Water to Heal the Aquifer - Elmore County Water Development Projects

IDAHO ASSOCIATION OF COUNTIES

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Elmore County Water Supply Goals

Stabilize aquifer water levels to

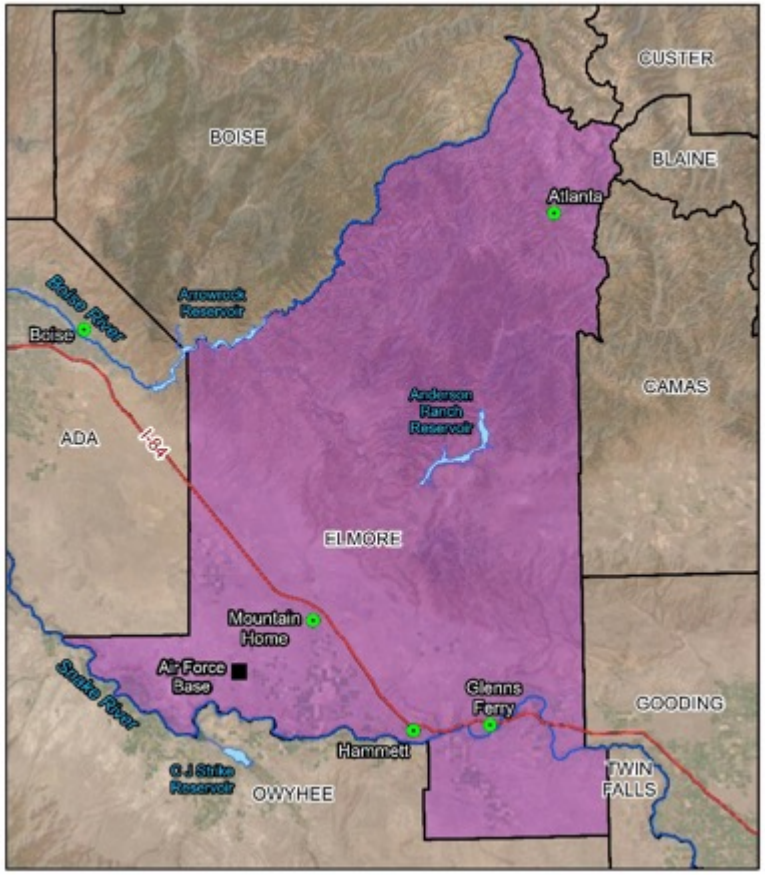
- Prevent curtailment
- Reduce well deepening/replacement costs
- Stabilize pumping costs
- Increase water supply certainty
- Maintain economic benefits
- Support economic growth

Topics

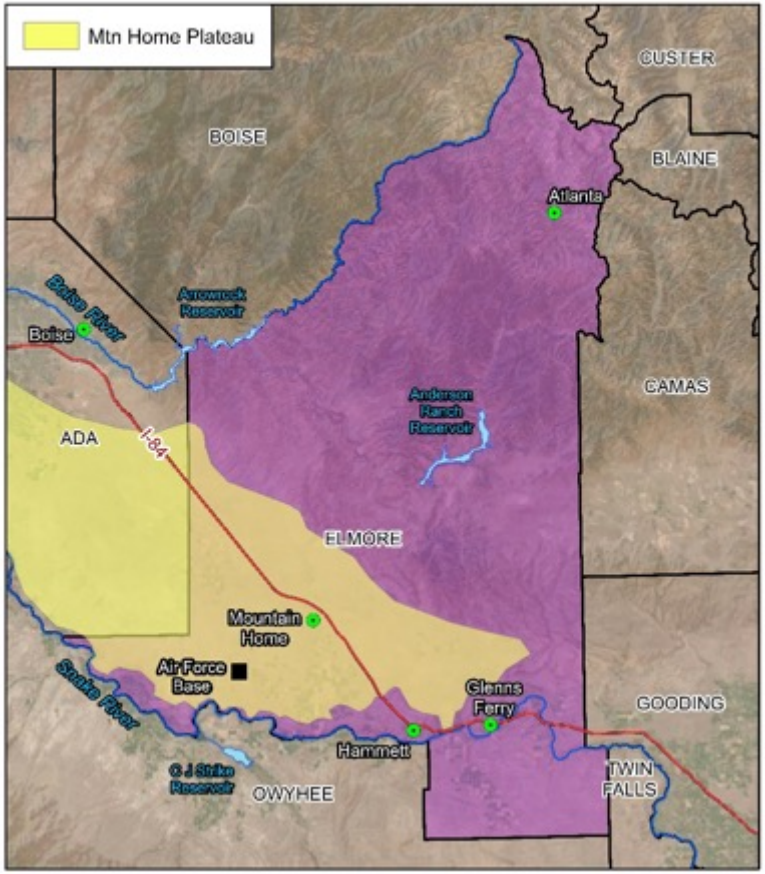
- Geography/Hydrogeology
- Historical Groundwater Development and Use
- Current Groundwater Conditions
- Administrative and Regulatory Environment
- Impacts of Declining Groundwater Levels
- County Water Development Efforts and Projects

Elmore County

- population 25,000 to 30,000,
- bordered by Boise, Ada, Owyhee, Twin Falls, Gooding, Camas, Blaine and Custer counties
- Includes most of the Boise River watershed upstream of Lucky Peak Reservoir
- economy is primarily agriculture and Mountain Home AFB

