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Managing Water in the West

Henrys Fork Basin Study Update September 2012

In Cooperation with:

Idaho Water Resource Board

and

Henrys Fork Watershed Council

U.S. Department of the Interior

Bureau of Reclamation

Agenda

1. Results from Tech Memos, Carry Forward / Additional Study

2. Facilitated Discussion

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House Keeping

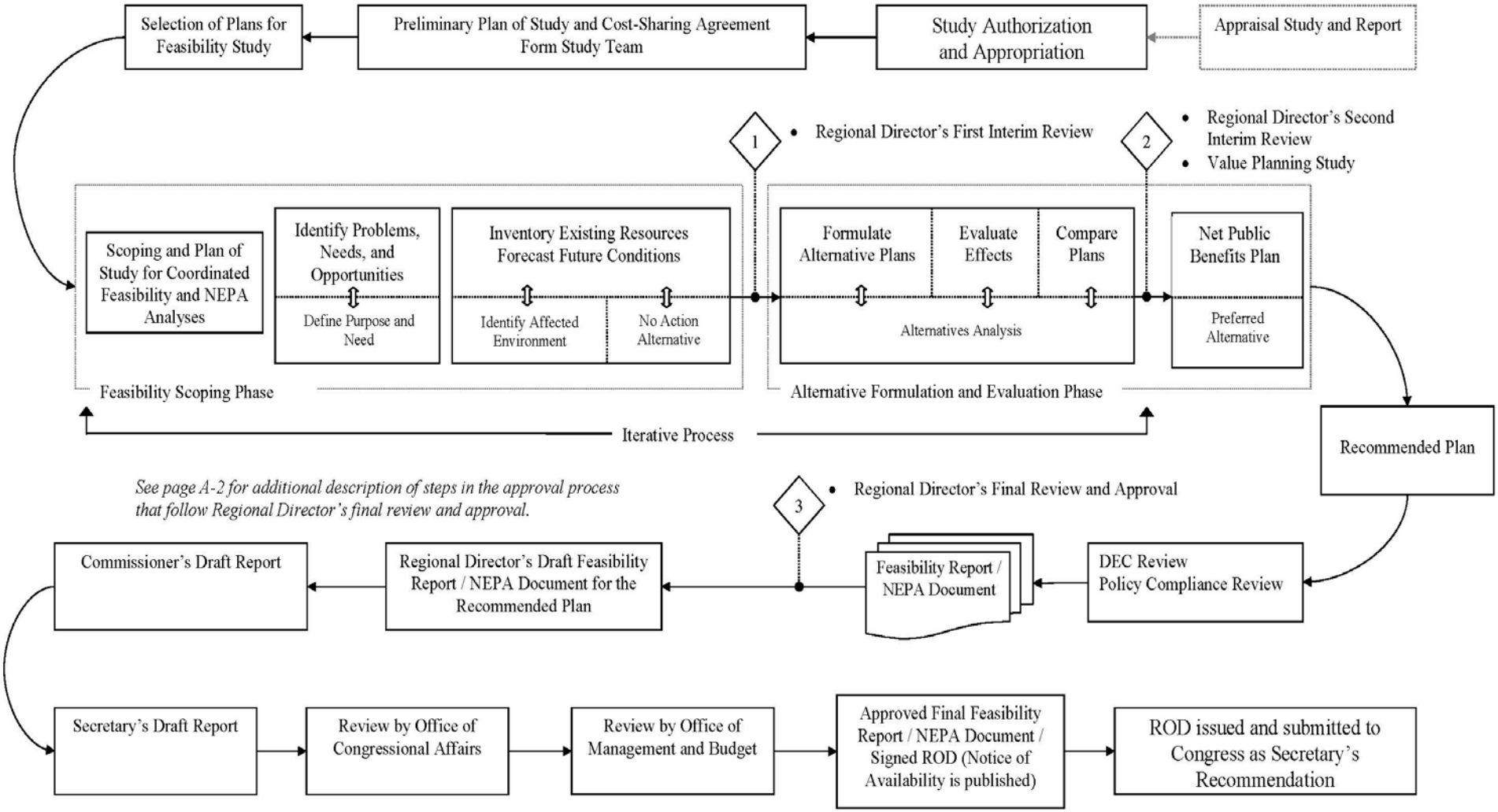
- Wire Process – will not been done. Opportunity for feedback next month.
- Developing a tool box of solutions. Thus far “alternatives not dismissed”

House Keeping

- Decision Support System (DSS)
  - more applicable to storage
  - will use for final comparison.

- Acknowledge work group support

Reclamation Planning Process



Basin Study History

- IWRB Application for WaterSmart Basin Study
- Reclamation Approved Application and Matched State Funds
- MOA for Basin Study between Reclamation and IWRB – March 2011

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Study Framework

1. Water Supply
2. Water Management
3. Sustain Environmental Quality

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Henrys Fork Watershed Council

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Needs

ESPA – 600,000 ac-feet annually

In Basin Agricultural Needs
Egin Bench, Lower Watershed,
North Fremont, Teton Valley

Environmental → Fisheries/YCT

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40+ Brainstorm Ideas

17 Reconnaissance Alternatives

We are here →

Appraisal Alternative(s)

Recommendation(s)

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Reconnaissance Alternatives

- ✓ Existing and New Surface Storage
- ✓ Managed Ground Water Recharge
- ✓ Agricultural Conservation
- ✓ Municipal & Industrial Conservation
- ✓ Market Based Alternatives

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Teton Dam Alternative

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Previous Studies

- Bureau of Reclamation. 1991. *Teton Dam Reappraisal Working Document*.
- HDR Engineering, Inc. 1995. *Teton Dam Reconnaissance Study*.

