BUREAU OF RECLAMATION

Water Management 101

Jackson, Wyoming
September 14, 2023

Why Are We Here Today?

- Commitment to deliver a 101 course.
- To provide details on the Bureau of Reclamation operating systems
  - Who?
  - When?
  - What?
  - Why?
  - Where?
  - How?

Agenda

- Overview of Reclamation and the Snake River Basin
- Project Authorizations and Multiple Interests
- Hydropower and Facility Operation & Maintenance (O&M)
- Water Management Overview
- Idaho Department of Water Resources
- Questions & Wrap-Up

BSEE
Bureau of Safety and Environmental Enforcement

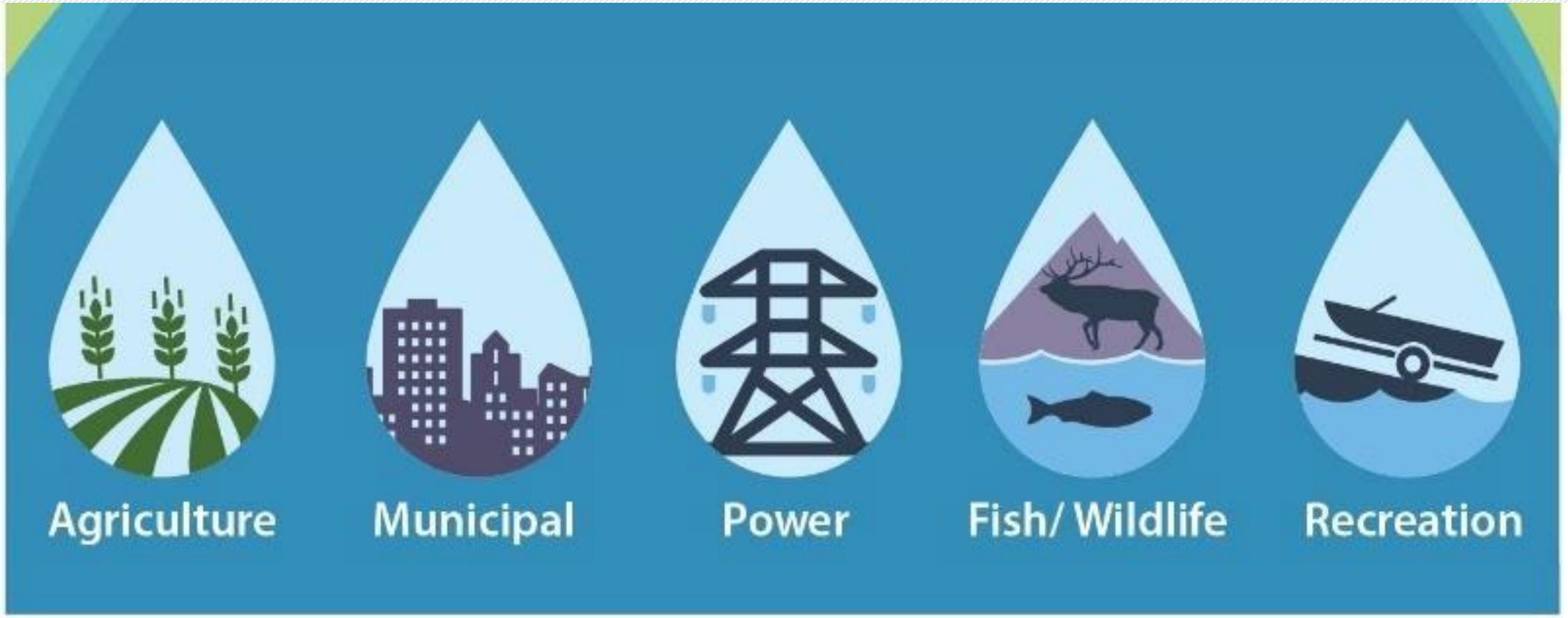
BOEM
Bureau of Ocean Energy Management

USGS
science for a changing world

Bureau of Trust Funds Administration
(BTFA)

BUREAU OF RECLAMATION

What Does the Bureau of Reclamation Do?



Priorities

- Ensure continued delivery of water and power benefits (meeting legal and contractual requirements)
- Operate and maintain projects in a safe and reliable manner
- Comply with laws, regulations and policy, including environmental
- Further Secretary's Indian Trust responsibilities
- Plan for future
- Enhance business operations

Stakeholder Communication & Coordination

Hydropower
BPA, Reserve Power, Idaho Power, others

Stakeholders
Irrigation Districts, Water Master, Committee of Nine

Technical Partners
Army Corps of Engineers, National Weather Service, NRCS

Others

Resource Protection
National Park Service, BLM, USFS

Shoshone-Bannock Tribes

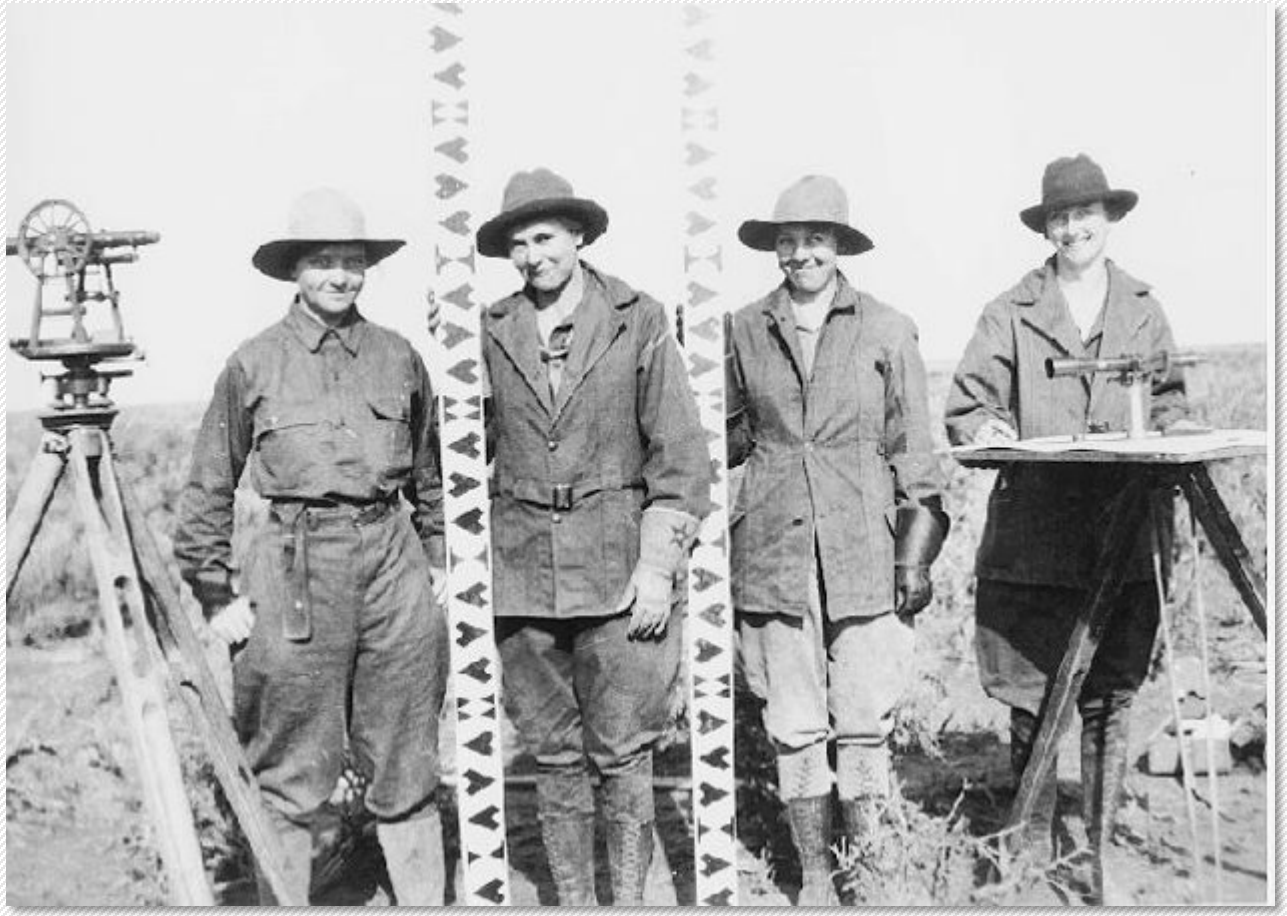
Upper Snake River Operations

Recreation Partners
Counties
State
Local
Private
Transportation

Emergency Management
Teton County, WY

State Agencies
Fish and Game, Dept. Env. Quality, Transportation

Private
Fishing
Rafting
Entertainment
News



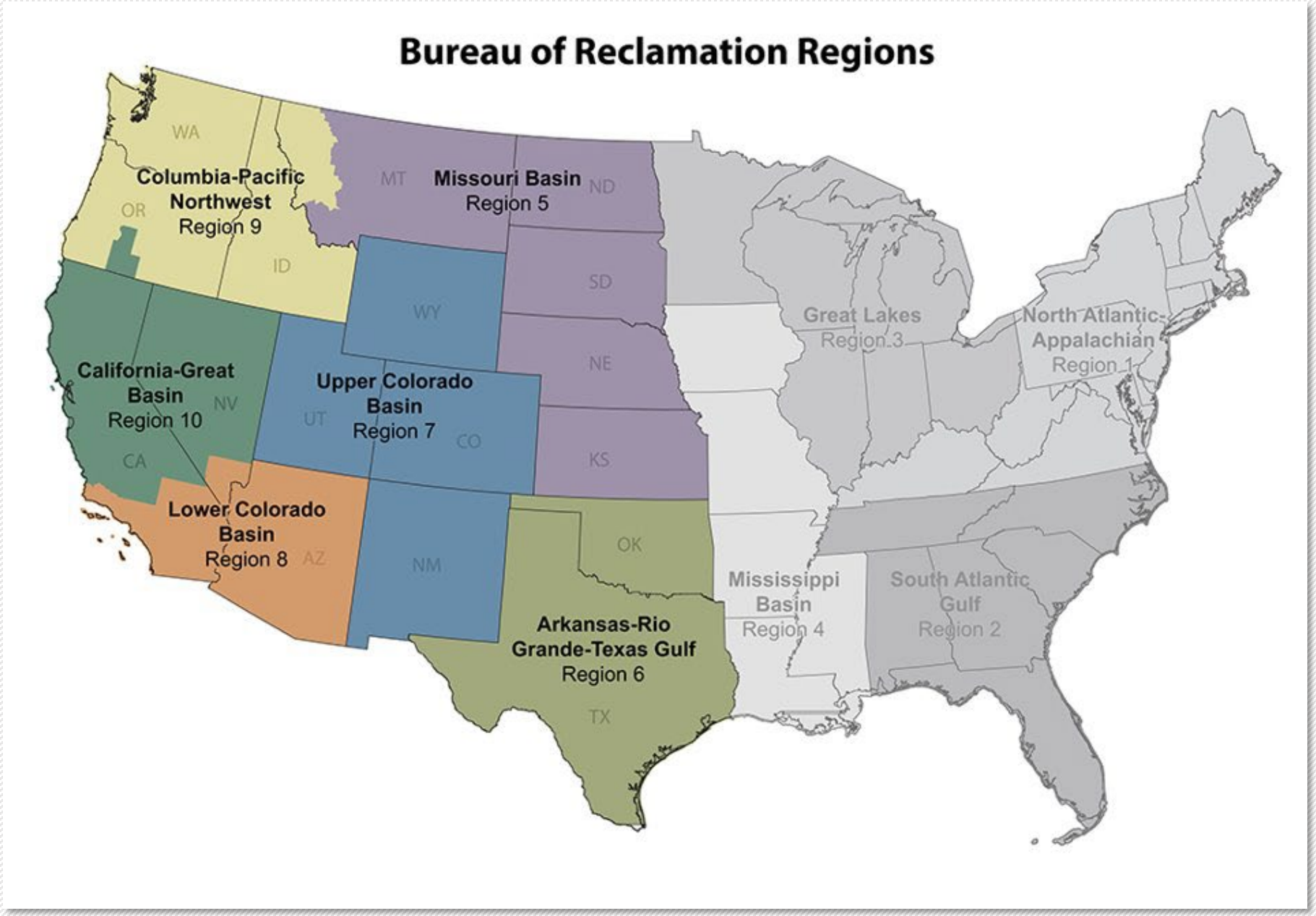
All female survey crew, 1918, Minidoka Project, Idaho.