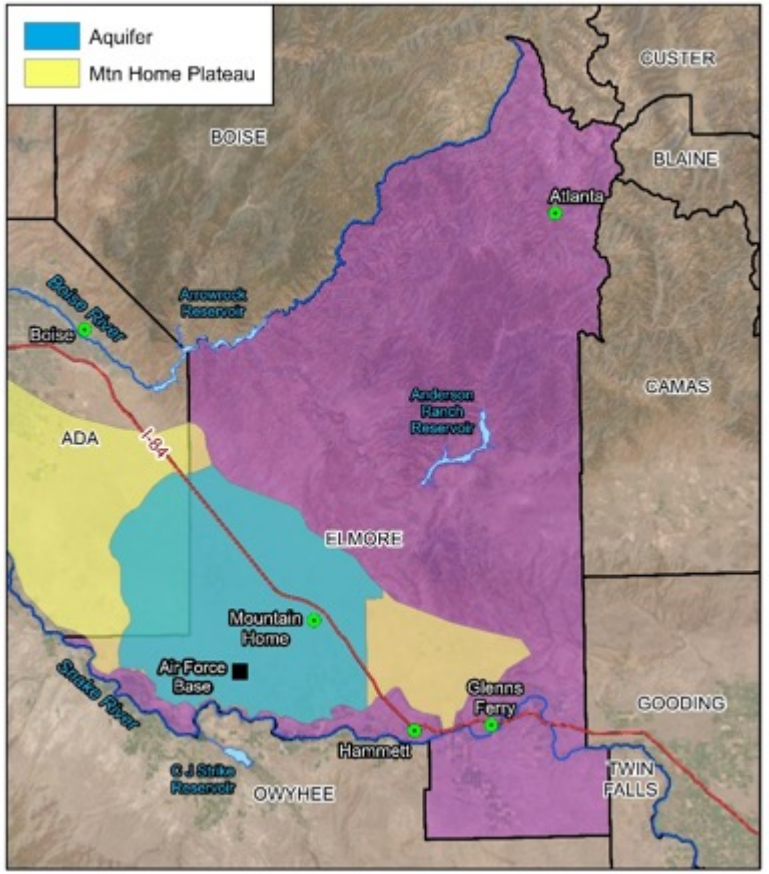


Mountain Home Plateau



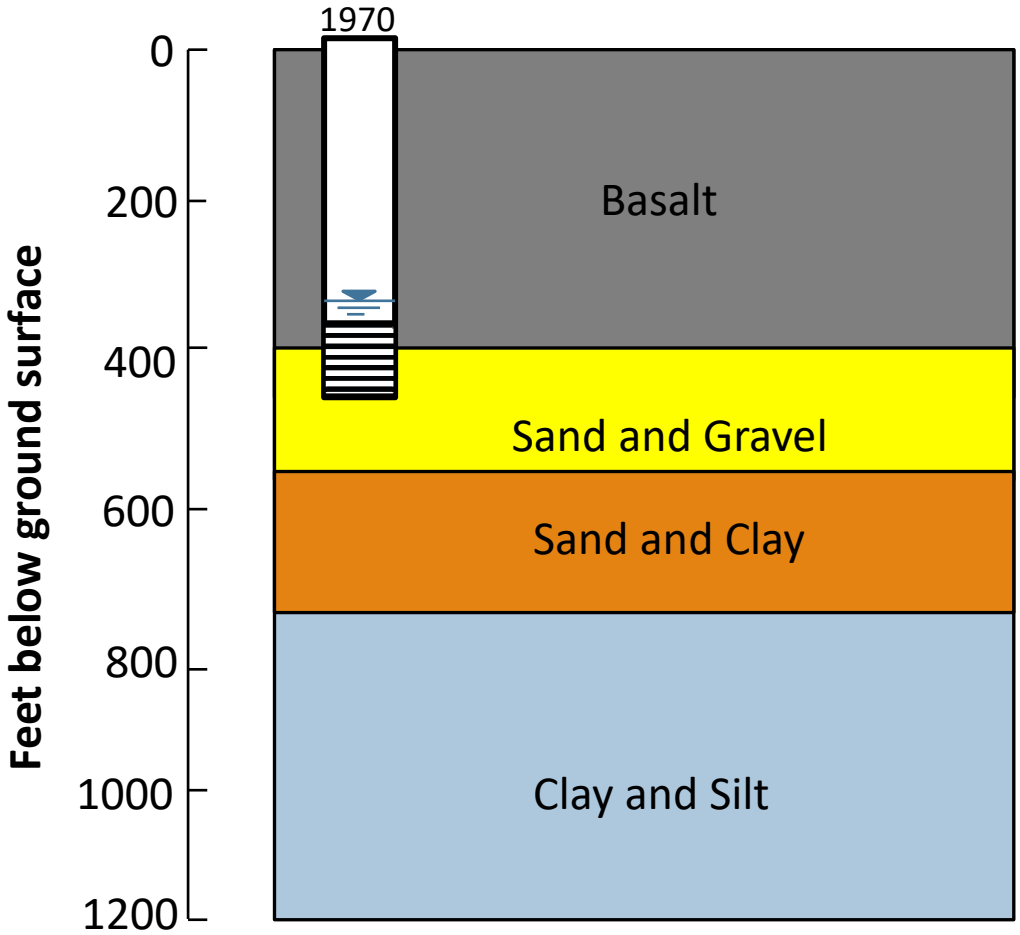
Mountain Home Plateau Aquifer

- Approximated as the portion of the Mountain Home Ground Water Management Area located within the Mountain Home Plateau
- Recharge sources are surface streams and irrigation losses from imported Boise River and Snake River water supplies
- Discharge primarily to wells
- Negligible discharge to springs and seeps along the Snake River



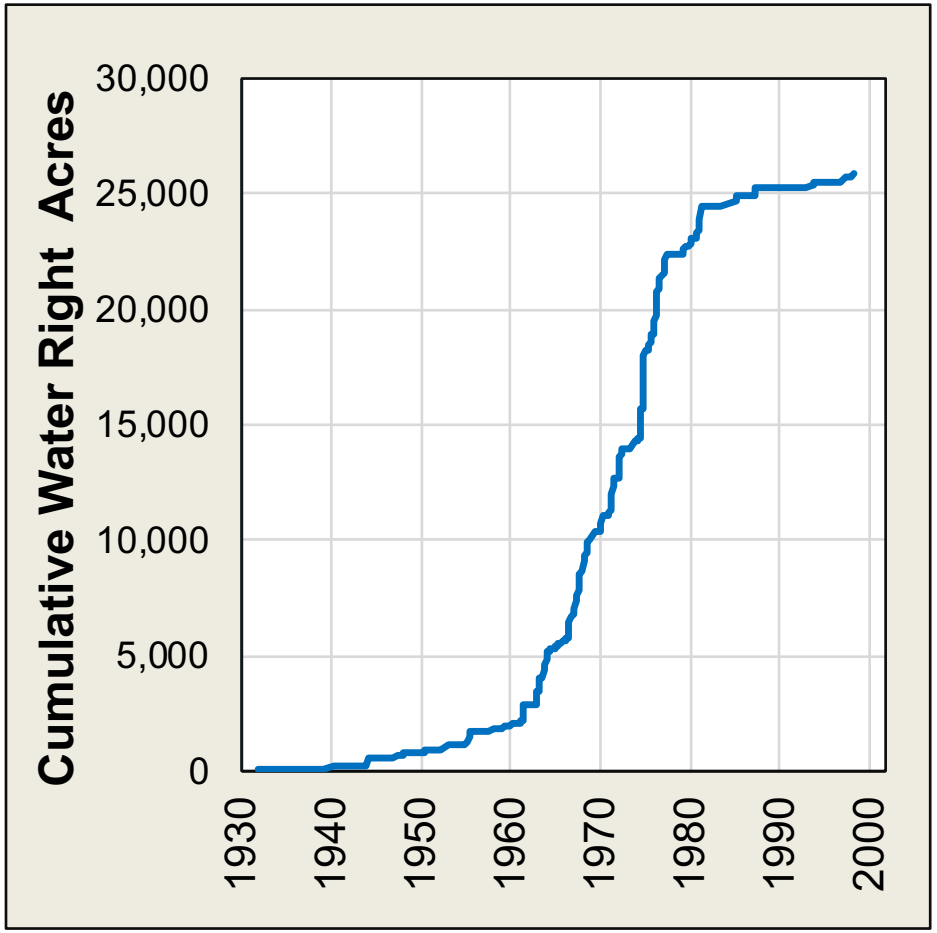
Mountain Home Plateau Aquifer - Hydrogeology

- Regional aquifer is found in productive basalt, sand, and gravel deposits, typically at depths of 400 to 800 feet.
- Aquifer is underlain by clays and silts of the Glenns Ferry Formation. These clays and silts do not yield significant water to wells.

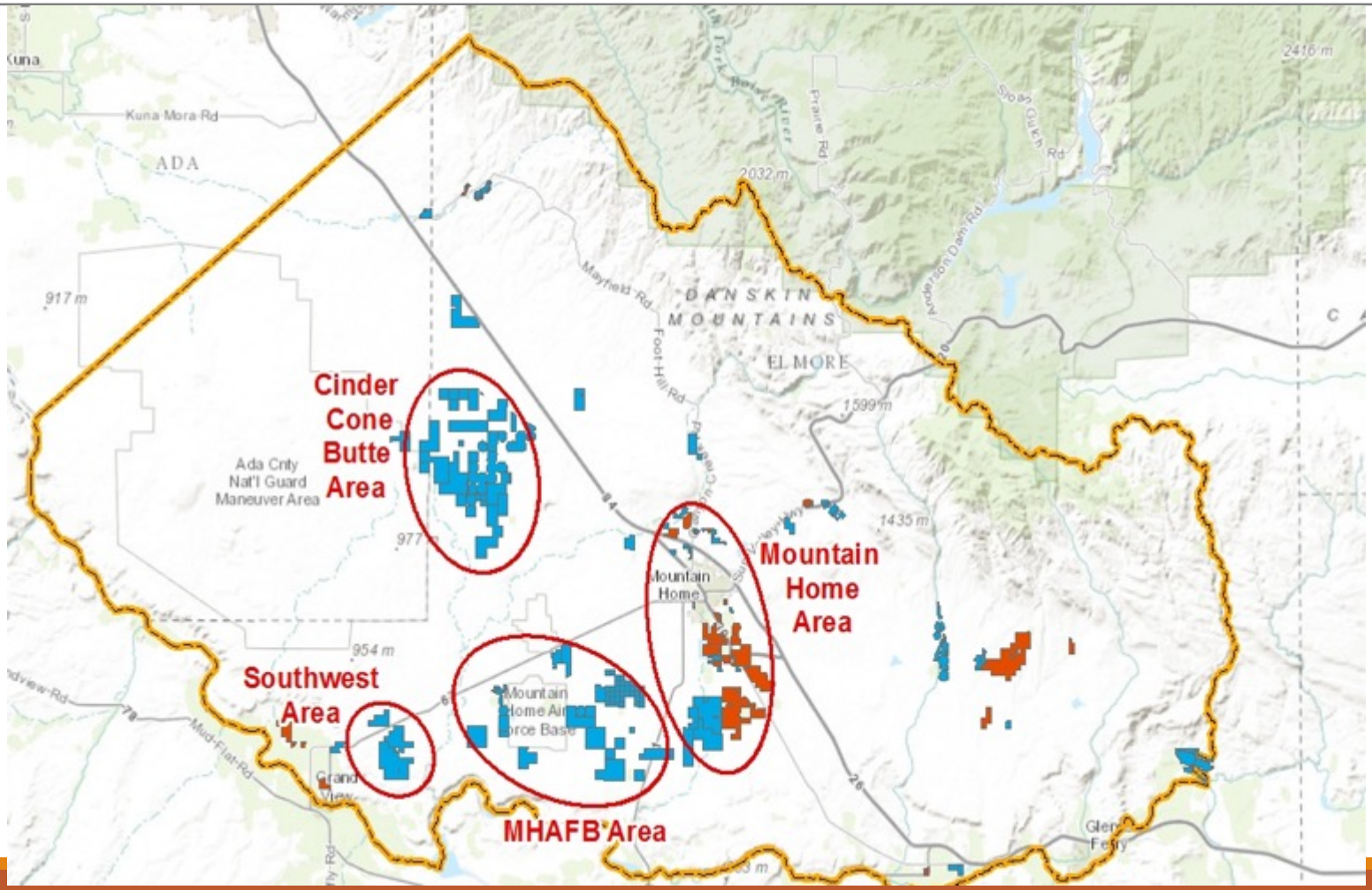


Groundwater Development

- 85% agricultural irrigation
- 8% municipal
- 4% commercial/ industrial
- 3% stockwater