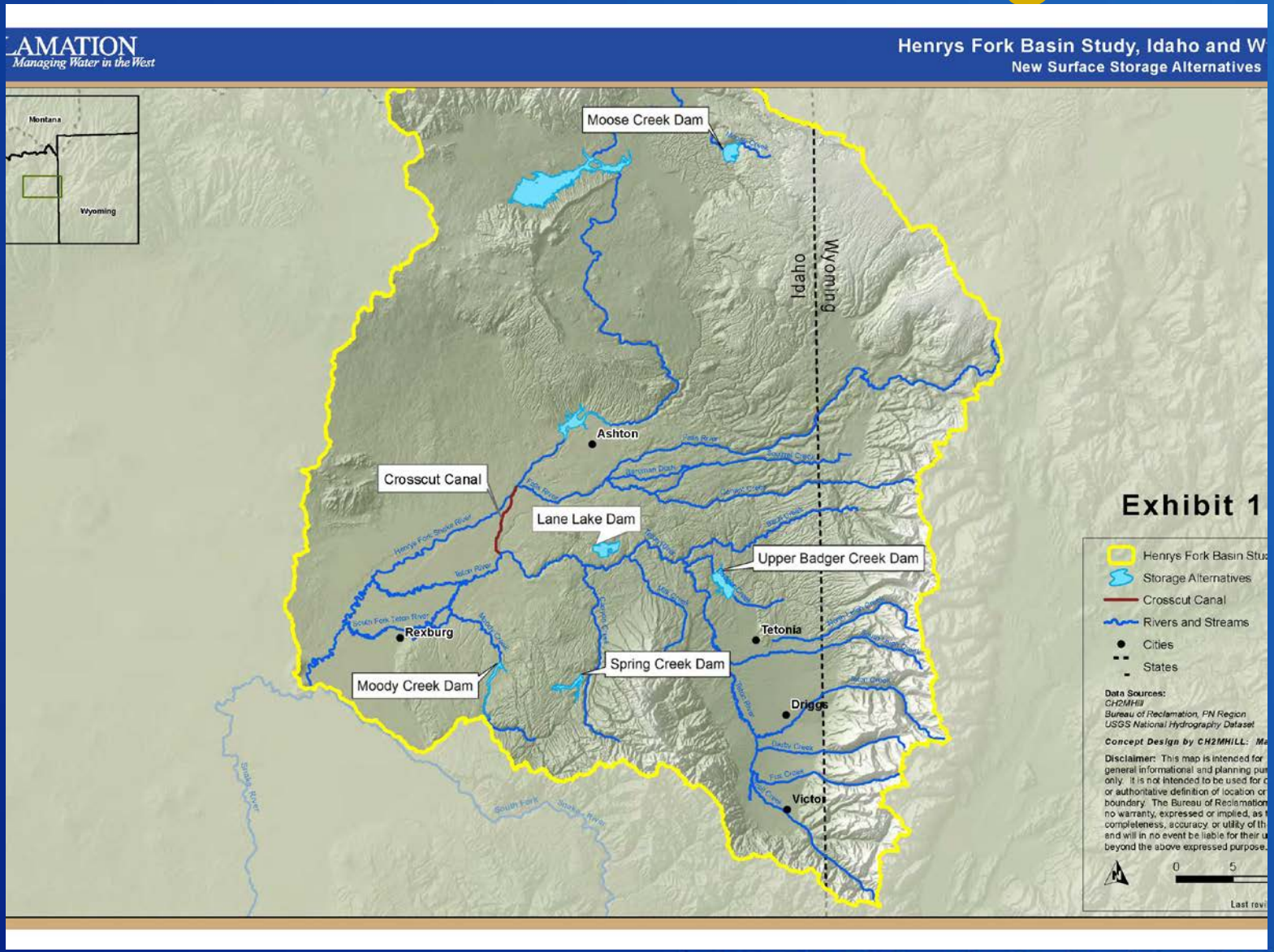
Teton Dam – Estimated Costs

Alterrnative	Total Storage Volume (acre-feet)	Water Supply Volume (acre-feet)	Field Construction Costs	Cost $/ac-ft Total	Cost $/ac-ft Water Supply
Teton Dam - Rockfill	288,000	55,000	$159,329,000	$553	$2,897
Teton Dam - roller compacted concrete	288,000	55,000	$315,996,000	$1,097	$5,745
Teton Small Dam - A	50,000	50,000	$65,680,000	$1,314	$1,314
Teton Small Dam -B	100,000	100,000	$83,874,000	$839	$839