DEVELOP

MANAGE

PROTECT

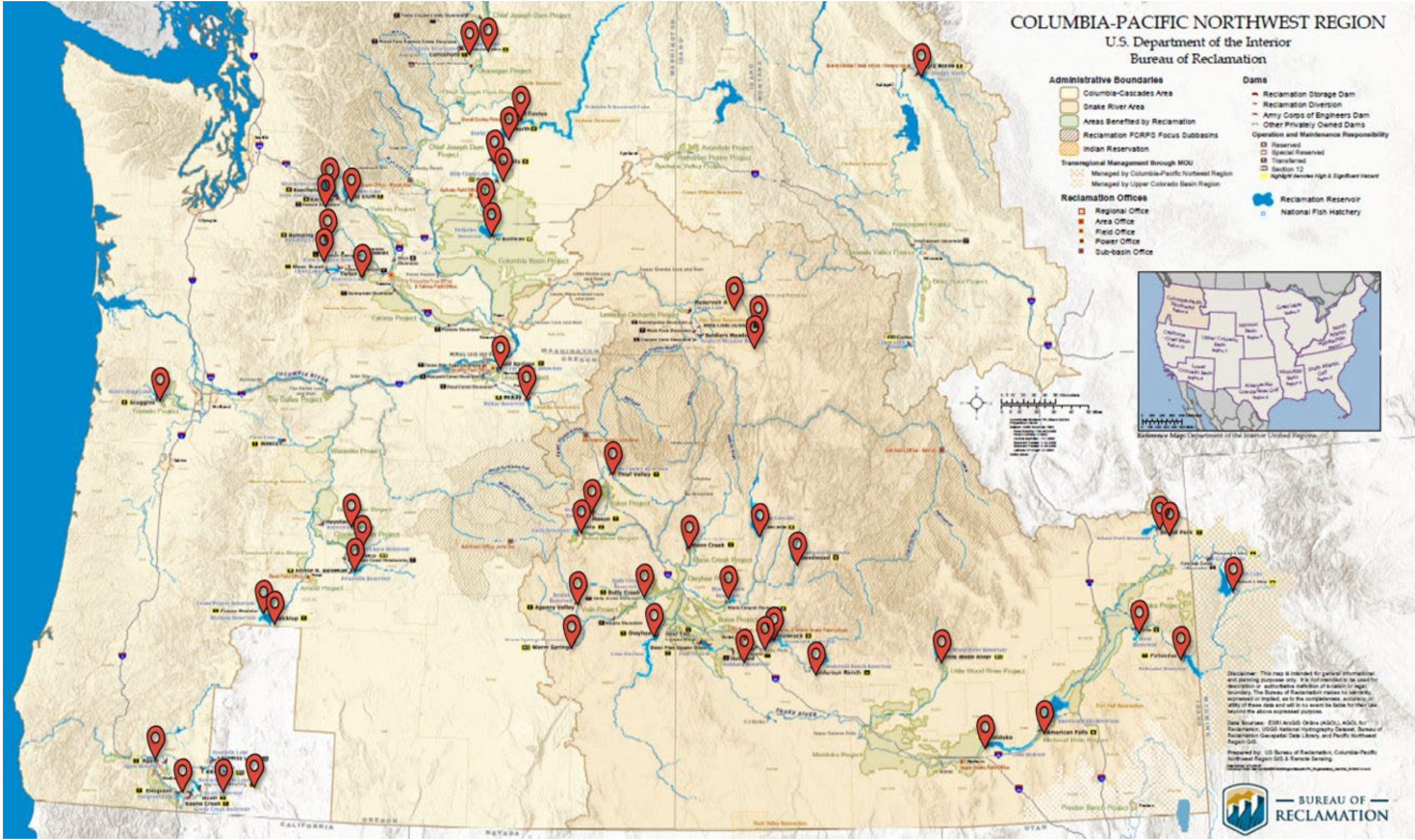
Largest water supplier in the U.S.
Second largest producer of hydropower in the U.S.

