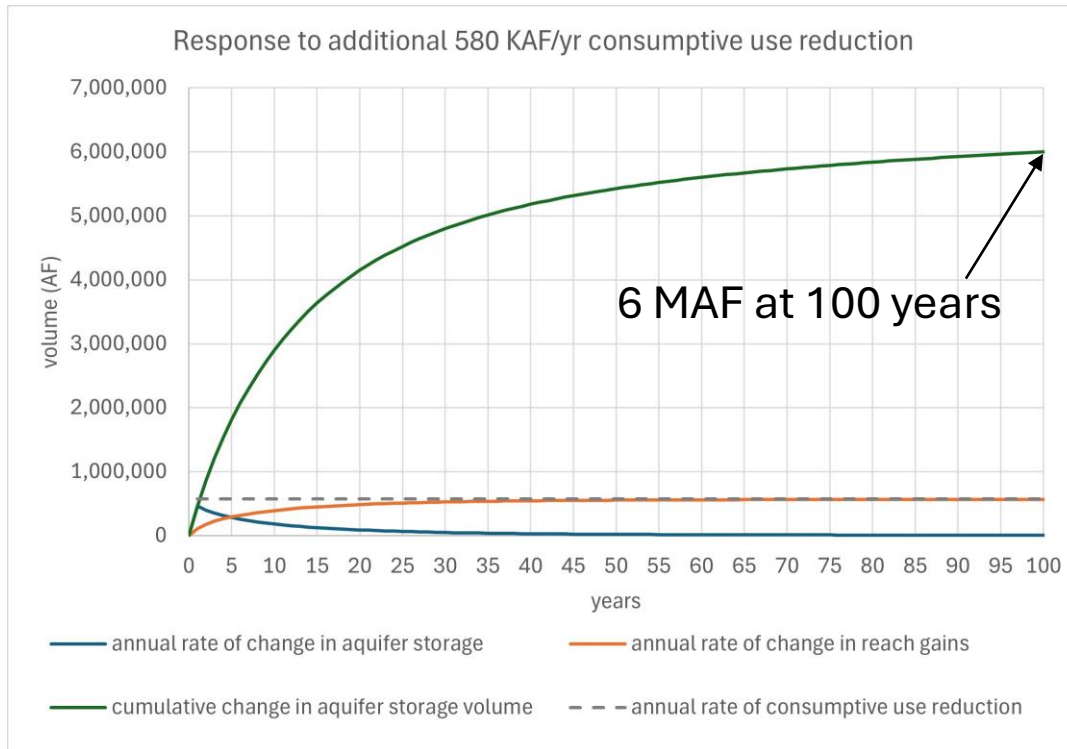
- 460 KAF/yr additional reduction in consumptive use or equivalent management actions
- 1.18 MAF/yr total management actions

Example goal #4: recovery to increase average aquifer storage content by 6 million AF in 36 years



- 680 KAF/yr additional reduction in consumptive use or equivalent management actions
- 1.4 MAF/yr total management actions

Example goal #5: recovery to increase average aquifer storage content by 6 million AF in 100 years



- 580 KAF/yr additional reduction in consumptive use or equivalent management actions
- 1.3 MAF/yr total management actions