Further Teton Dam Study Needs

- ✓ Compare Teton Dam alternative with other storage alternatives

New Surface Storage



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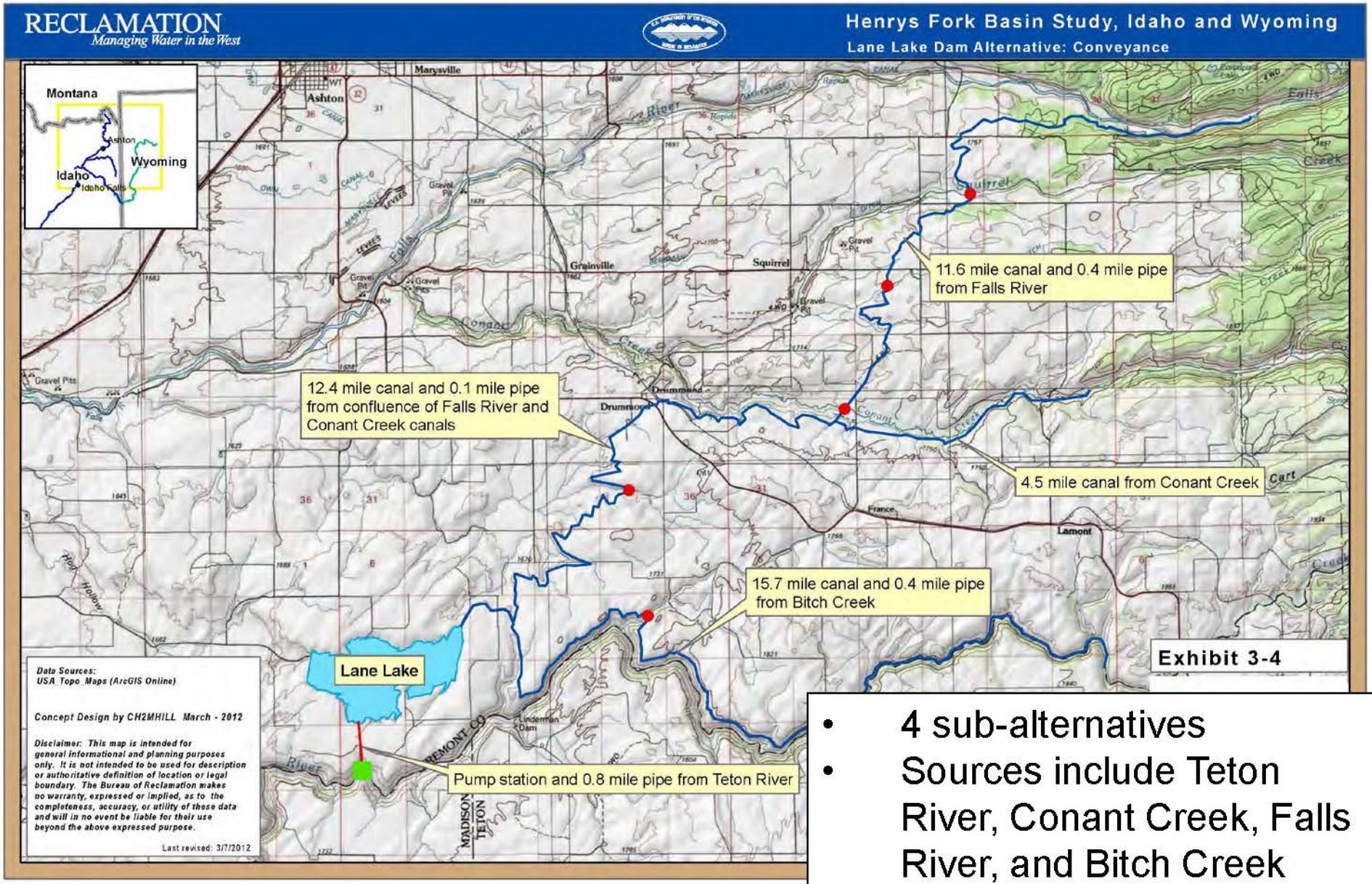
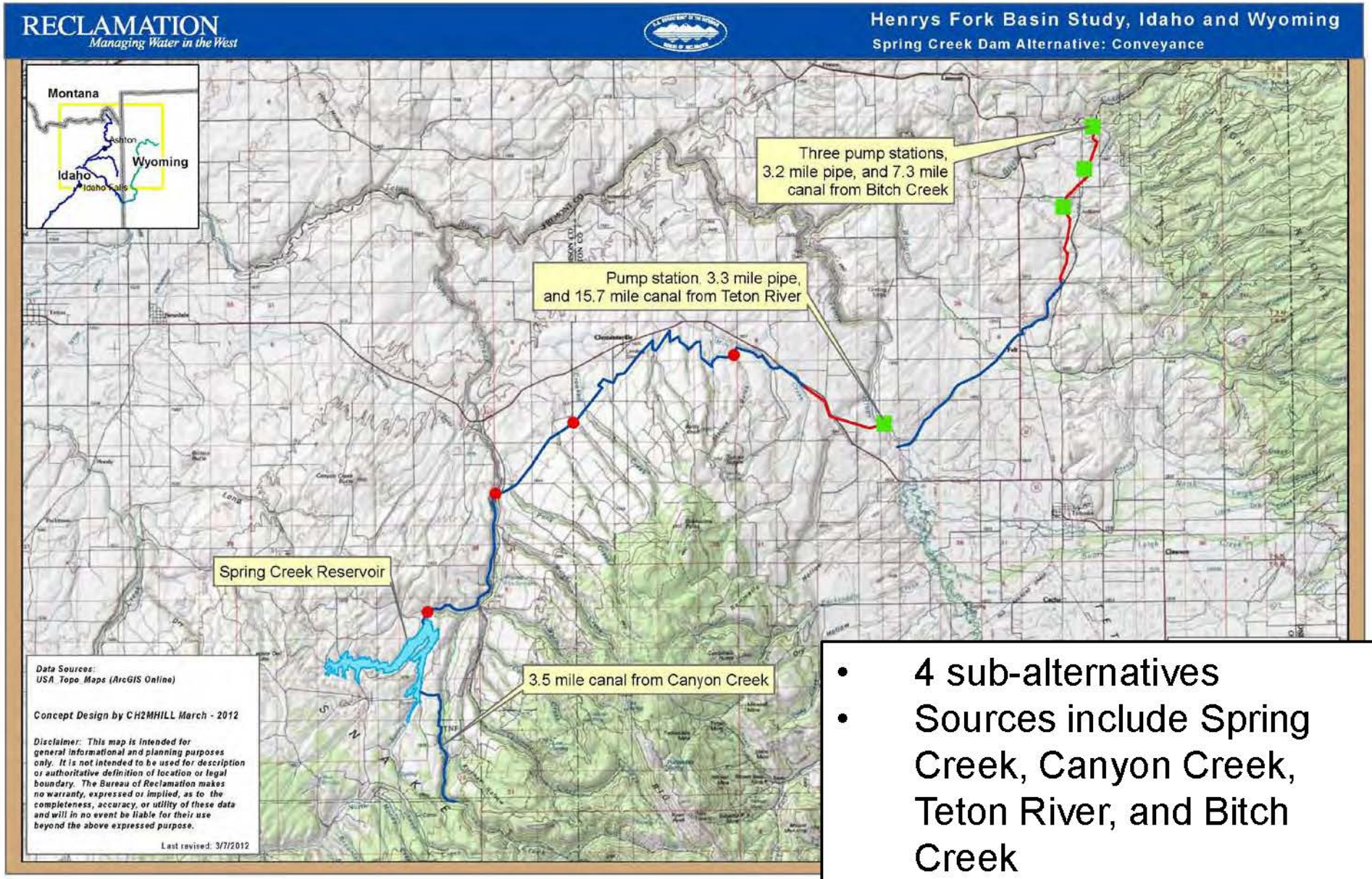
Lane Lake Dam