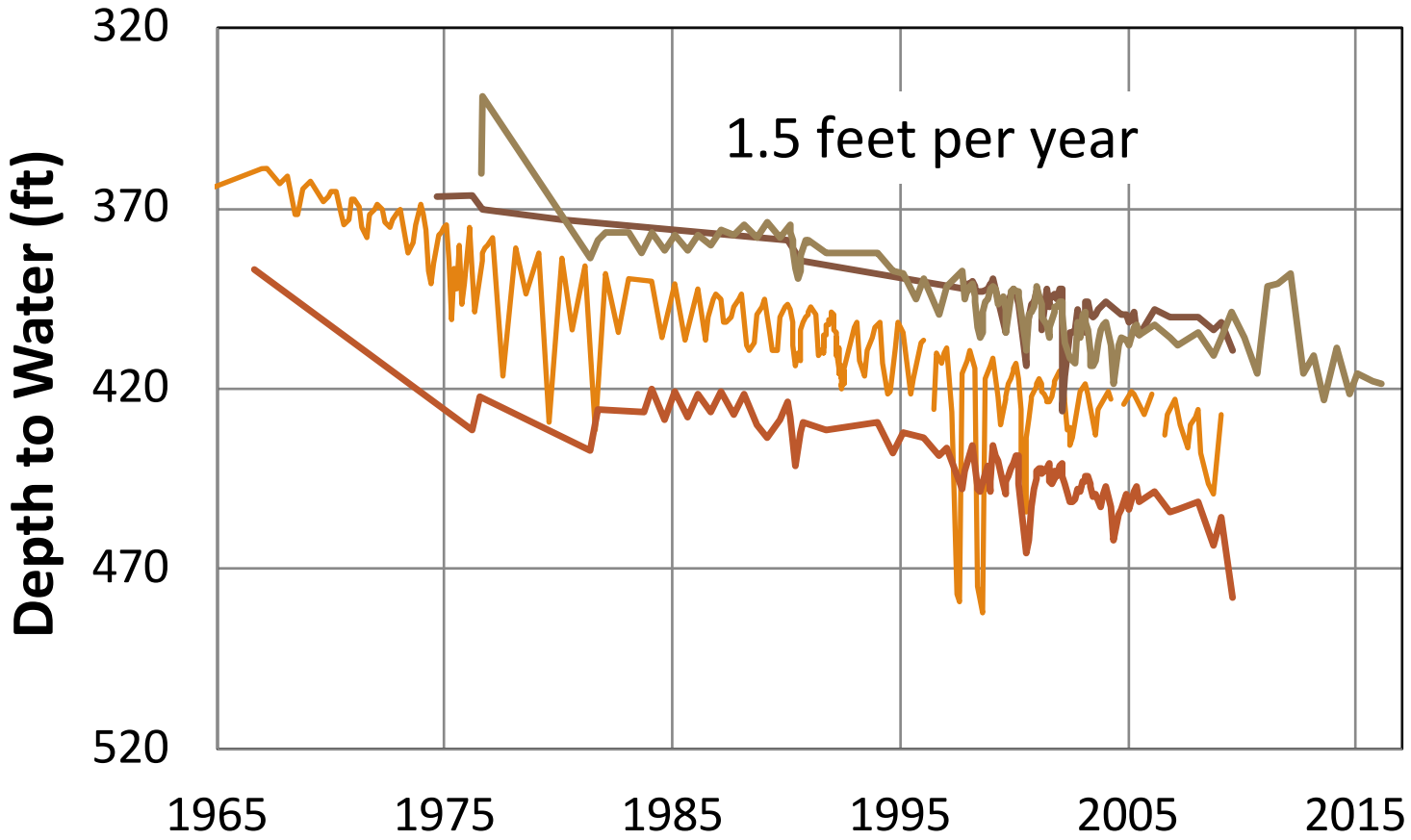
Groundwater Irrigated Areas



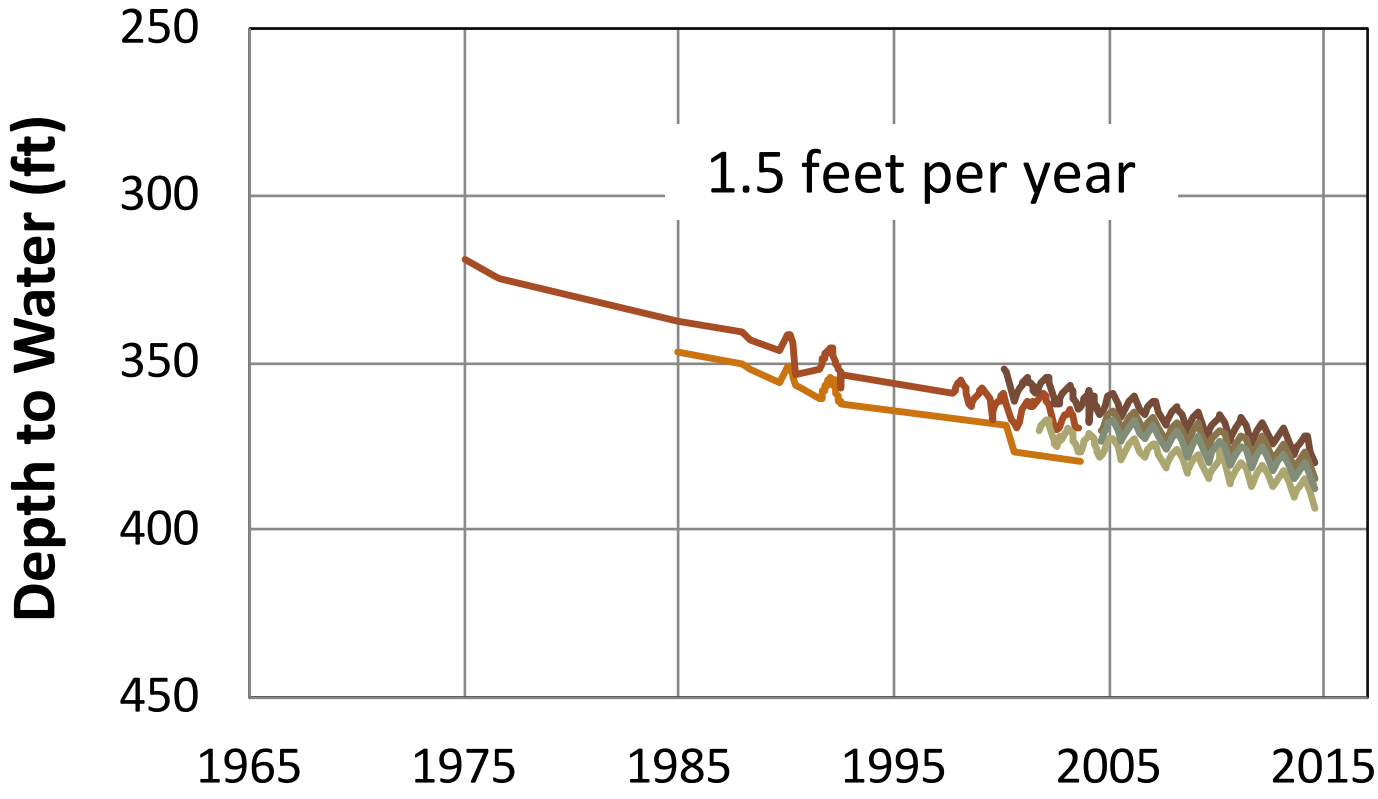
Groundwater Deficit and Decline

- annual groundwater pumping volume - 80,000 af
- annual aquifer recharge – 40,000 af +/-
- annual groundwater deficit 40,000 acre feet
  - 80,000 af pumped – 40,000 af of recharge = 40,000 af deficit
- Pumping deficit results in groundwater level declines as water is removed from storage in the aquifer