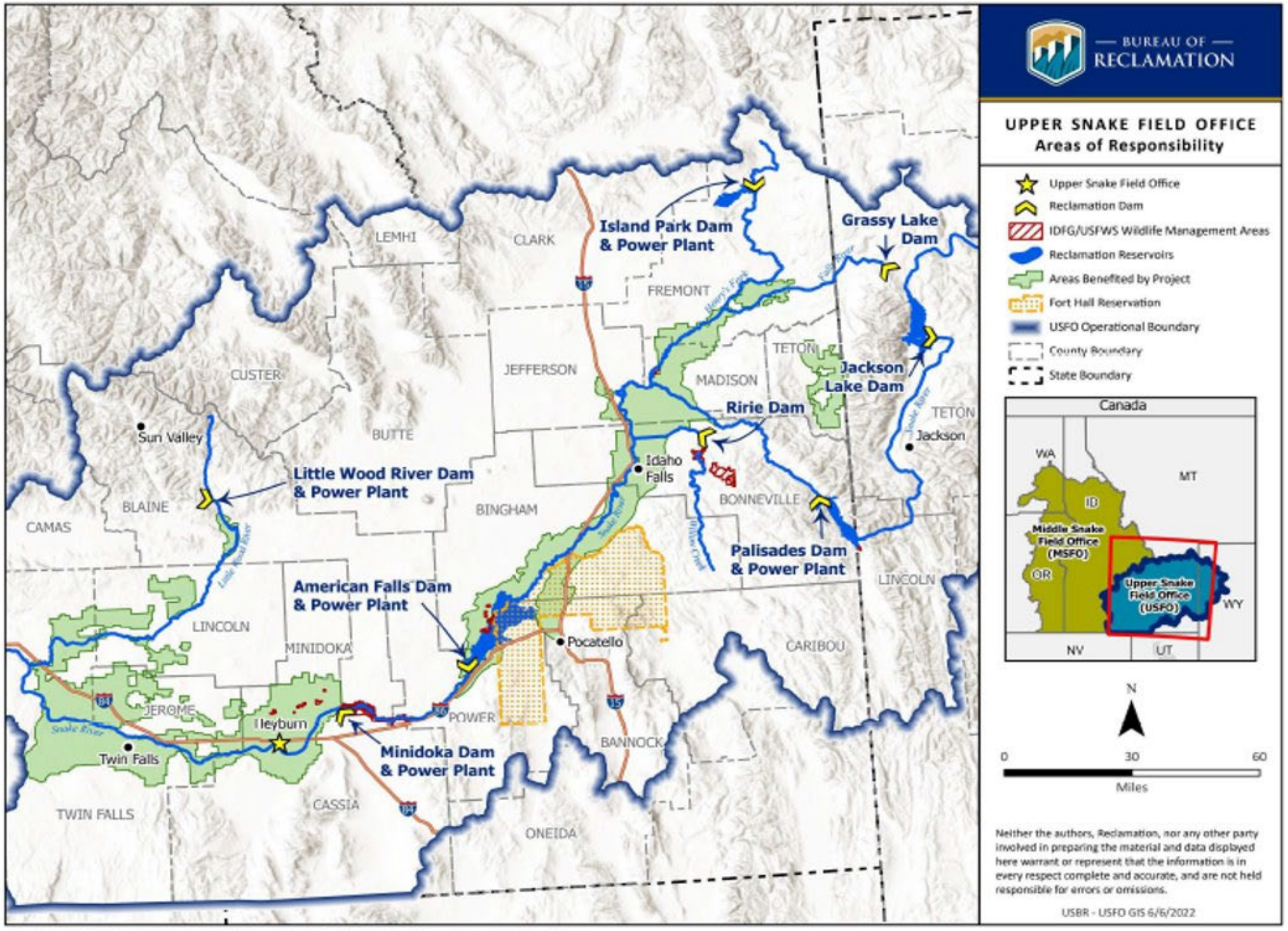


- ❑ Western US
- ❑ Six Regions
- ❑ Columbia-Pacific NW

C-PN Reservoirs & River Systems

https://www.usbr.gov/pn/maps/pnmap.pdf




BUREAU OF RECLAMATION
UPPER SNAKE FIELD OFFICE
Areas of Responsibility
Upper Snake Field Office
Reclamation Dam
IDFG/USFWS Wildlife Management Areas
Reclamation Reservoirs
Areas Benefited by Project
Fort Hall Reservation
USFO Operational Boundary
County Boundary
State Boundary
Island Park Dam & Power Plant
Grassy Lake Dam
Jackson Lake Dam
Ririe Dam
Little Wood River Dam & Power Plant
Palisades Dam & Power Plant
American Falls Dam & Power Plant
Minidoka Dam & Power Plant
LEMHI
CLARK
FREMONT
JEFFERSON
MADISON
TETON
CUSTER
BUTTE
BLAINE
CAMAS
BINGHAM
BONNEVILLE
LINCOLN
MINIDOKA
POWER
CARIBOU
BANNOCK
CASSIA
TWIN FALLS
ONEIDA
JEROME
Sun Valley
Idaho Falls
Jackson
Pocatello
Heyburn
Twin Falls
Canada
WA
MT
ID
OR
WY
NV
UT
Middle Snake Field Office (MSFO)
Upper Snake Field Office (USFO)
N
0
30
60
Miles
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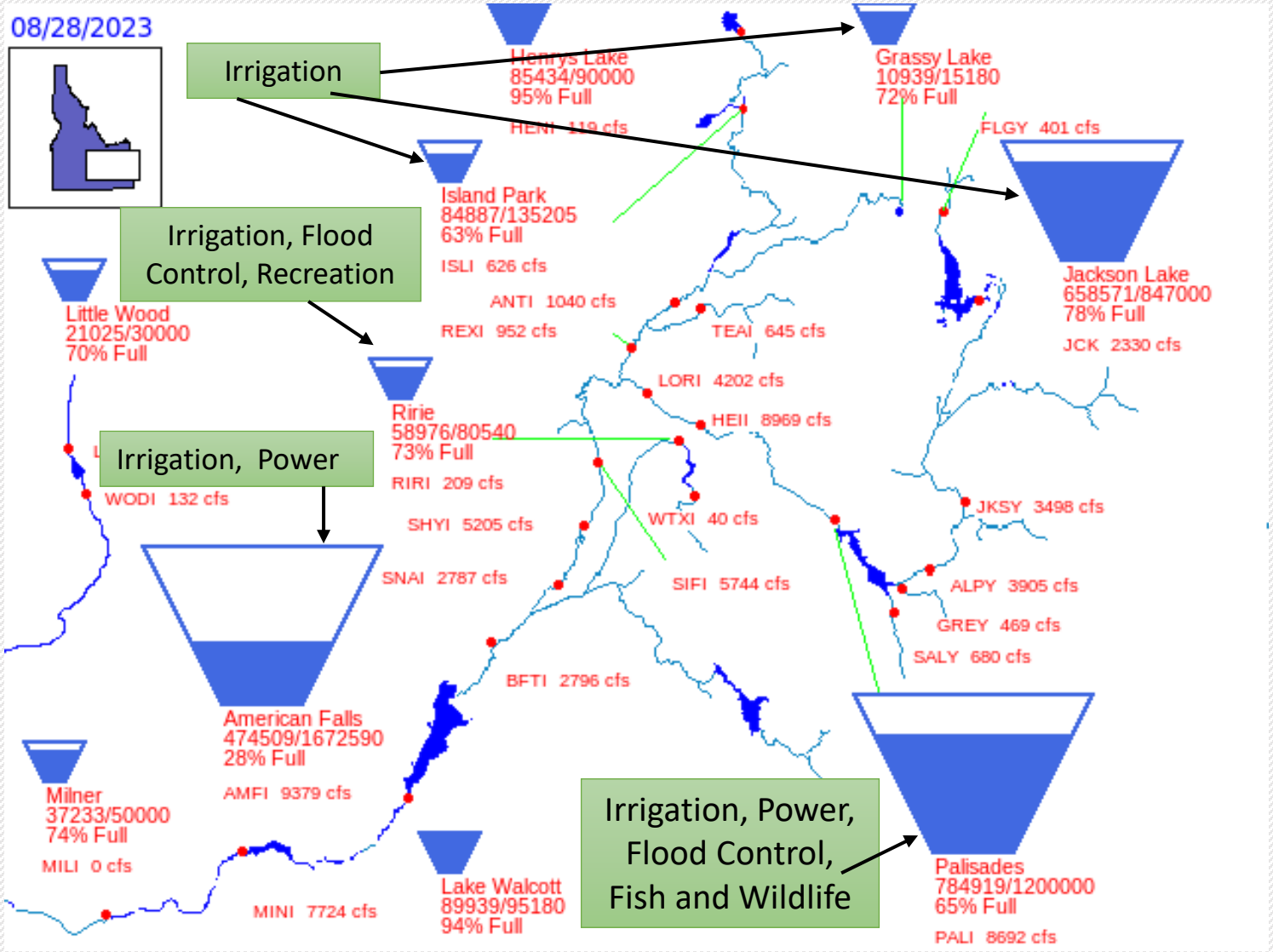
USBR - USFO GIS 6/6/2022

Minidoka Project Authorities



Minidoka Dam	Irrigation and Power
Jackson Lake Dam	Irrigation
American Falls Dam	Irrigation and Power
Island Park Dam	Irrigation
Grassy Lake Dam	Irrigation

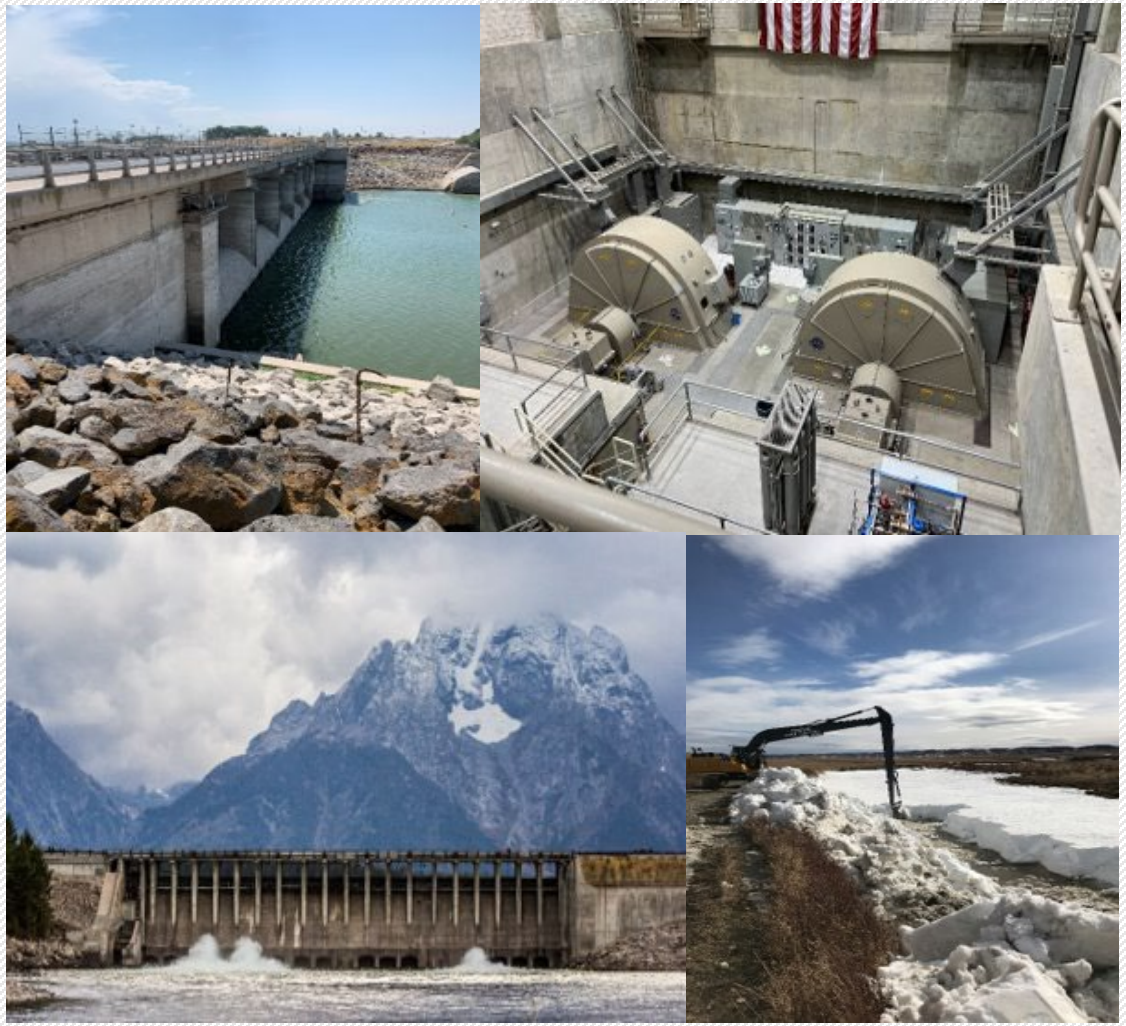
In 1950 – Palisades Project- authorized the upper Snake River system to be operated for Flood Control

Palisades Project	Irrigation, Power, Flood Control, Fish and Wildlife
Ririe Project	Irrigation, Flood Control, Recreation
Michaud Flats Project	Irrigation
Little Wood Project	Irrigation and Flood Control
Teton Basin Project	Irrigation, Power, Flood Control, Fish and Wildlife, Recreation