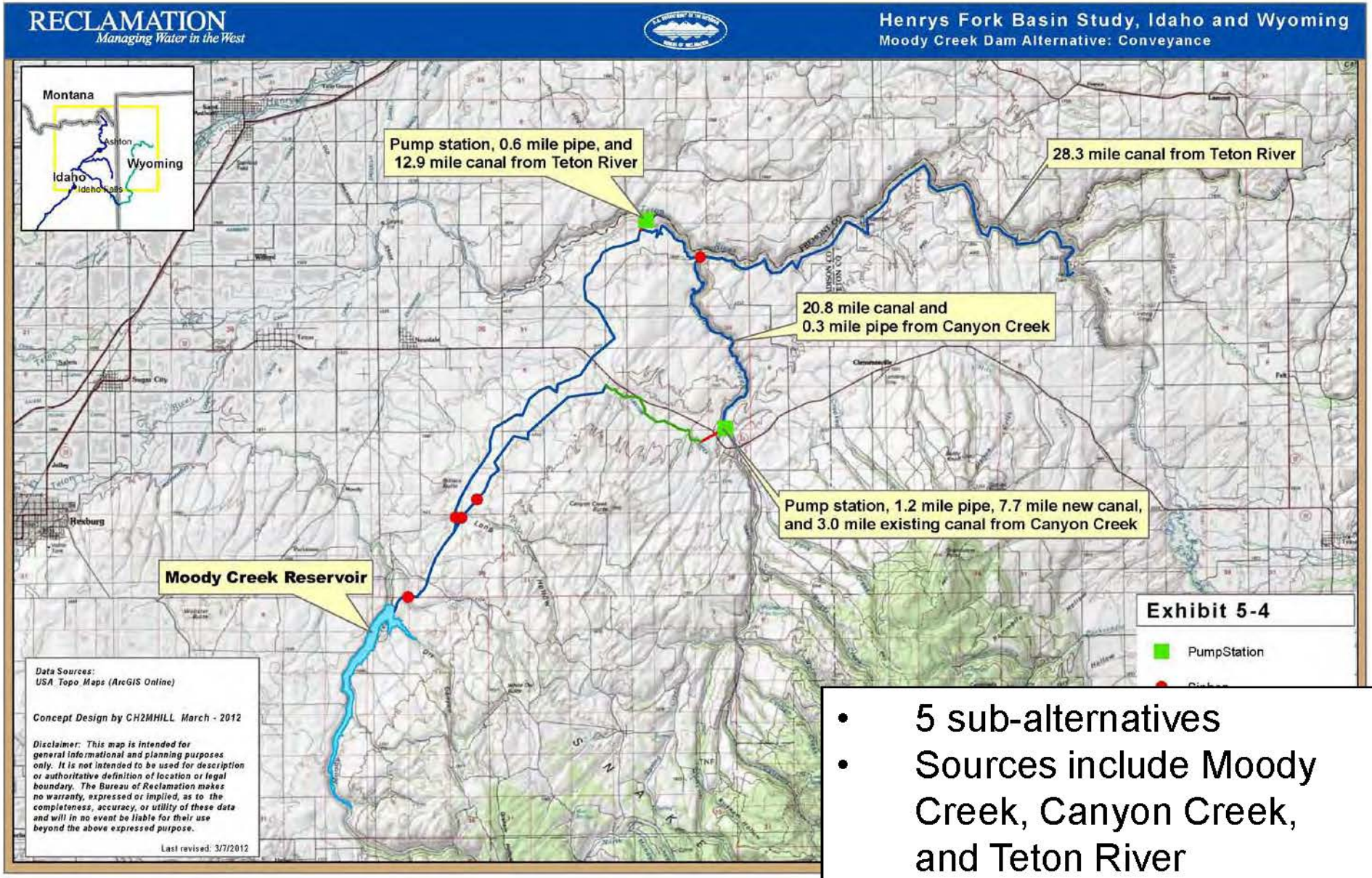
- 4 sub-alternatives
- Sources include Teton River, Conant Creek, Falls River, and Bitch Creek