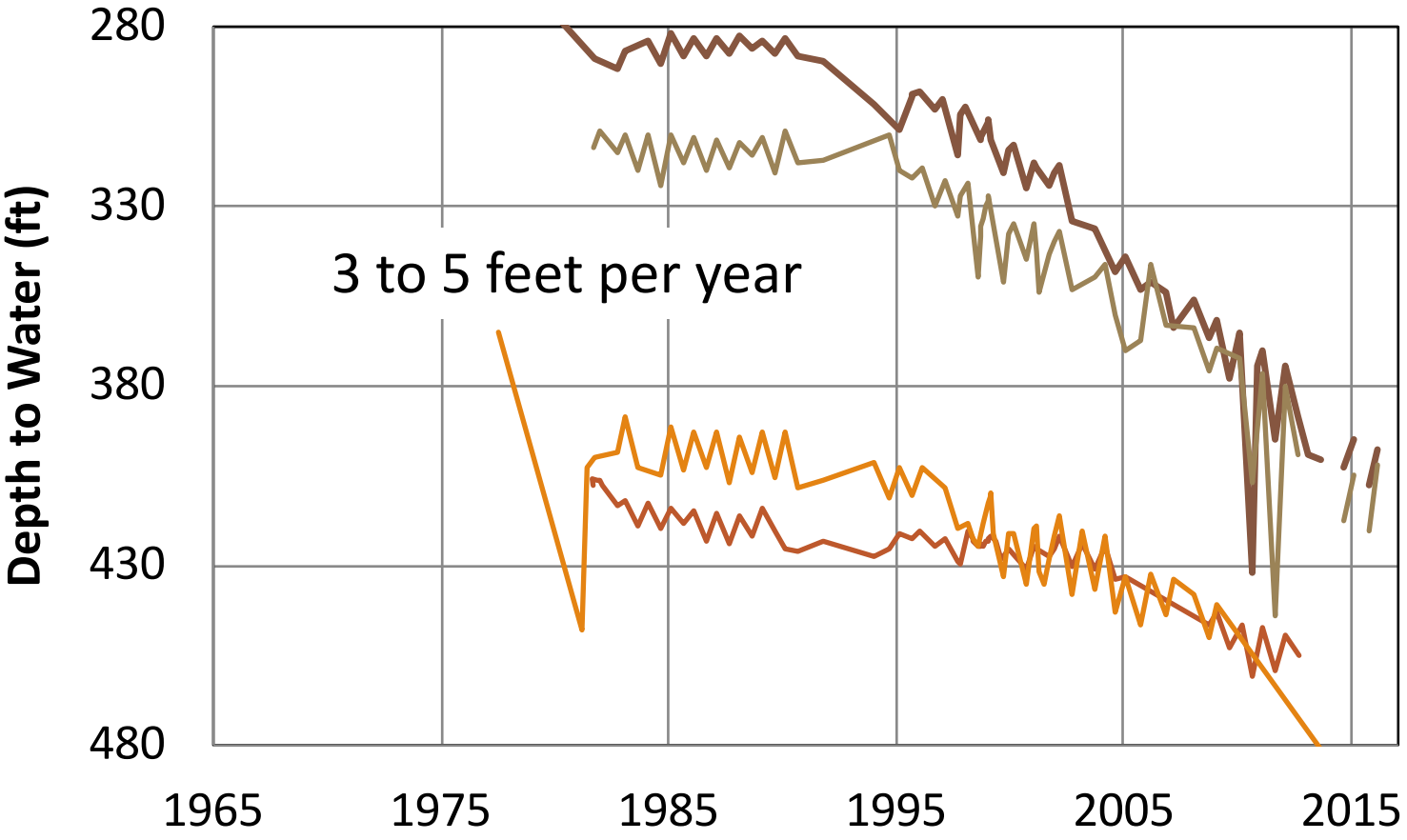
Groundwater Level Declines South Mountain Home



Groundwater Level Declines Mountain Home Air Force Base

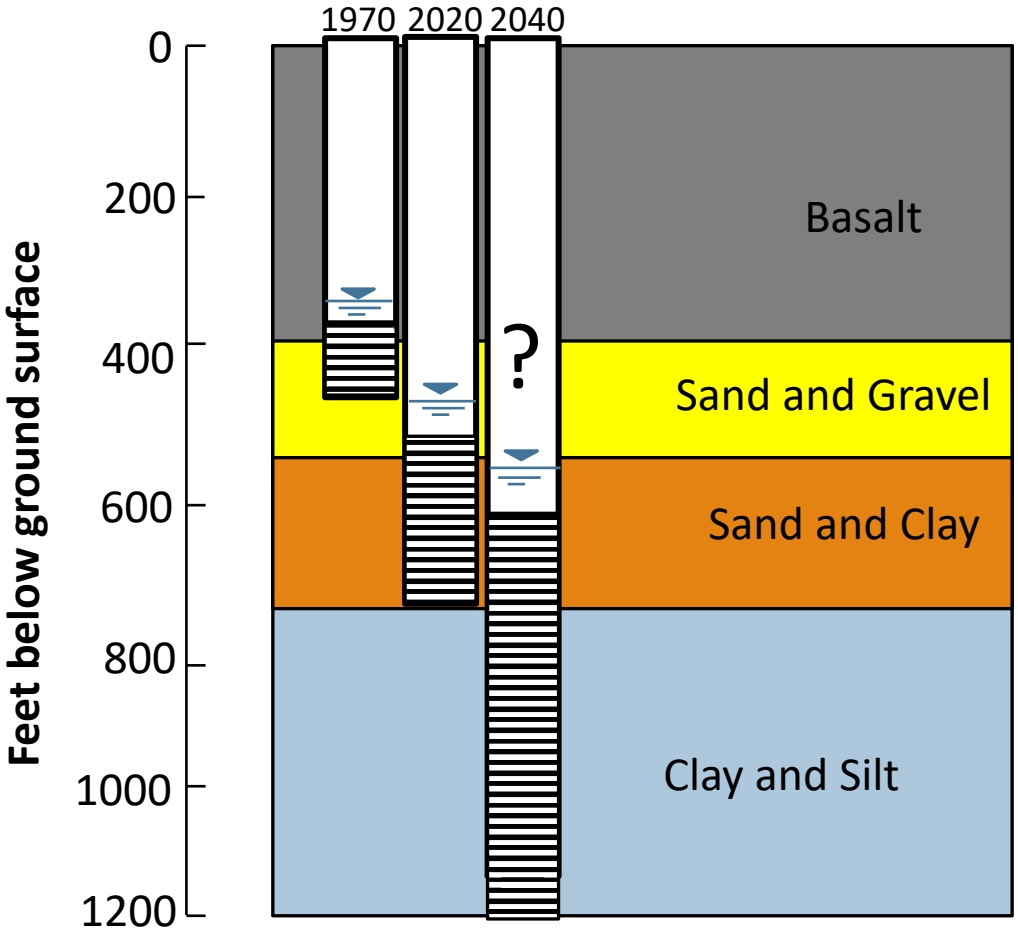


Groundwater Level Declines Cinder Cone Butte



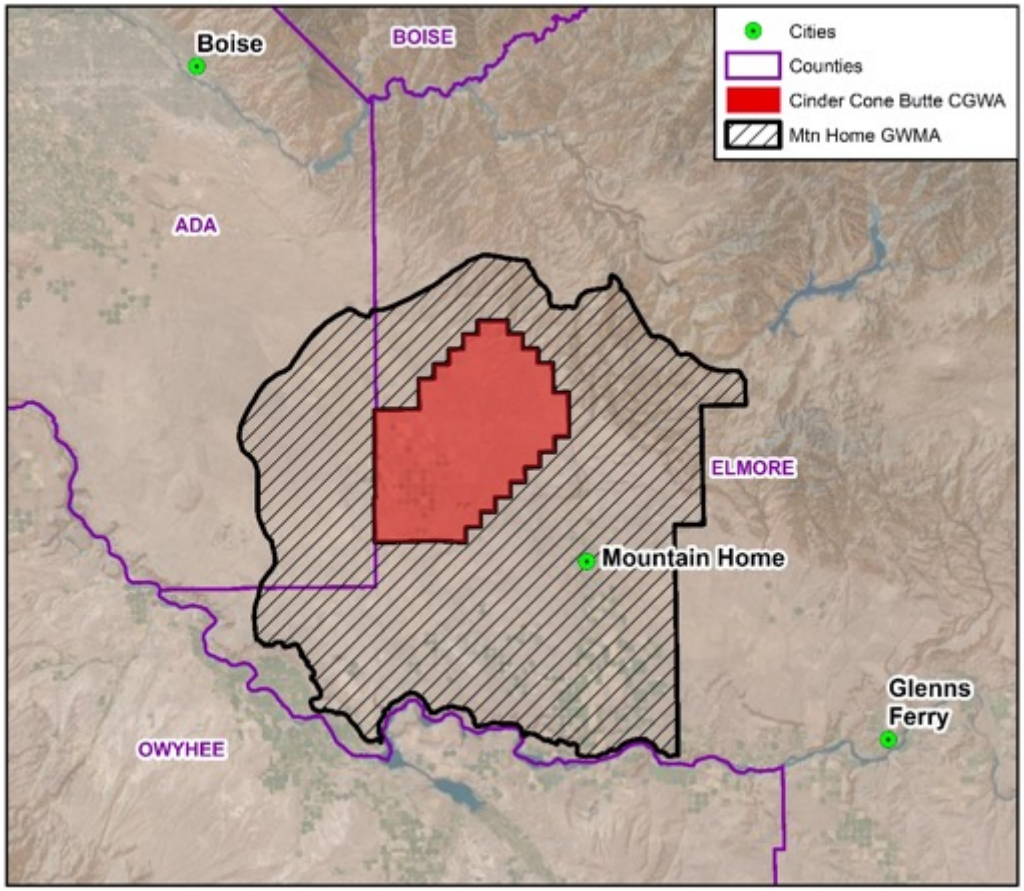
Physical Impacts of Declining Ground Water Levels

- Increased pumping costs
- Deeper wells required
- Some wells cannot be effectively replaced with deeper wells