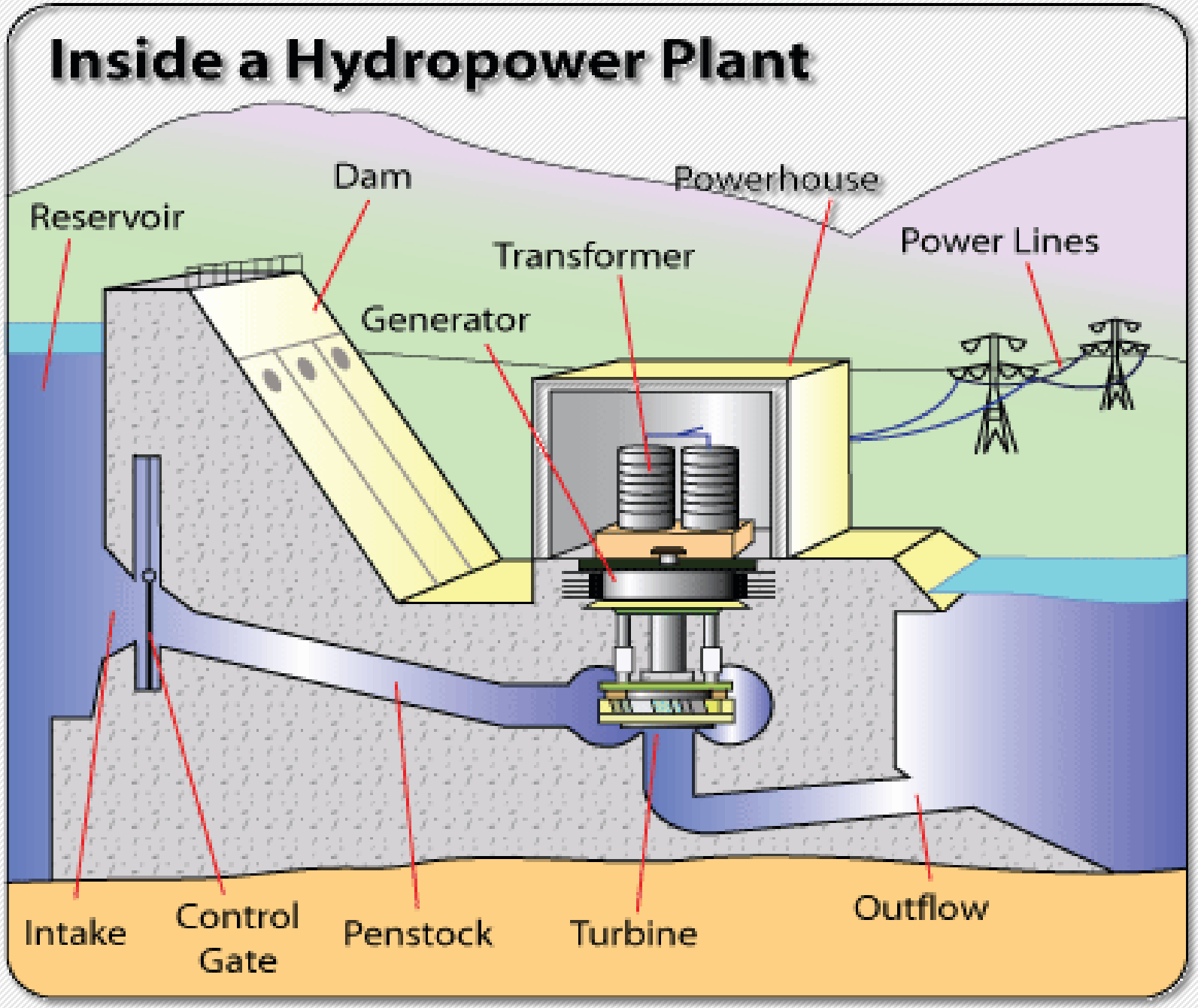
Multiple Interests

- Water Supply
- Protect Infrastructure
- Power Generation
- Fish and Wildlife
- Recreation

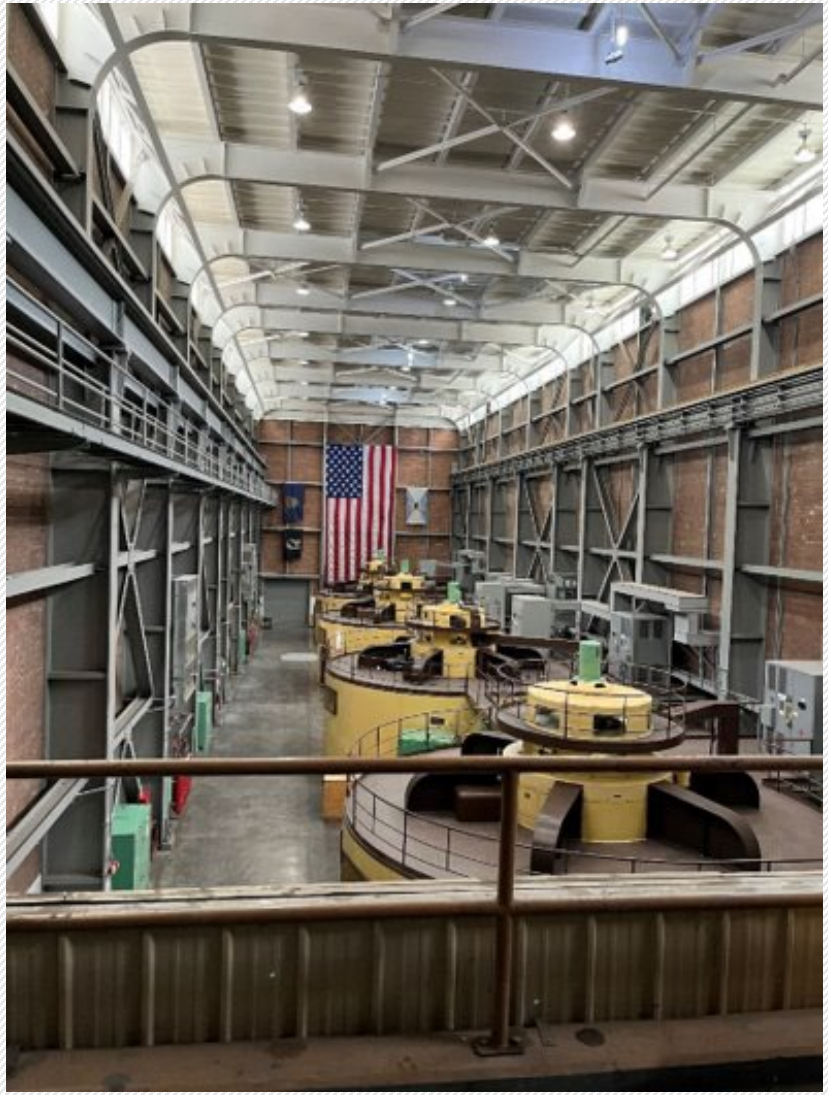
Hydropower and Facility O&M Programs



- Safety of Dams
- Hydropower
- Maintenance
- Repair/Replace
- Heavy Equipment
- Construction
- Land Survey
- Water Delivery
- Infrastructure
- Snow Survey
- Design
- Inspections
- Planning
- Facilities


Inside a Hydropower Plant
Reservoir
Dam
Powerhouse
Power Lines
Transformer
Generator
Intake
Control Gate
Penstock
Turbine
Outflow