Spring Creek Dam



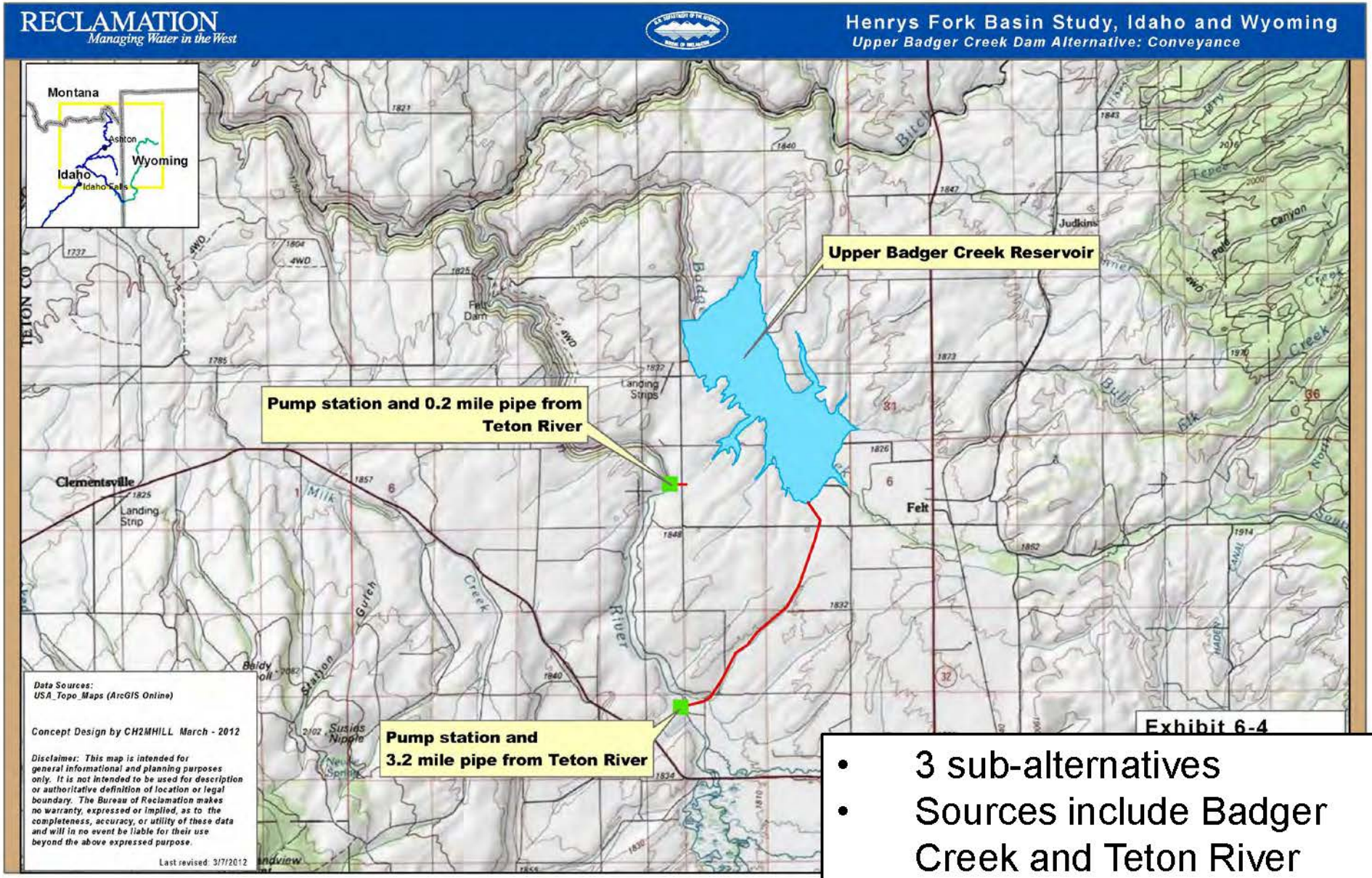
- 4 sub-alternatives
- Sources include Spring Creek, Canyon Creek, Teton River, and Bitch Creek

Moody Creek Dam



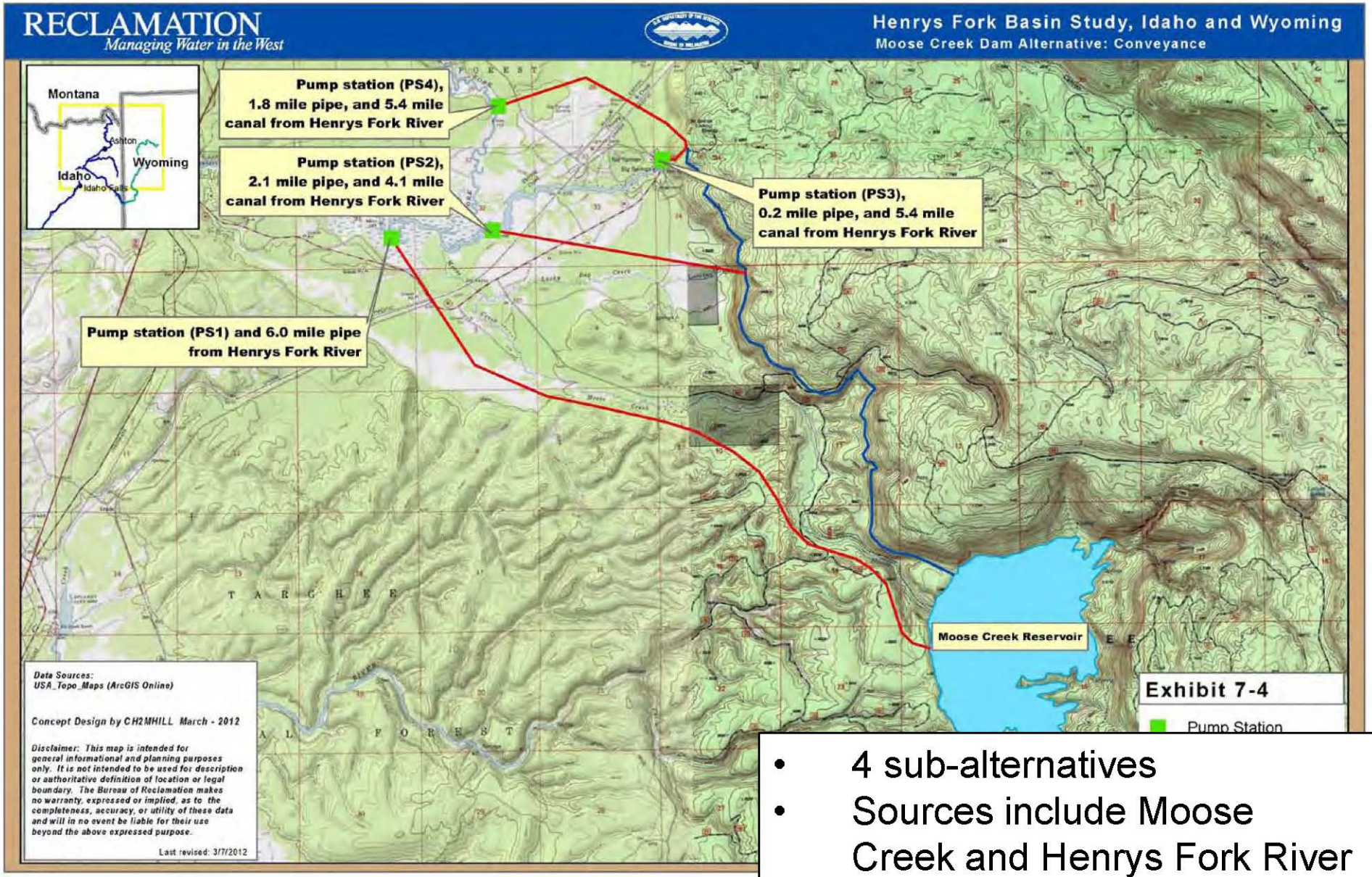
- 5 sub-alternatives
- Sources include Moody Creek, Canyon Creek, and Teton River