Regulatory/Administrative Actions to Control Water Level Decline

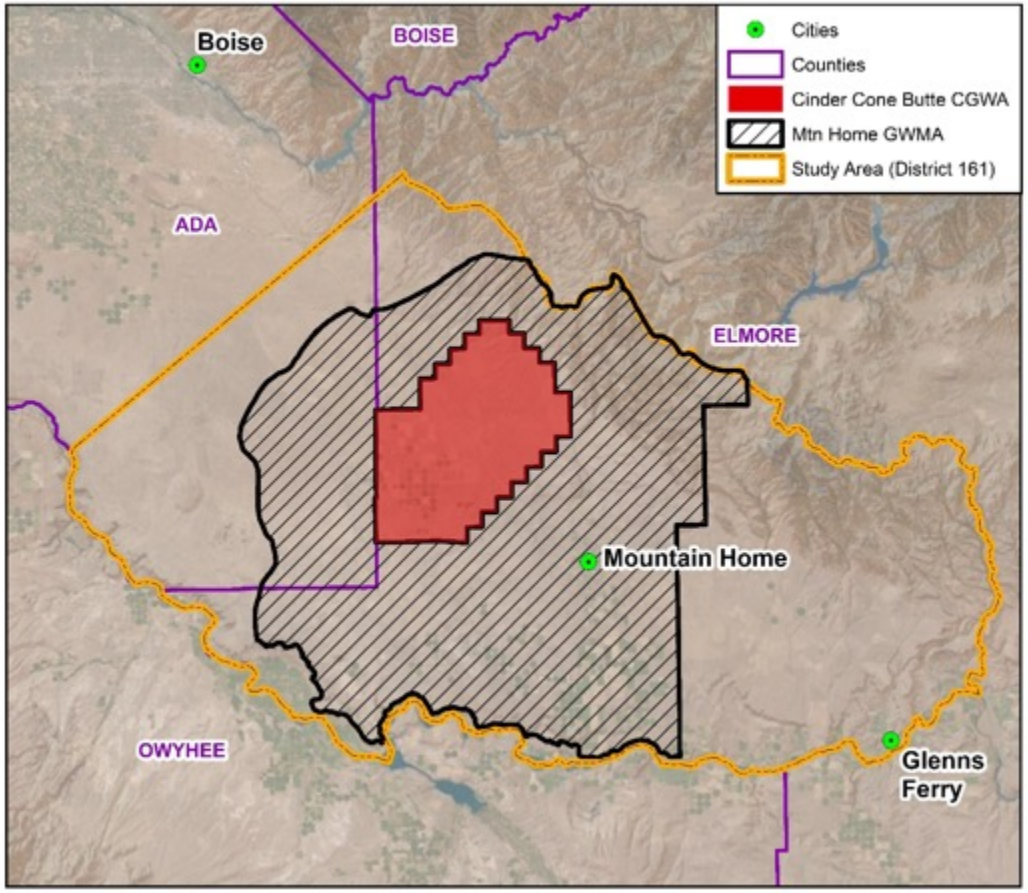
- Cinder Cone Butte Critical Ground Water Area – 1981
- Mountain Home Ground Water Management Area – 1982



Other Water Right Activities

- Snake River Basin Adjudication (SRBA)

- Mountain Home Area Water District (WD 161)



Potential For Curtailment

- Senior-priority water right holders have the ability to make delivery calls against junior-priority water right holders.
- A delivery call can result in full or partial curtailment of junior priority water, unless adequate mitigation is provided.
- Eastern Snake Plain Aquifer delivery calls
  - included consumptive municipal rights
  - Resulted in development of mitigation plans that require replacement water to senior rights and reductions in pumping.

Economic Impacts of Declining Ground Water Levels

- MHAFB
- Agriculture
- City of Mountain Home
- Future Economic Development

Water Development Activities by Elmore County Commissioners

- 2015 Groundwater Study
- 2017 Water Supply Alternatives Study
  - Alternative sources identified as South Fork Boise River, Snake River, and Canyon Creek
- Water Right Permit Applications
  1. Canyon Creek Recharge
  2. South Fork Boise River at Anderson Ranch Reservoir
  3. Snake River at CJ Strike Reservoir
- Anderson Ranch Dam Raise – Request for Storage

Elmore County Water Projects

- Authorization
  - Idaho Code Section 31-877
  - Idaho Code Section 50-323
  - Idaho Code Title 50 Chapter 18

IC 31-877. WATER AND SEWER SERVICES.

The boards of county commissioners in their respective counties shall have the authority to provide necessary water and sewer services to any part of the county which does not receive water and sewer services ....

For purposes of this section, a board of county commissioners shall have the authority granted to water and sewer districts pursuant to chapter 32, title 42, Idaho Code, and the authority granted to municipalities pursuant to the provisions of title 50, Idaho Code.

IC 50-323. DOMESTIC WATER SYSTEMS.

Cities are hereby empowered to establish, create, develop, maintain and operate domestic water systems; provide for domestic water from wells, streams, water sheds or any other source; provide for storage, treatment and transmission of the same to the inhabitants of the city; and to do all things necessary to protect the source of water from contamination. The term "domestic water systems" and "domestic water" includes by way of example but not by way of limitation, a public water system providing water at any temperature for space heating or cooling, culinary, sanitary, recreational or therapeutic uses.

IC 50-1801. CITY IRRIGATION SYSTEM AUTHORIZED

Any city within the state of Idaho is hereby authorized, in the whole or part of the city to establish a city irrigation system and to extend the boundaries within which it will supply and deliver irrigation water; to acquire by purchase, contract, eminent domain or otherwise and to operate, maintain, construct, improve, enlarge and extend an irrigation system to supply water to a part or all of the lands, lots, parcels and pieces of real estate within the limits of such city; to acquire by appropriation, purchase, contract, eminent domain or by any other lawful means not herein enumerated any of the public or private waters of the state of Idaho whether such waters are surface or subterranean waters; to acquire, extend, enlarge, maintain and operate any canals, ditches, conduits and rights of way for ditches, canals and conduits by contract, deed, eminent domain or any other lawful means for the use of such city in supplying water to and distributing the same throughout the city.

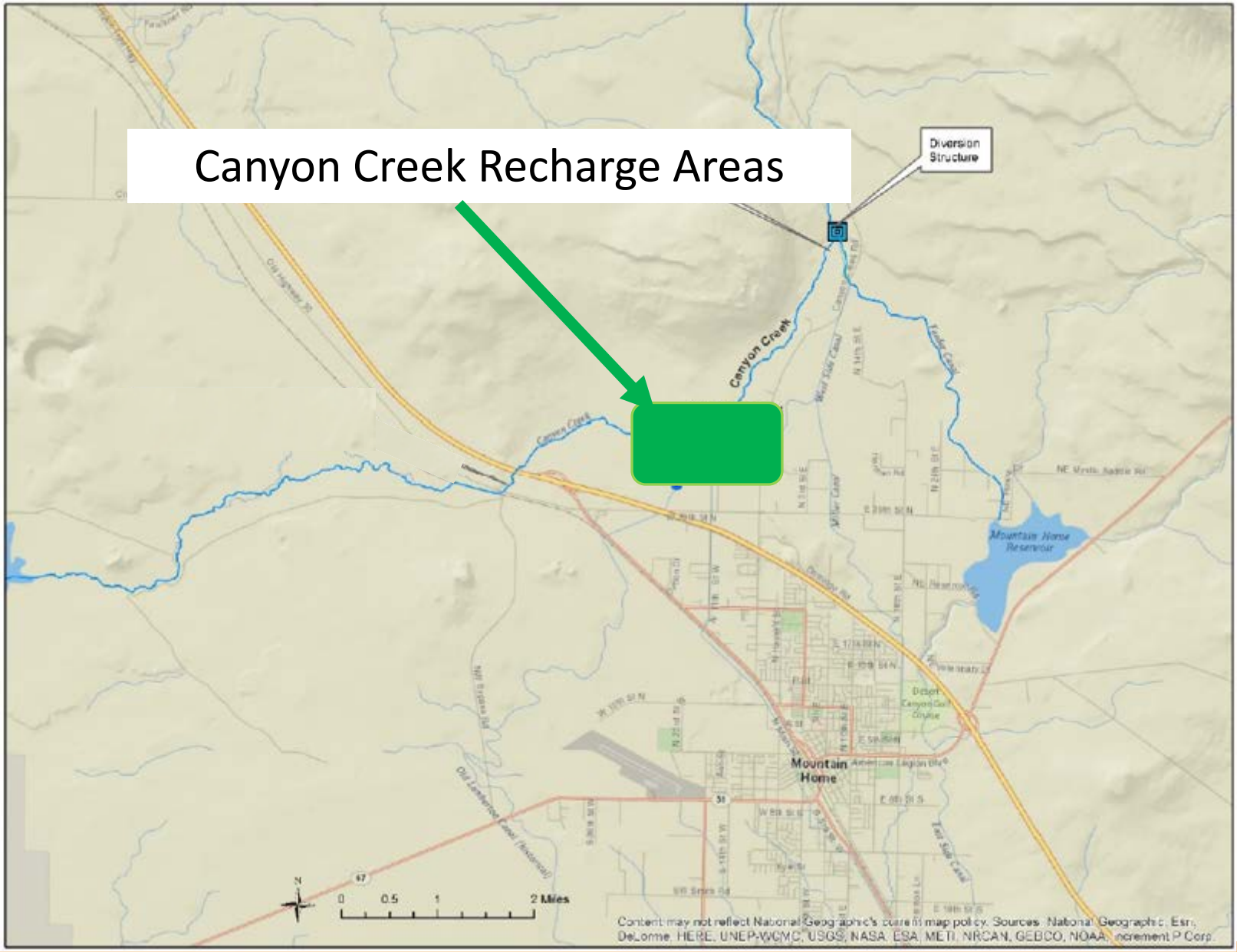
Elmore County Water Projects

1. Canyon Creek Recharge
2. Anderson Ranch Dam Pump Station and Pipeline
3. Snake River Pump Station and Pipeline

Project 1 - Canyon Creek Recharge

- Project construction completed February 2019 – 3 gravel pit sites
- IWRB Grant
- 200 cfs design capacity
- Water quality monitoring program
- 2000 to 3000 af average anticipated
- All available Canyon Creek flow was recharged in 2019