Federal Power Generation

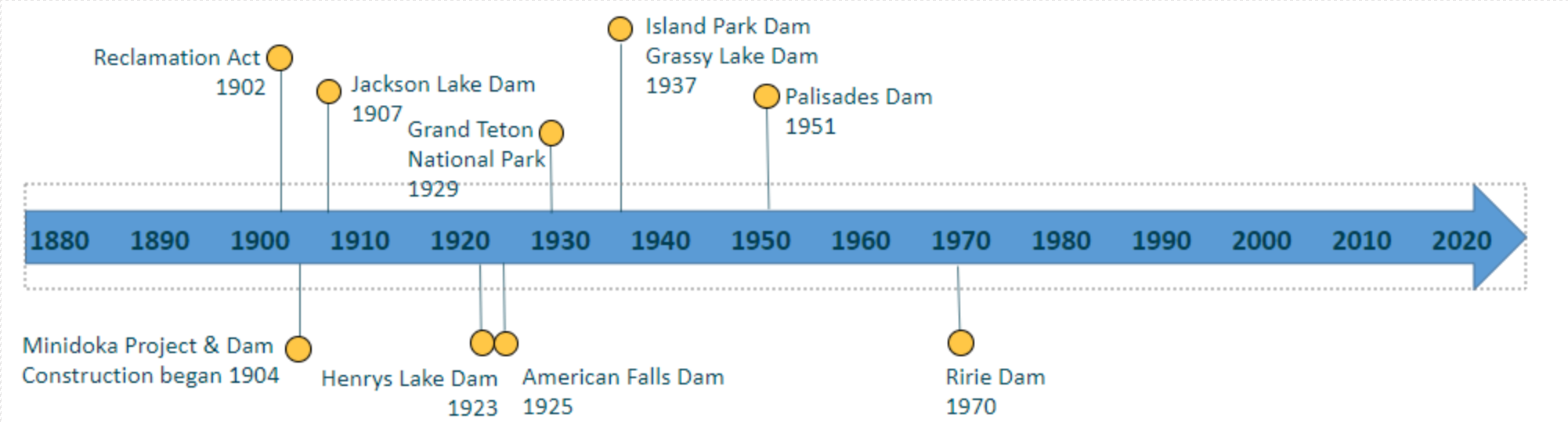


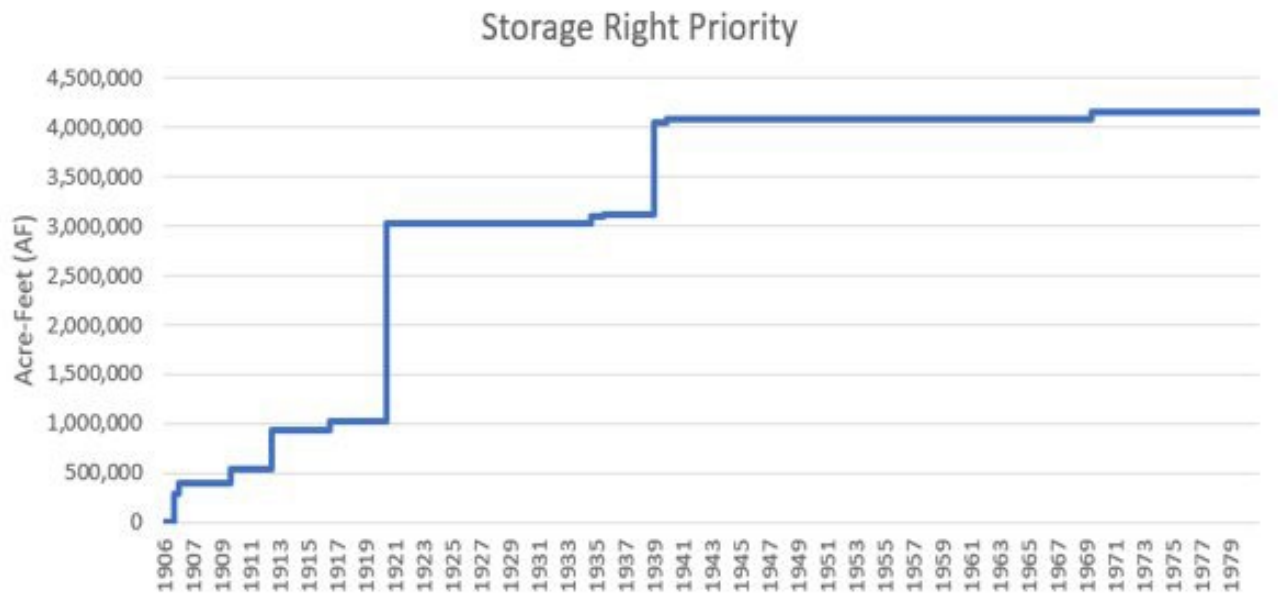
MINIDOKA PROJECT

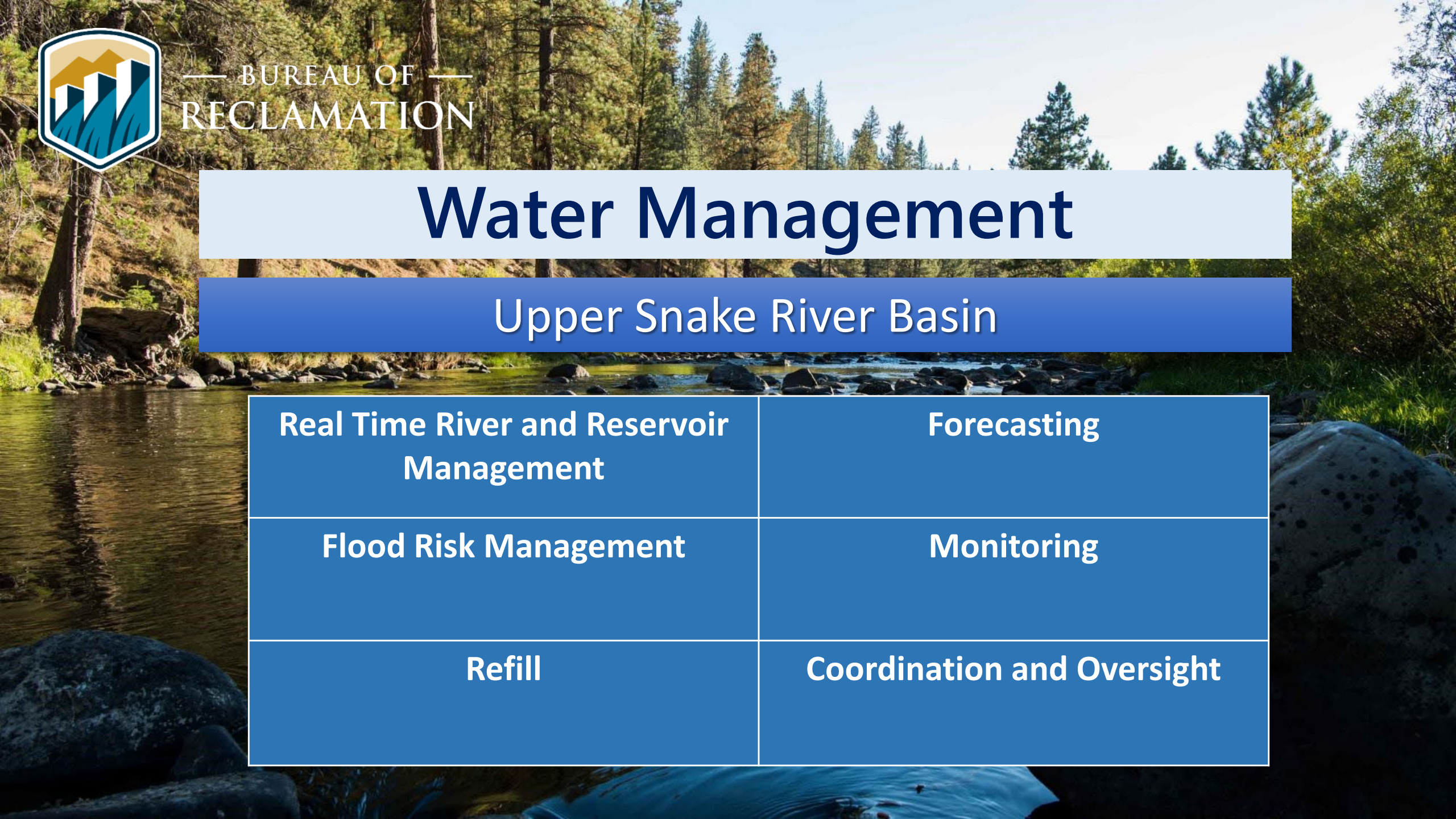
Yearly Benefits of the Minidoka / Palisades Project

Irrigated Crops	**$1.2 Billion**
Power Generated	**~$41 Million in 2021**
Formal Flood Prevention	**$35 Million in 2021** **~$2.6 Billion since life of Project**
Recreation	**$62 Million and over** **650,000 visits**

Upper Snake Storage Development







Water Management

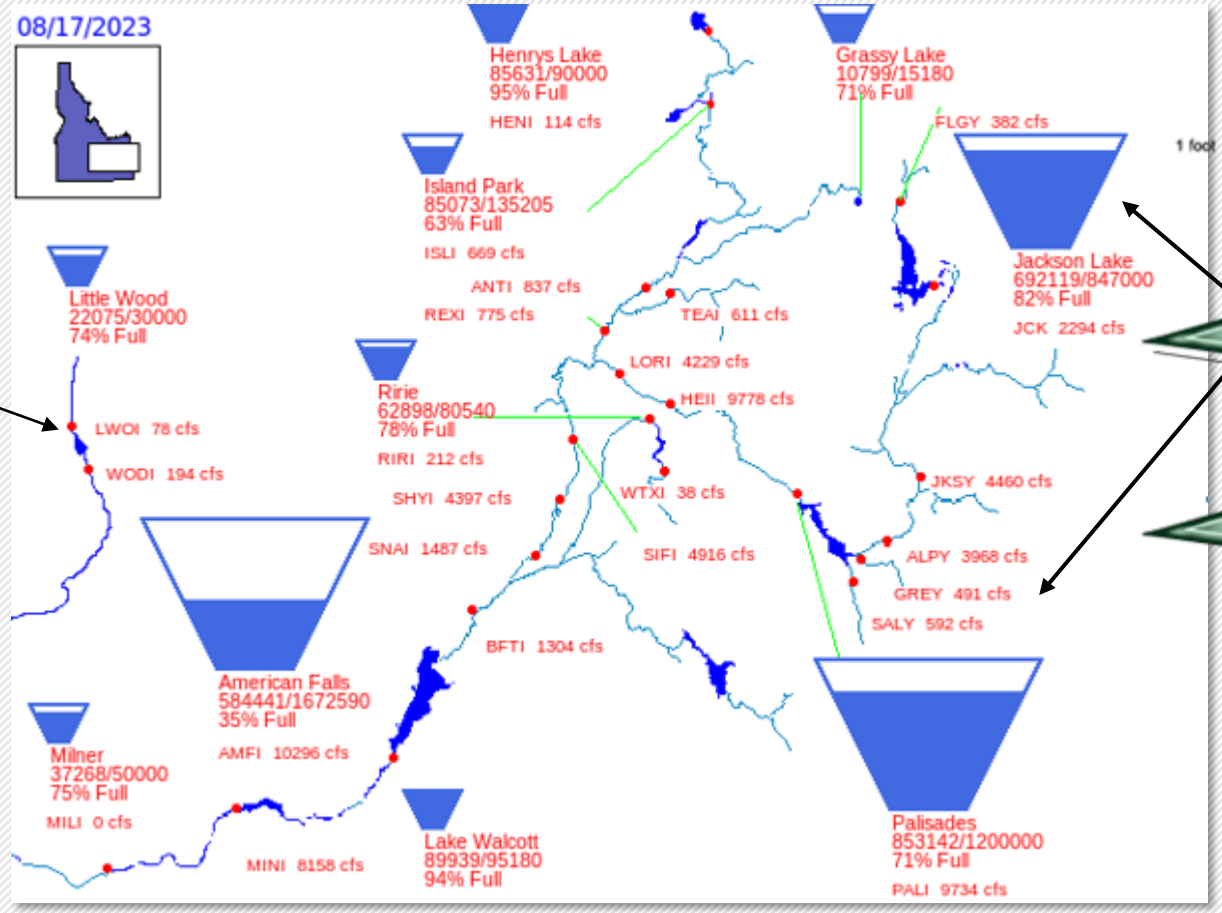
Upper Snake River Basin

Real Time River and Reservoir Management	**Forecasting**
Flood Risk Management	**Monitoring**
Refill	**Coordination and Oversight**