Upper Badger Creek Dam



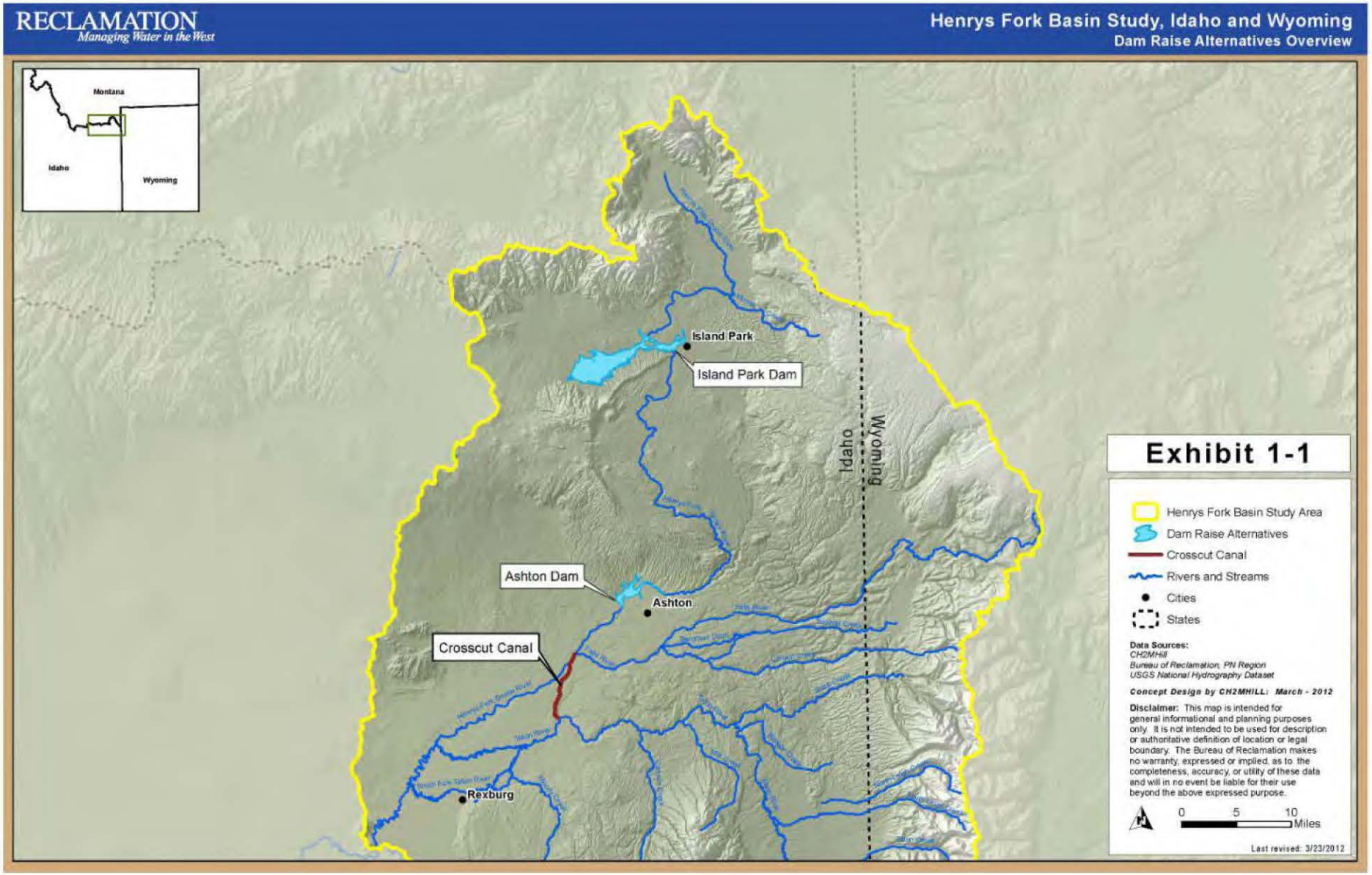
- 3 sub-alternatives
- Sources include Badger Creek and Teton River