Canyon Creek Recharge Areas



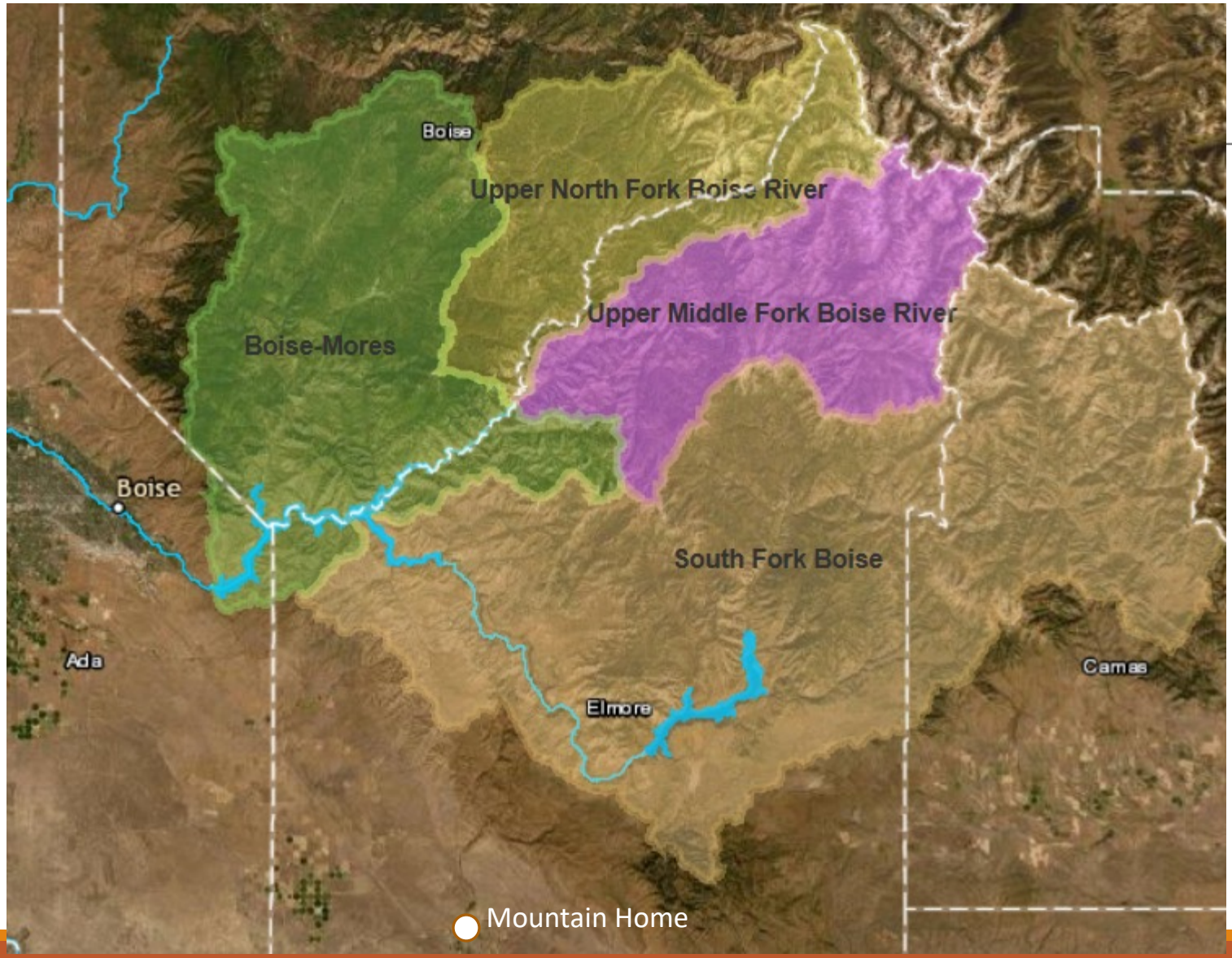
Check and Headgates on Canyon Creek

Flow Measurement Weir at Recharge Site

Water Flowing into Recharge Site

Recharge Site

Project 2 - South Fork Boise River



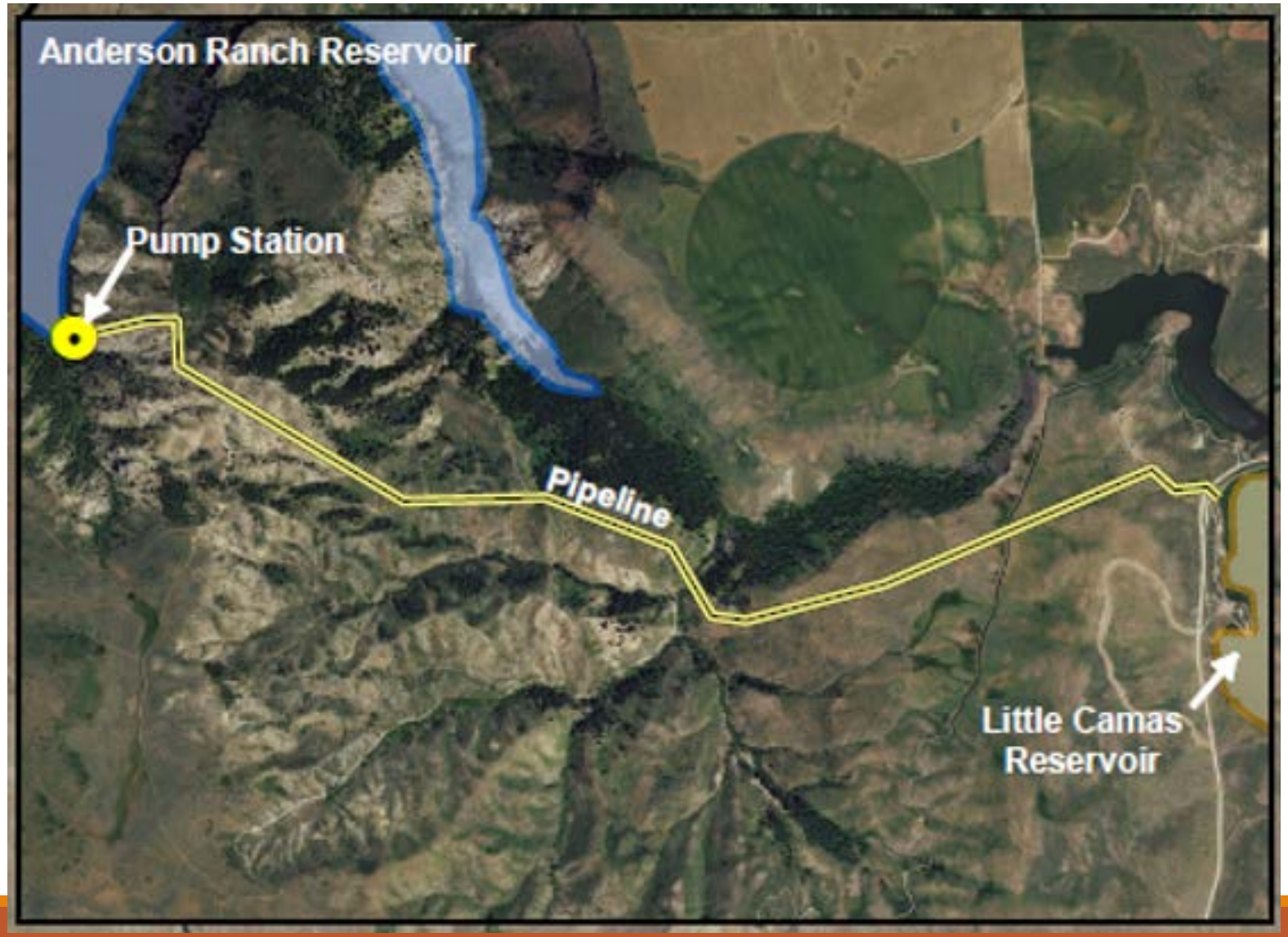
South Fork Boise River Water Availability

- Water in excess of existing rights (unappropriated water) is available approximately every other year
- Duration of this “flood water” can range from a few days to more than two months
- Estimated average annual diversion could be 7500 af.