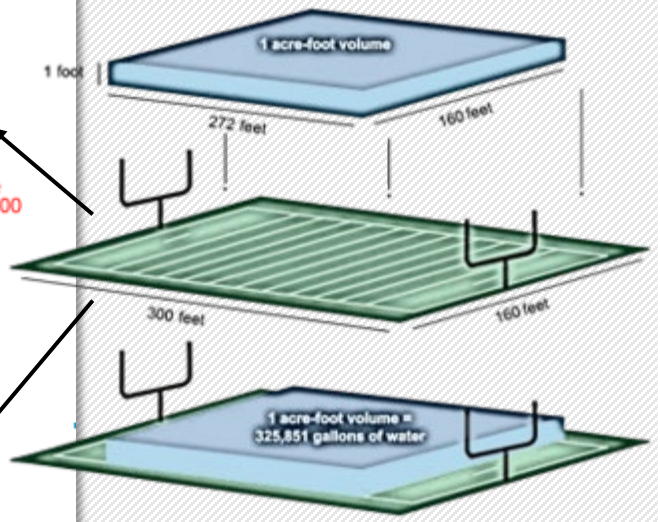
Units of Measure

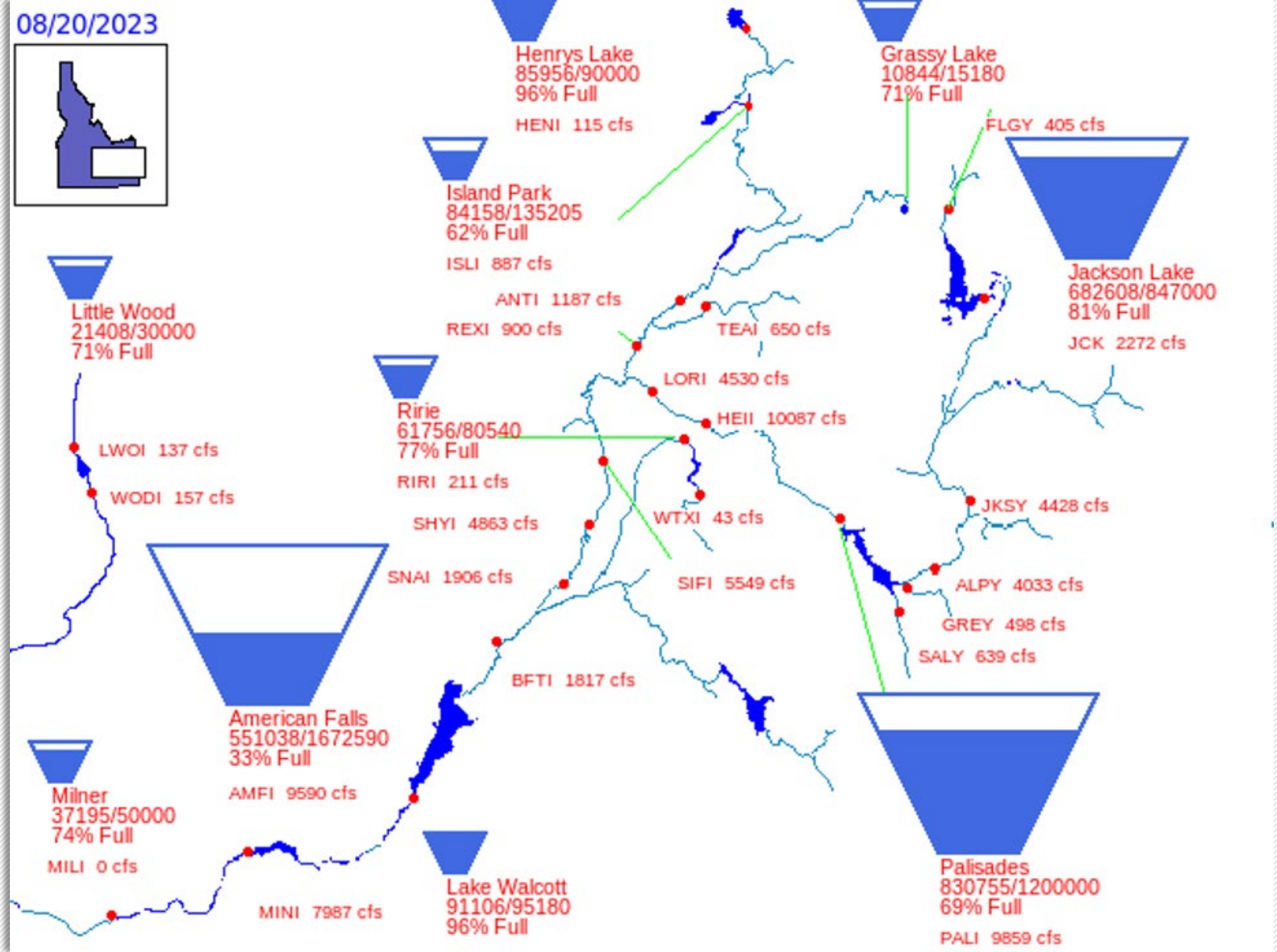
- Volume in a reservoir is measured in acre-feet
- Flow in a river is measured in cubic feet per second (cfs)
- 1 cfs for 1 day = about 2 acre-feet (1.98347 acre-feet)

1 CFS =



1 acre-foot =




08/20/2023
Henrys Lake
85956/90000
96% Full
HENI 115 cfs
Grassy Lake
10844/15180
71% Full
FLGY 405 cfs
Island Park
84158/135205
62% Full
ISLI 887 cfs
ANTI 1187 cfs
REXI 900 cfs
Jackson Lake
682608/847000
81% Full
JCK 2272 cfs
Little Wood
21408/30000
71% Full
TEAI 650 cfs
LORI 4530 cfs
HEII 10087 cfs
Ririe
61756/80540
77% Full
RIRI 211 cfs
SHYI 4863 cfs
LWOI 137 cfs
WODI 157 cfs
WTXI 43 cfs
JKSY 4428 cfs
SNAI 1906 cfs
SIFI 5549 cfs
ALPY 4033 cfs
GREY 498 cfs
SALY 639 cfs
BFTI 1817 cfs
American Falls
551038/1672590
33% Full
AMFI 9590 cfs
Milner
37195/50000
74% Full
MILI 0 cfs
MINI 7987 cfs
Lake Walcott
91106/95180
96% Full
Palisades
830755/1200000
69% Full
PALI 9859 cfs

Water Storage and Delivery

Store excess runoff to supplement natural flow when it would otherwise be insufficient

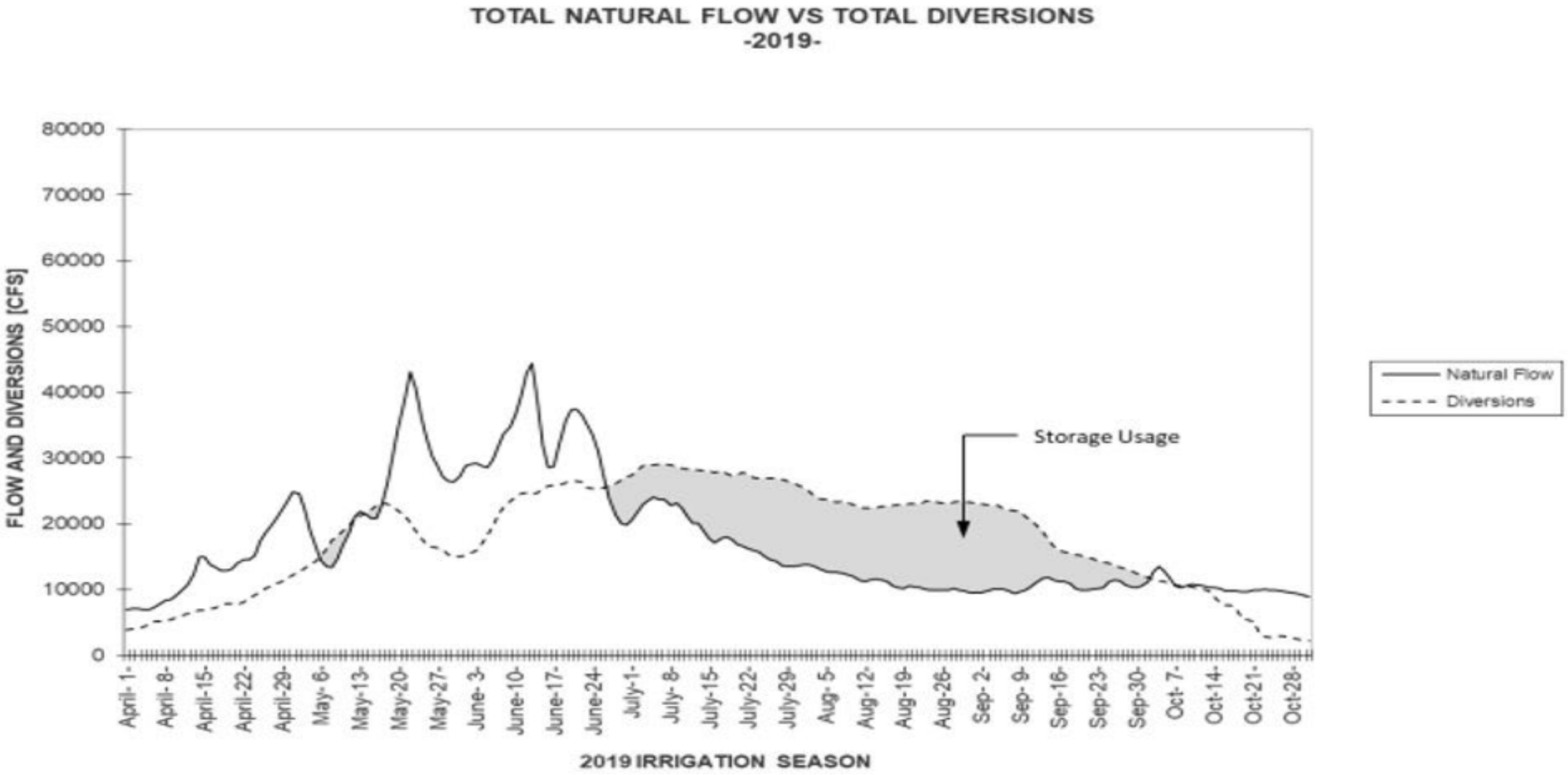
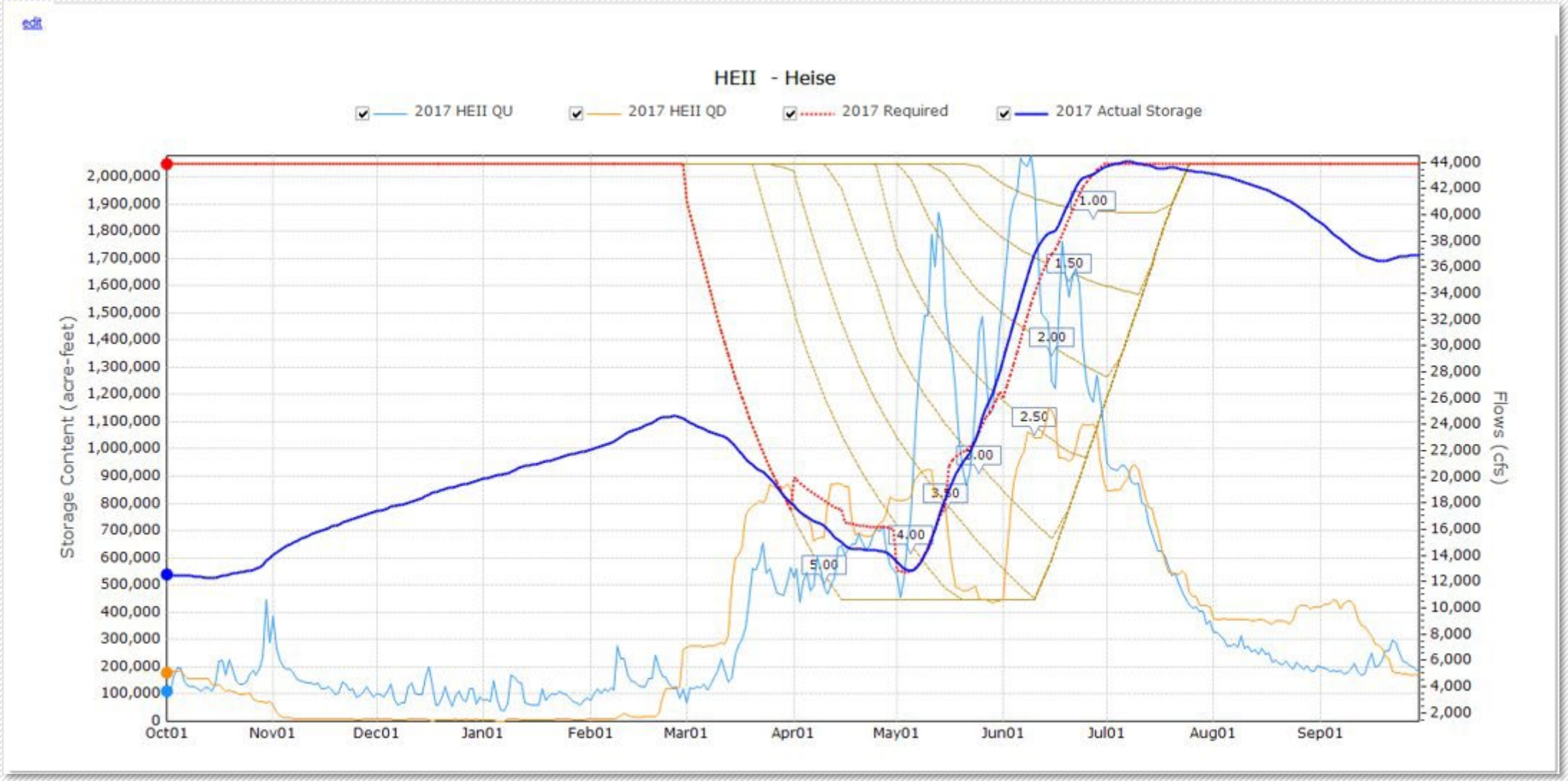