Moose Creek Dam

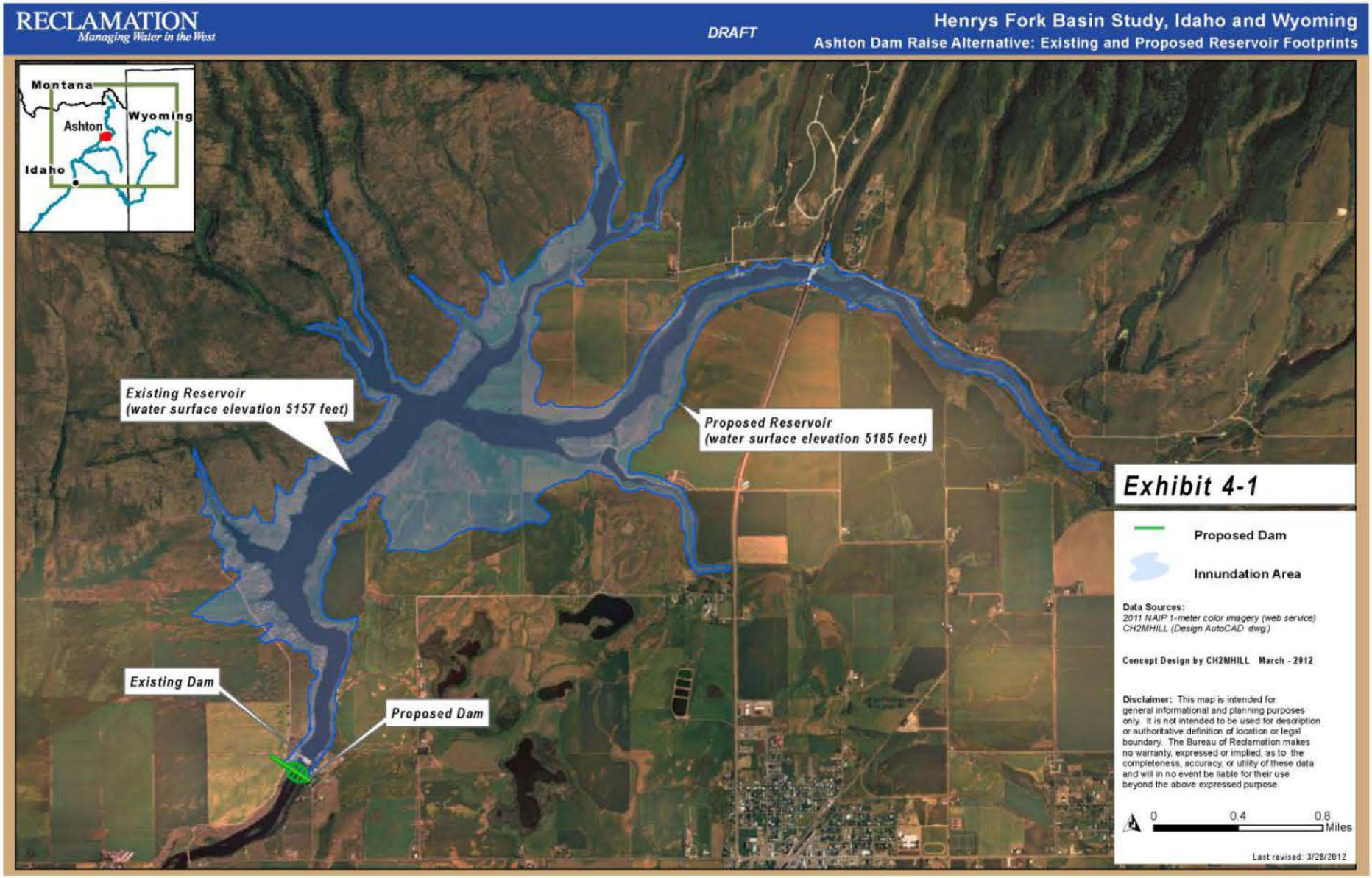


- 4 sub-alternatives
- Sources include Moose Creek and Henrys Fork River

Locations of Dam Raise Alternatives



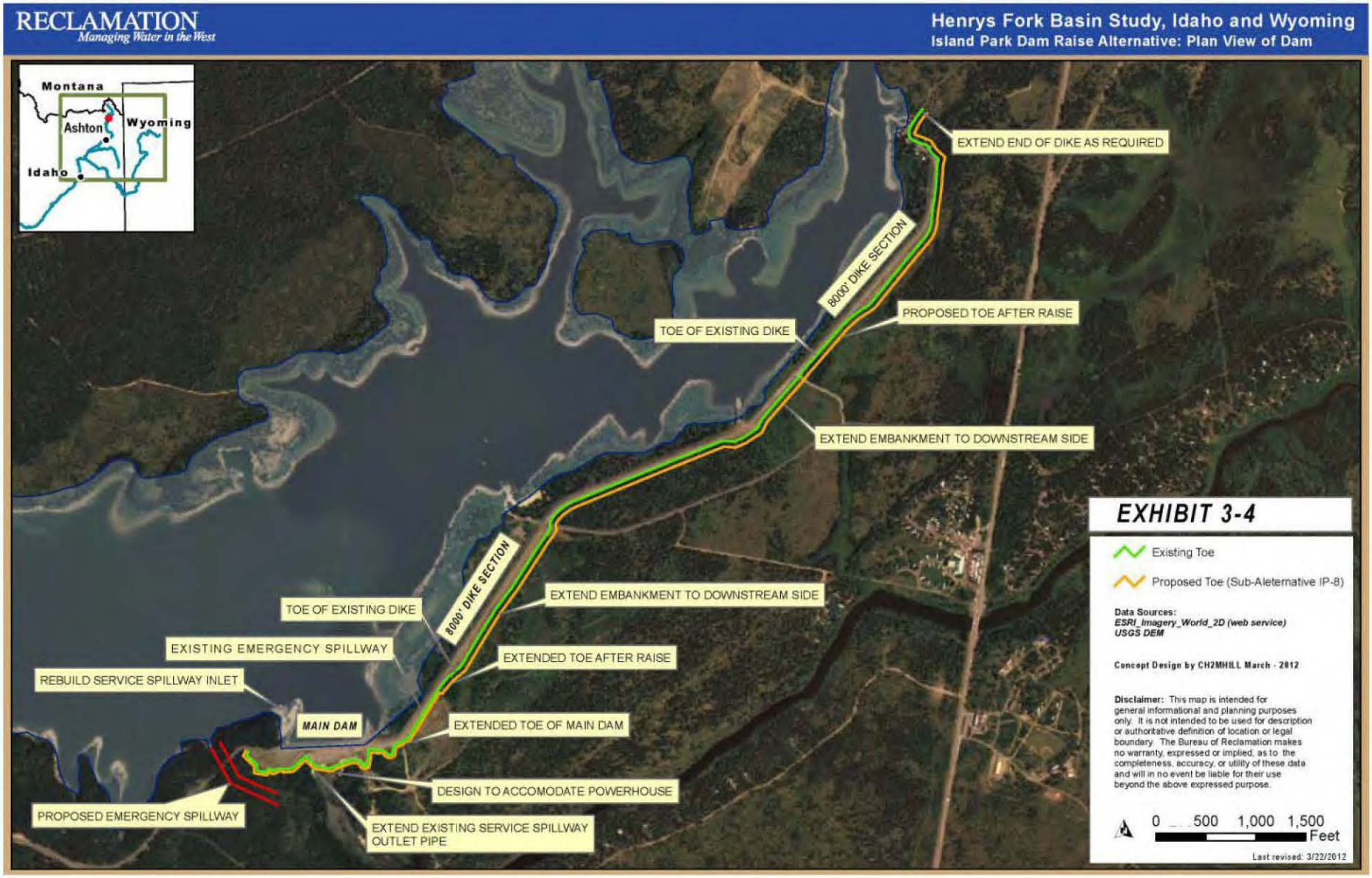
Ashton Dam
Dam Reconstruction



Island Park Dam
1-foot Bladder Raise Sub-Alternative

Island Park Dam

8-foot Embankment Raise Sub-Alternative, cont.



Eliminate - Moose Creek and Bitch Creek Source

Site	Source			ac-ft	$/ac-ft	project cost
Spring creek	Spring	Canyon		10,800	3,900	$ 42,120,000
Moody creek	Moody			15,000	3,700	$ 55,500,000
Upper Badger	Badger	Teton		47,000	2,700	$ 126,900,000
Lane Lake	Conant	Fall		68,000	4,600	$ 312,800,000