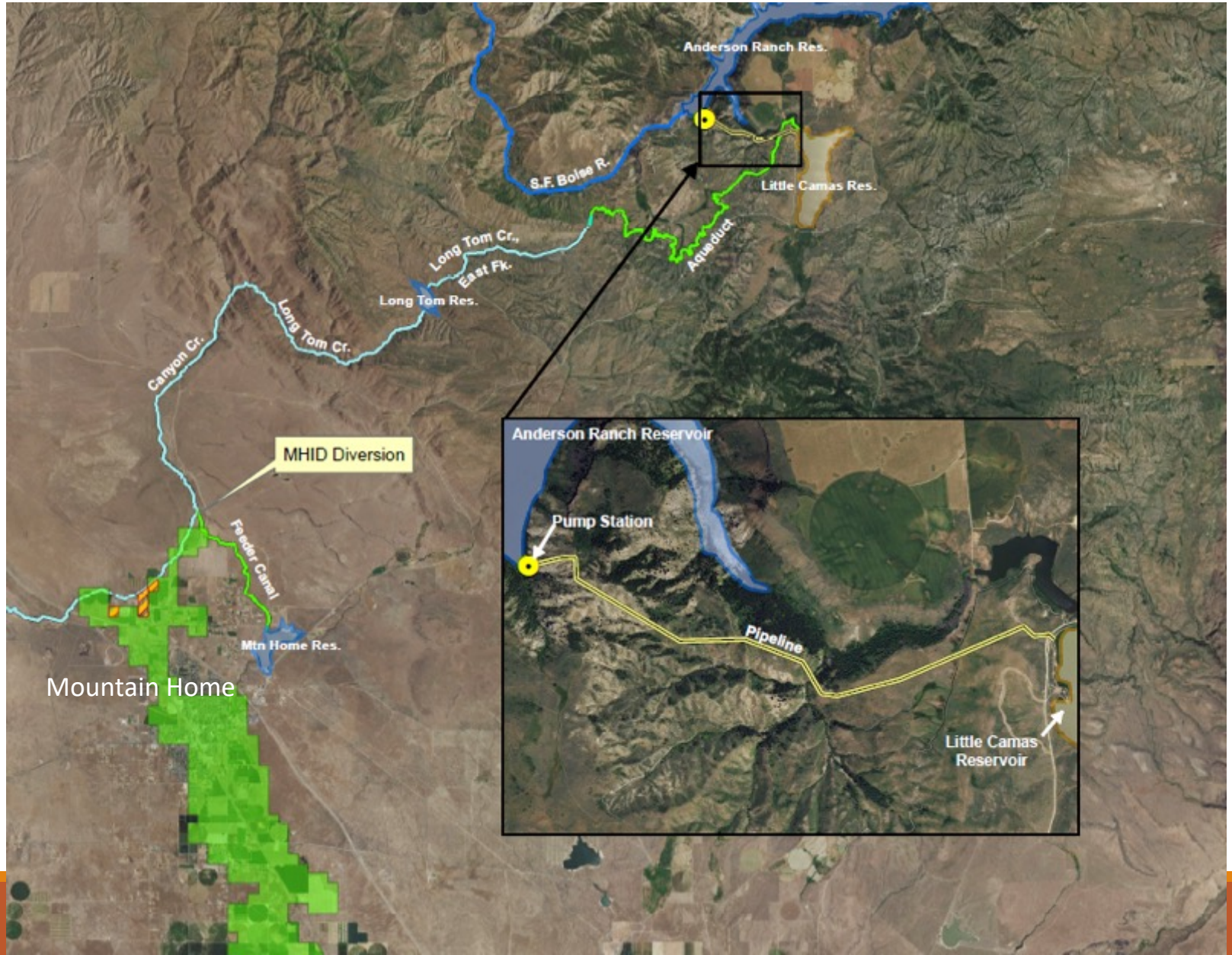
South Fork Boise River Project

- 200 cfs floodwater permit for County approved on August 13, 2019
- Engineering in progress for pump station and pipeline from Anderson Ranch Reservoir to Little Camas Reservoir
- Potential for energy recapture through hydropower generation

South Fork Boise River Water Diversion Project



South Fork Boise River Water Diversion Project



South Fork Boise River Project

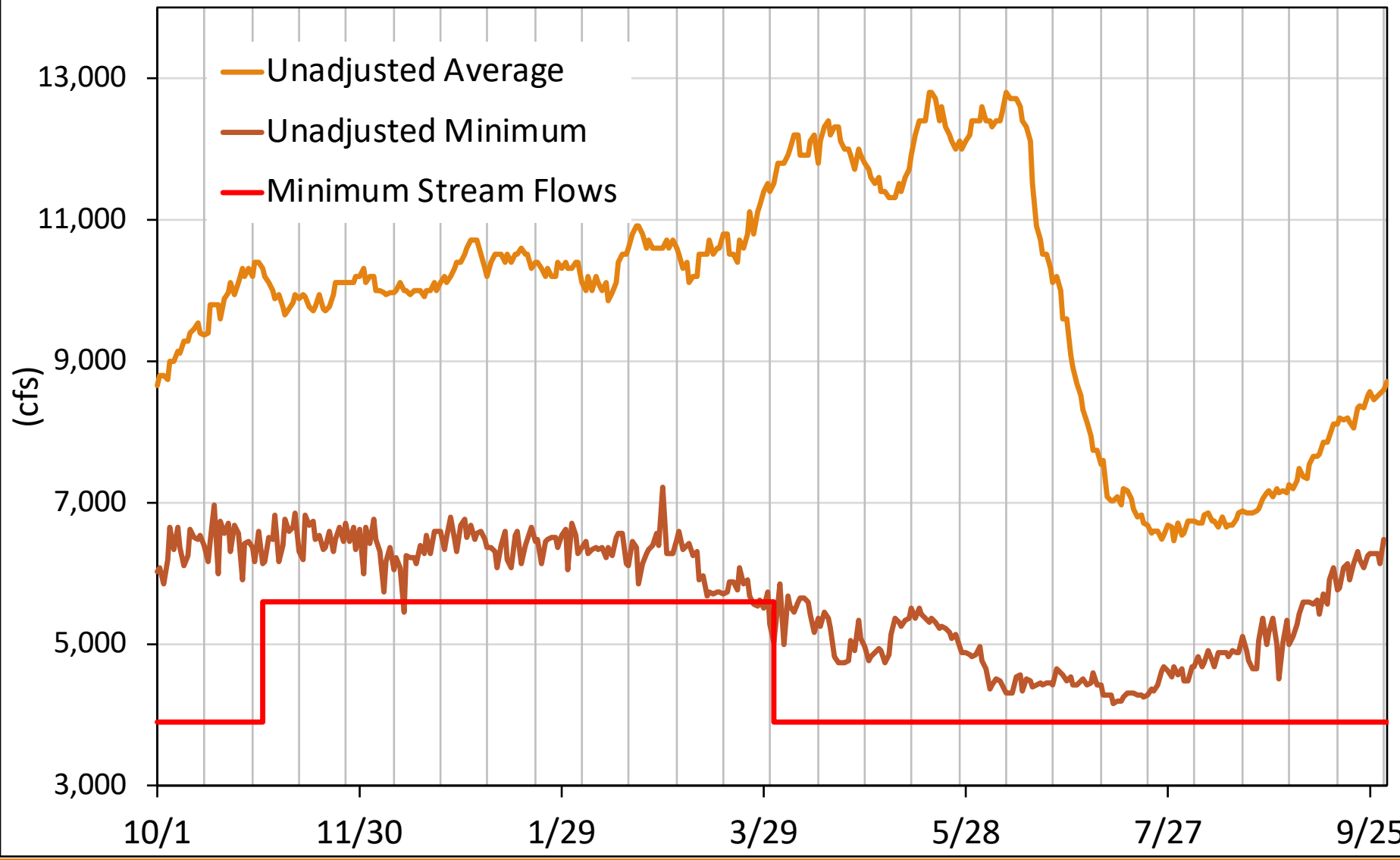
- Anderson Ranch Dam raise study in progress by USBOR and IWRB – 29,000 af
- Elmore County is seeking 10,000 af of the new storage
- Will use the same pump station and pipeline as proposed for SF Boise floodwater

Project 3 - Snake River

Snake River Water Availability

- The Idaho Water Resource Board holds minimum stream flow water rights on the Snake River.
- The minimum stream flows have been satisfied on more than 99% of the days in the past 30 years.