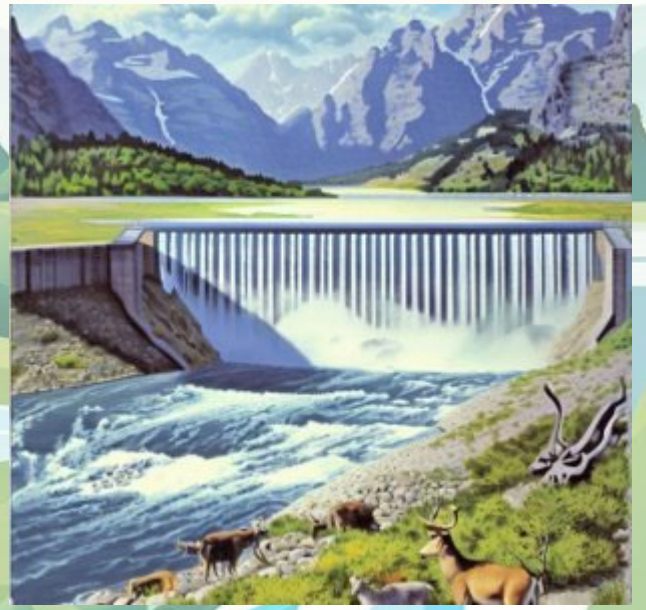
Figure 3. Natural Flow and Total Diversions

Flood Risk Management

Flood Risk Management



Fish and Wildlife



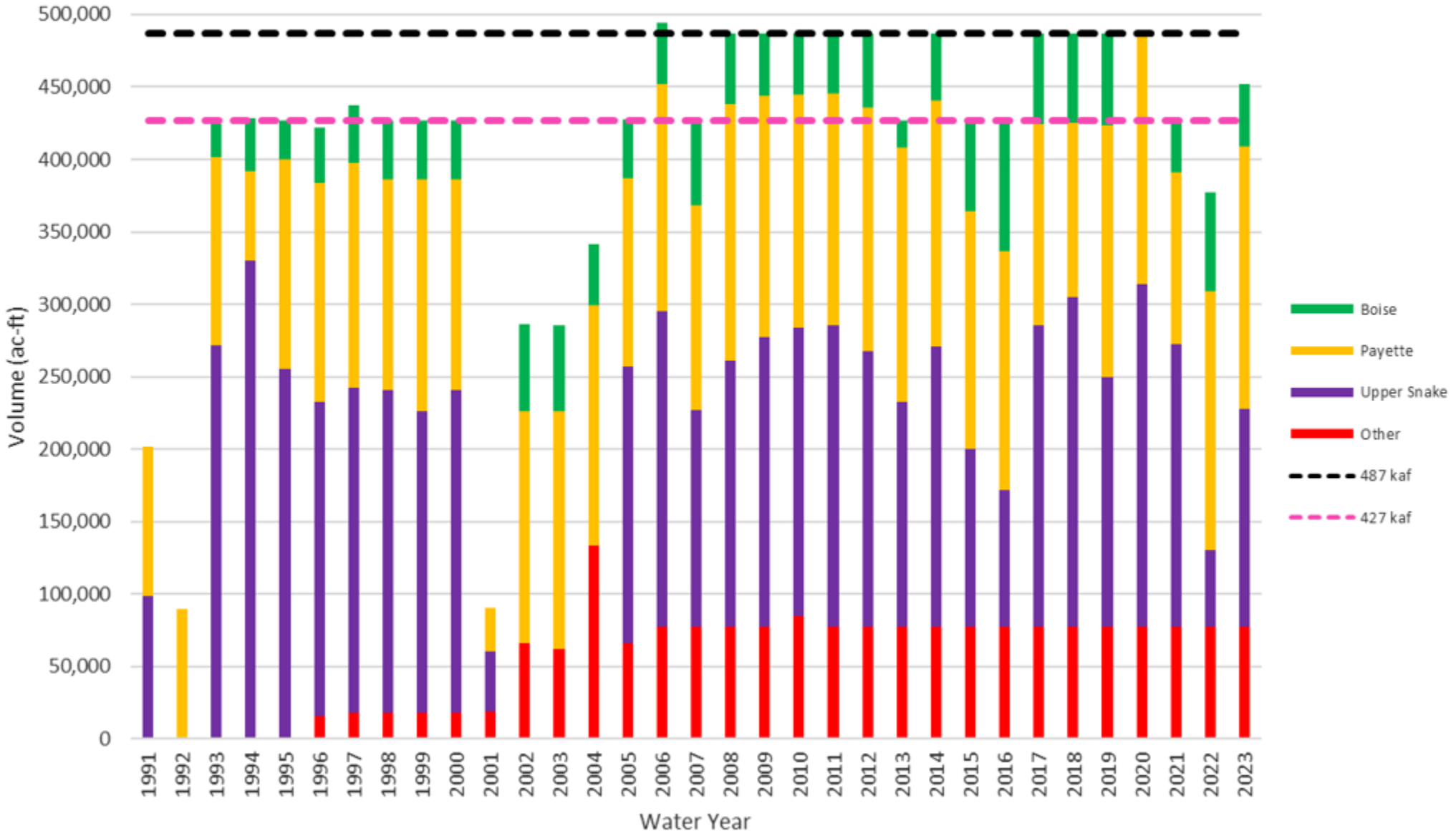
Upper Snake Flow Augmentation

- Flow Augmentation is one of several regional supplies of water used to help improve conditions for listed salmon and steelhead, specifically for out-migrating smolts.
- Upper Snake flow augmentation includes acquisitions from willing sellers and lessors.

Basic Tenets of Flow Augmentation

- Flow augmentation must be water that would otherwise not be there.
- Flood control releases cannot be counted as flow augmentation.
- Must occur between Apr 3 – Aug 31.
- Must be able to clearly report on the volumes and timing.

Upper Snake above Brownlee
Flow Augmentation Volumes 1991-2023



Reporting Requirements

RECLAMATION
Managing Water in the West

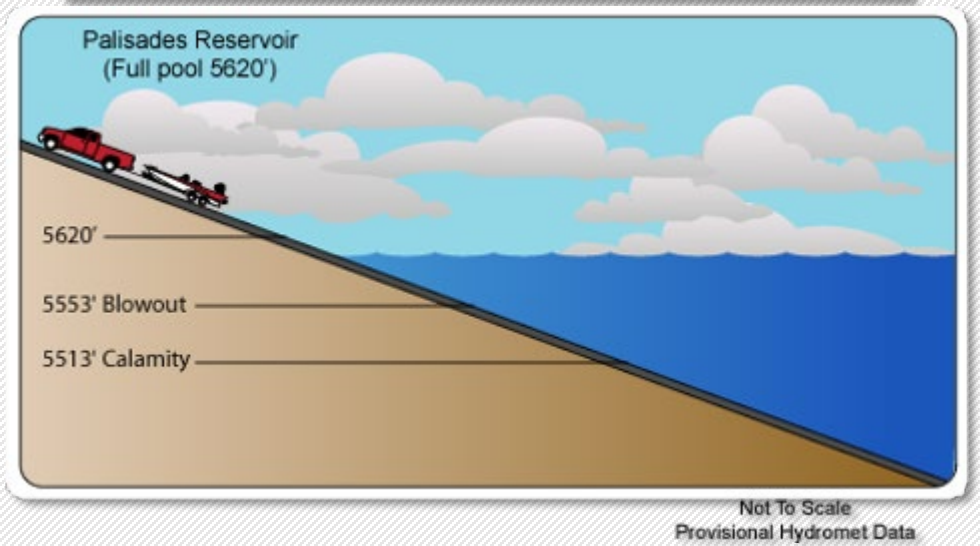
2018 Salmon Flow Augmentation Program and Other Activities Associated with the NOAA Fisheries Service 2008 Biological Opinion and Incidental Take Statement for Operations and Maintenance of Bureau of Reclamation Projects in the Snake River Basin above Brownlee Reservoir