Snake River Near Murphy 1981-2012



Snake River Water Availability

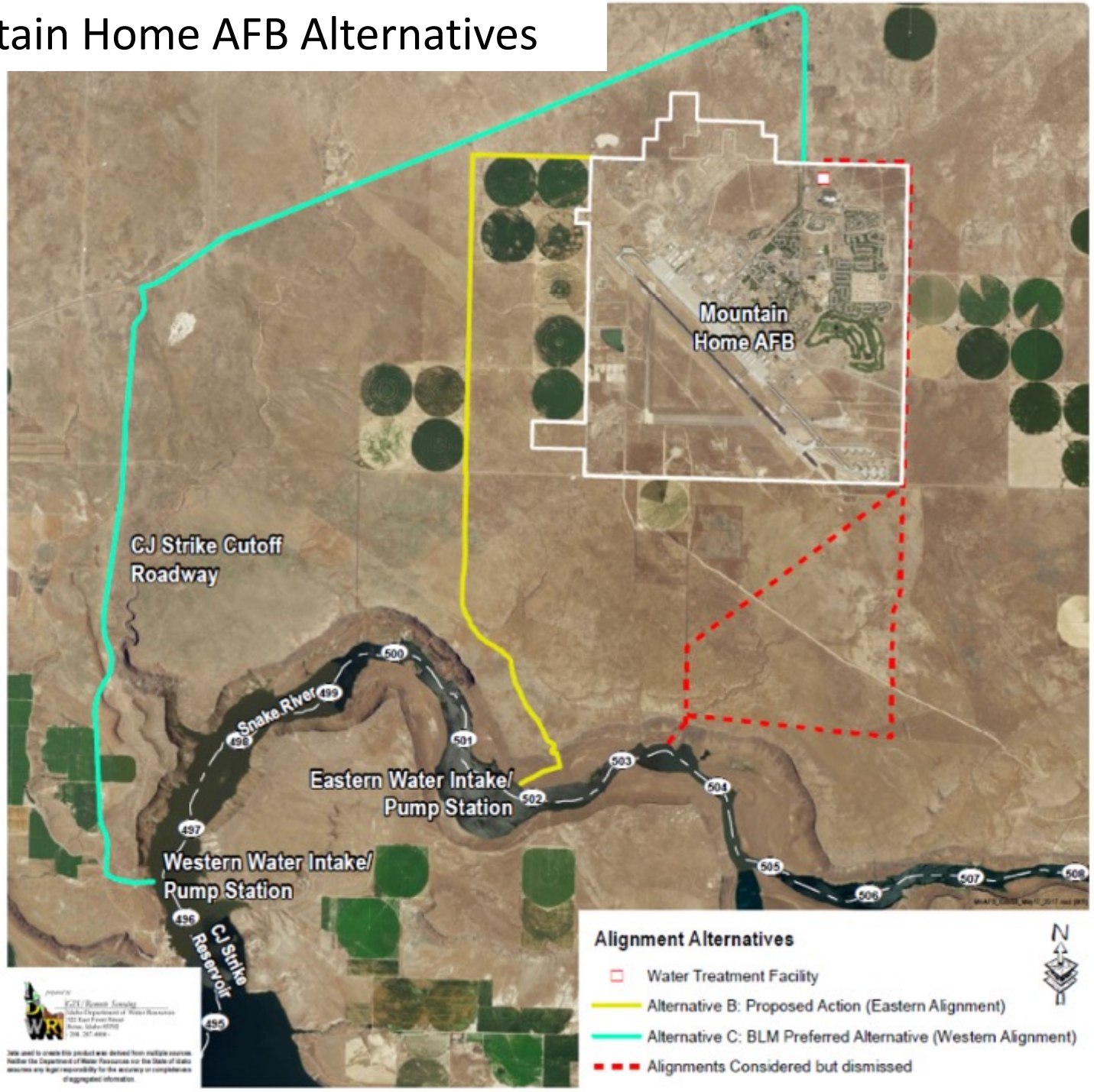
- Water is available for limited appropriation from the Snake River when minimum stream flows are satisfied
- Elmore County has a 20 cfs water right application pending
  - Protests have been resolved. Approval is anticipated
  - Proposed uses are municipal, ground water recharge, and supplemental irrigation

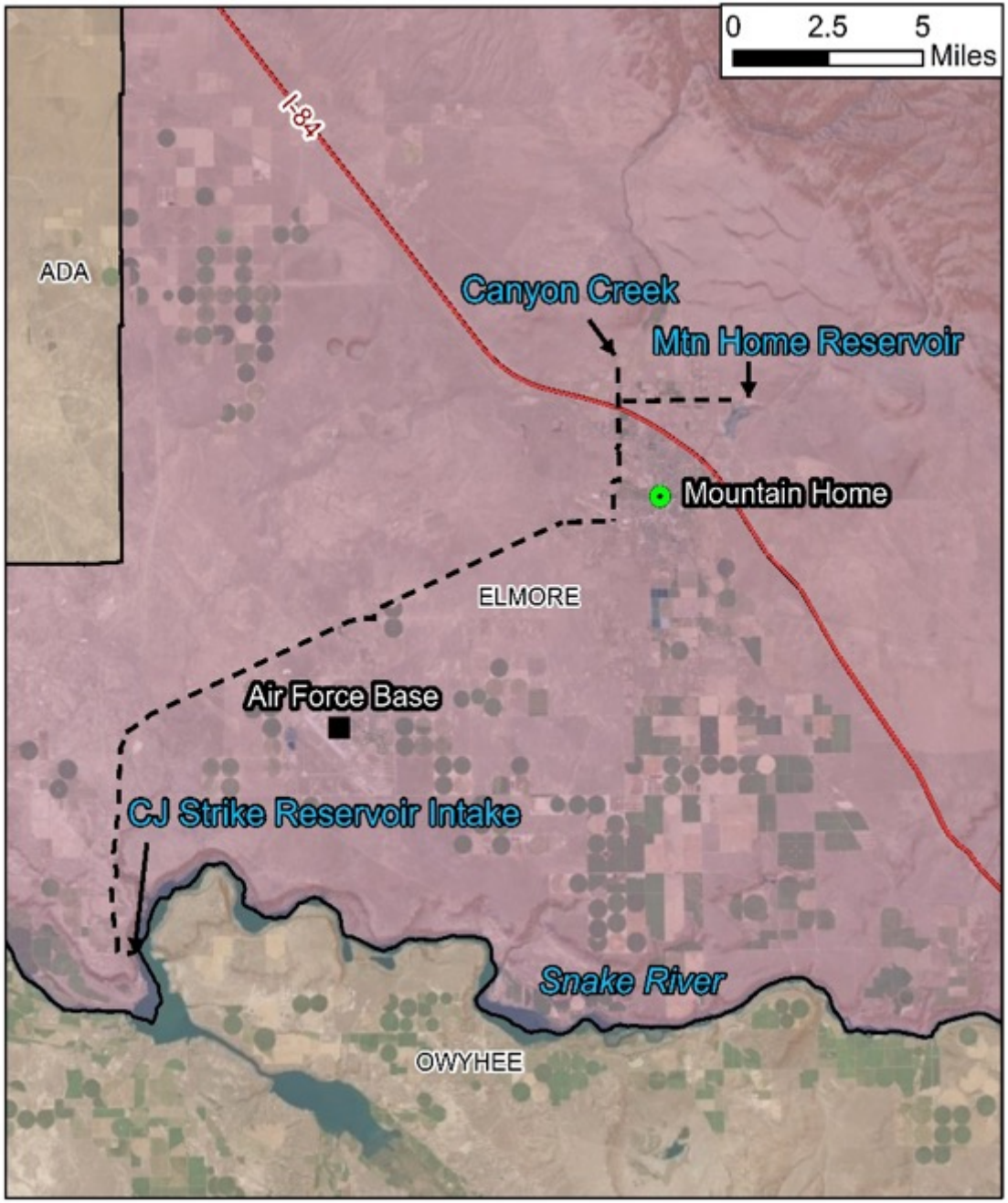
Snake River Water Projects

- Elmore County proposes a 20 cfs pump station and pipeline
  - Year-round operation will produce 14,000 af
- Elmore County's pump station and pipeline will parallel a pump station and pipeline to MHAFB currently under consideration by the Idaho Water Resource Board
- Elmore County's pipeline will extend past the base to City of Mountain Home

Snake River Water Diversion Project

Mountain Home AFB Alternatives

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Miles
I-84
ADA
Canyon Creek
Mtn Home Reservoir
Mountain Home
ELMORE
Air Force Base
CJ Strike Reservoir Intake
Snake River
OWYHEE

Costs for Water

- Estimated water cost of $90 to more than $200 per acre foot – much higher than current irrigation water costs
- Some costs might be reduced through energy recapture and optimized facility sizing
- How to pay?

Status of Projects

- Canyon Creek recharge project is operational.
- Preliminary design of South Fork Boise pump station and pipeline in progress.
- Waiting for Anderson Dam raise feasibility to be completed.
- Waiting for IDWR action on Snake River water right application.
- Waiting for State and MHAFB to move forward on MHAFB project.

Final Points

- A county can be an appropriate entity to initiate a water project in some situations.
  - Issues that are too broad to be covered by a single city, irrigation district, or water user group
  - Areas where groundwater users have not organized into a groundwater district
- Counties have statutory authority to develop water projects.
  - The County can be either an interim or the permanent entity to develop and operate a water project.
- The Idaho Water Resource Board may be able to provide funding assistance for investigations and water development.

Questions?