Annual Progress Report

U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region

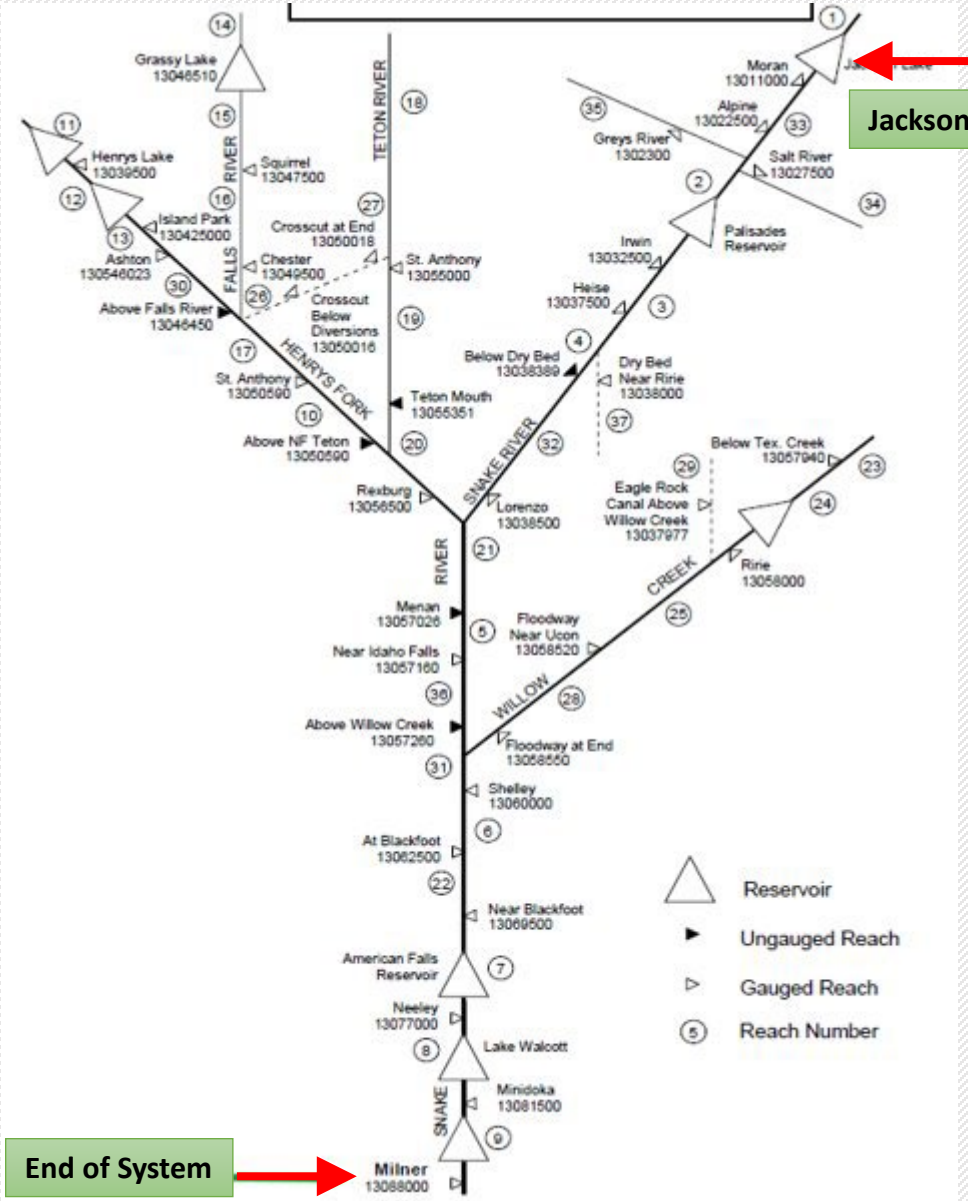
December 15, 2018

Recreation and Various Partnerships



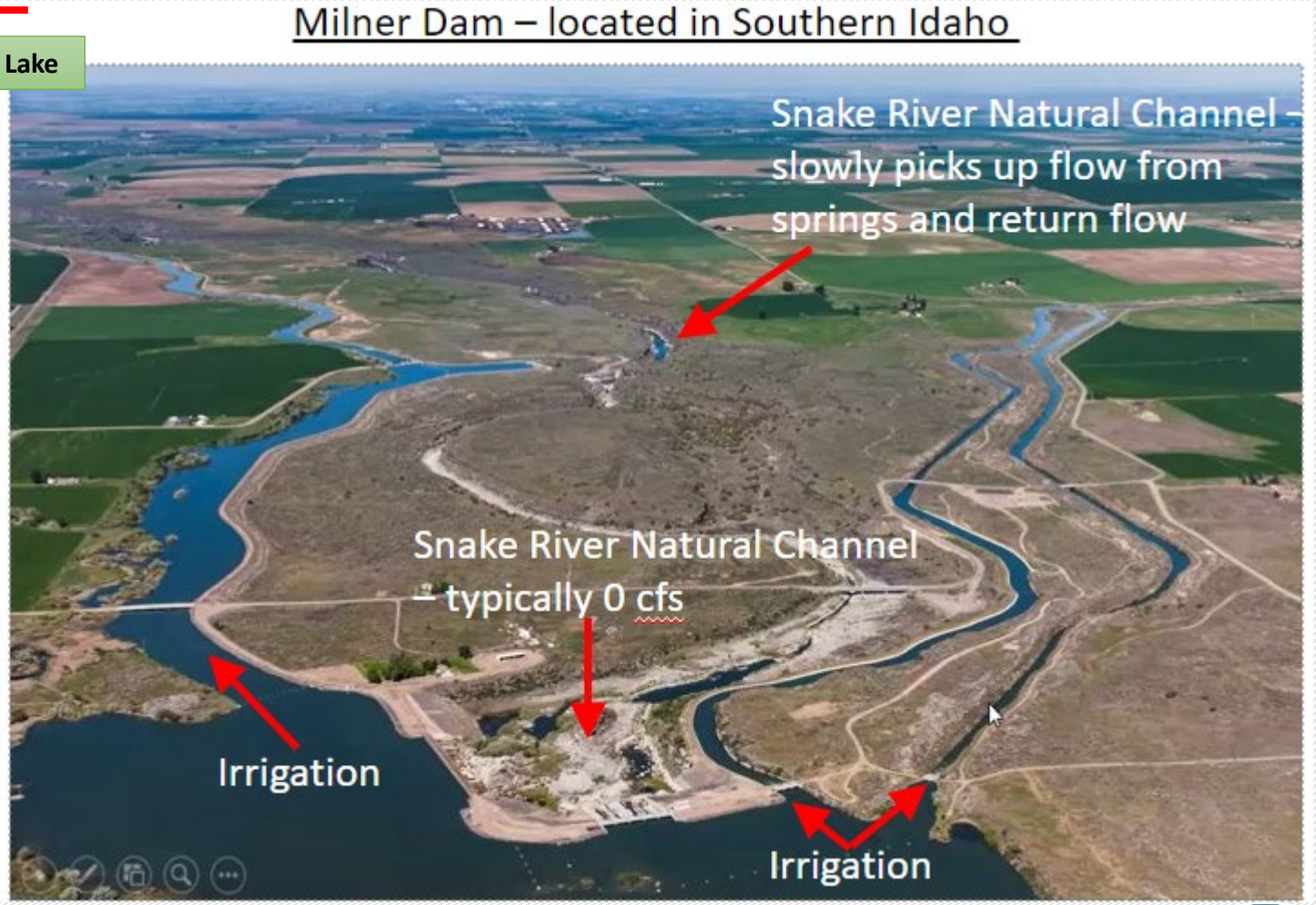
https://www.usbr.gov/pn/recreation/index.html

Milner Two River Principle



Jackson Lake

End of System



Milner Dam

Lower System - Snake River

American Falls Dam

Minidoka Dam

Storage capacity: 1,672,590 acre-feet
112 MW generation capacity (non-federal)

Storage capacity: 95,200 acre-feet
28 MW generation capacity

Palisades Dam

Palisades Dam

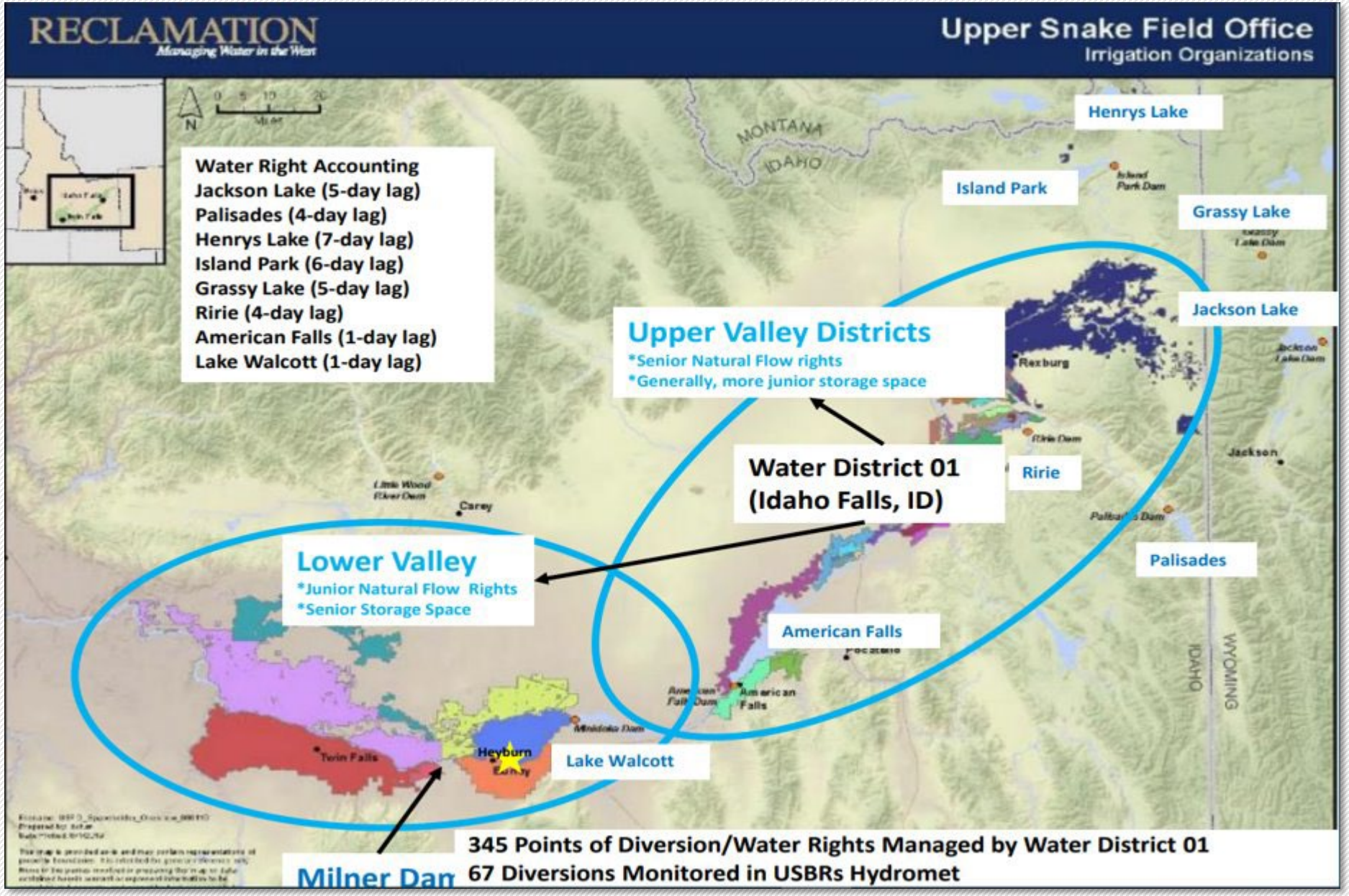
- Storage capacity: 1,200,000 acre-feet
- 176 MW hydropower capacity

Jackson Lake Dam

Jackson Lake Dam

- Storage capacity: 847,000 acre-feet
- 200,000 acre-feet winter flood control space

Water Rights and Delivery



Questions?

For More Information

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Snake River Operations Web Sites

Upper Snake water information site - http://www.usbr.gov/pn/hydromet/uppersnake/index.html
USBR HydroMet - http://www.usbr.gov/pn/hydromet/
Northwest River Forecast Center - http://www.nwrfc.noaa.gov/rfc/
NRCS SNOTEL Data - http://www.id.nrcs.usda.gov/snow/