Island Park - raise	Henrys Fork			8,000	100	$ 800,000
Ashton Dam - raise	Henrys Fork			24,000	1,900	$ 45,600,000
			total	172,800	$ 3,378	$ 583,720,000

Further Storage Study Needs

- ✓ Reconfigure Lane Lake – Design/Costs
- ✓ Optimize Island Park Raise
- ✓ Hydrologic Impacts
- ✓ Environmental Impacts
- ✓ Water Availability
  - flows past Milner
  - frequency analysis

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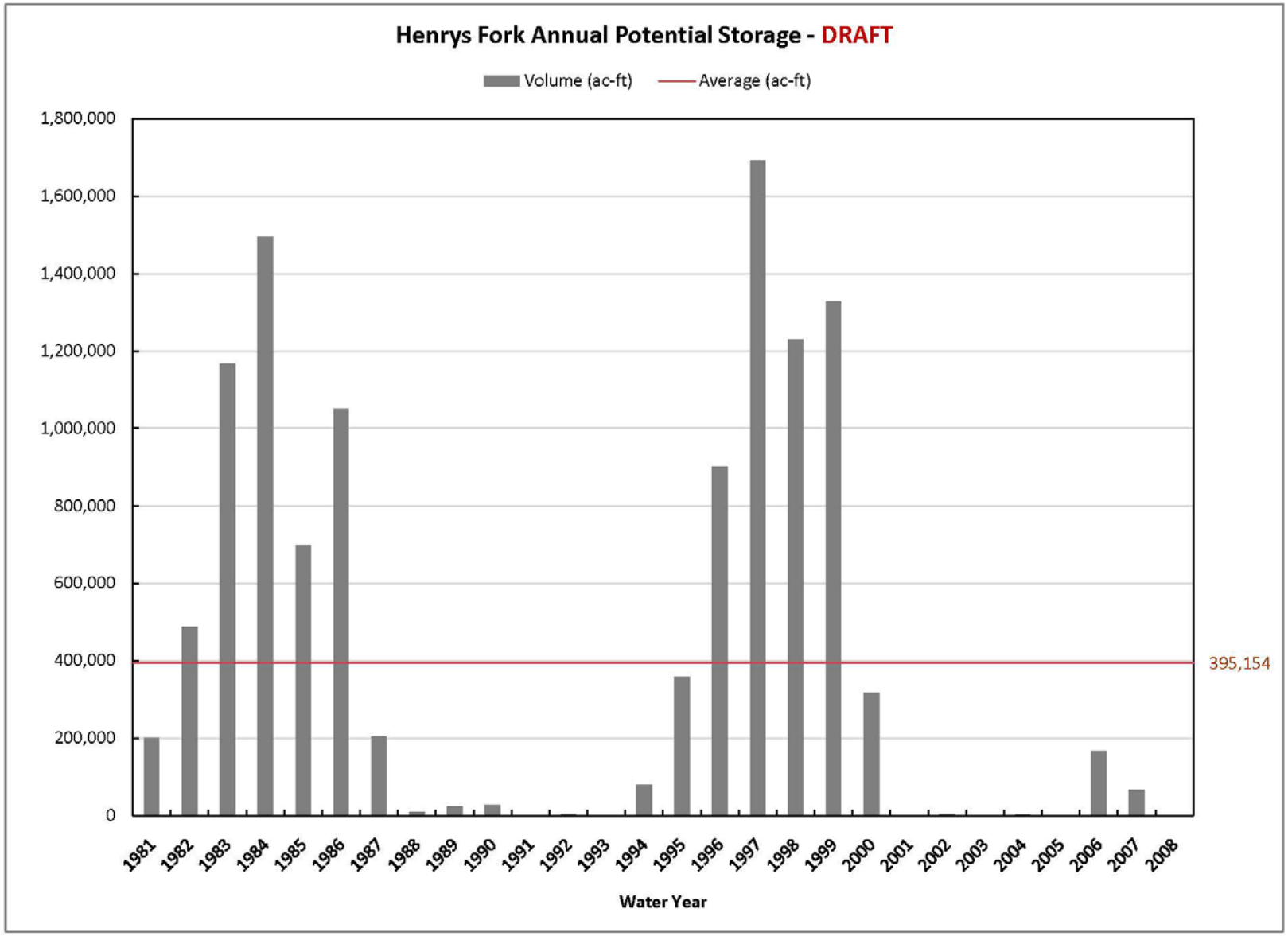

Note: assumes maintaining 500 cfs flow below Milner Dam

Managed Recharge Alternatives

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West Egin Lakes
Recharge Modeling

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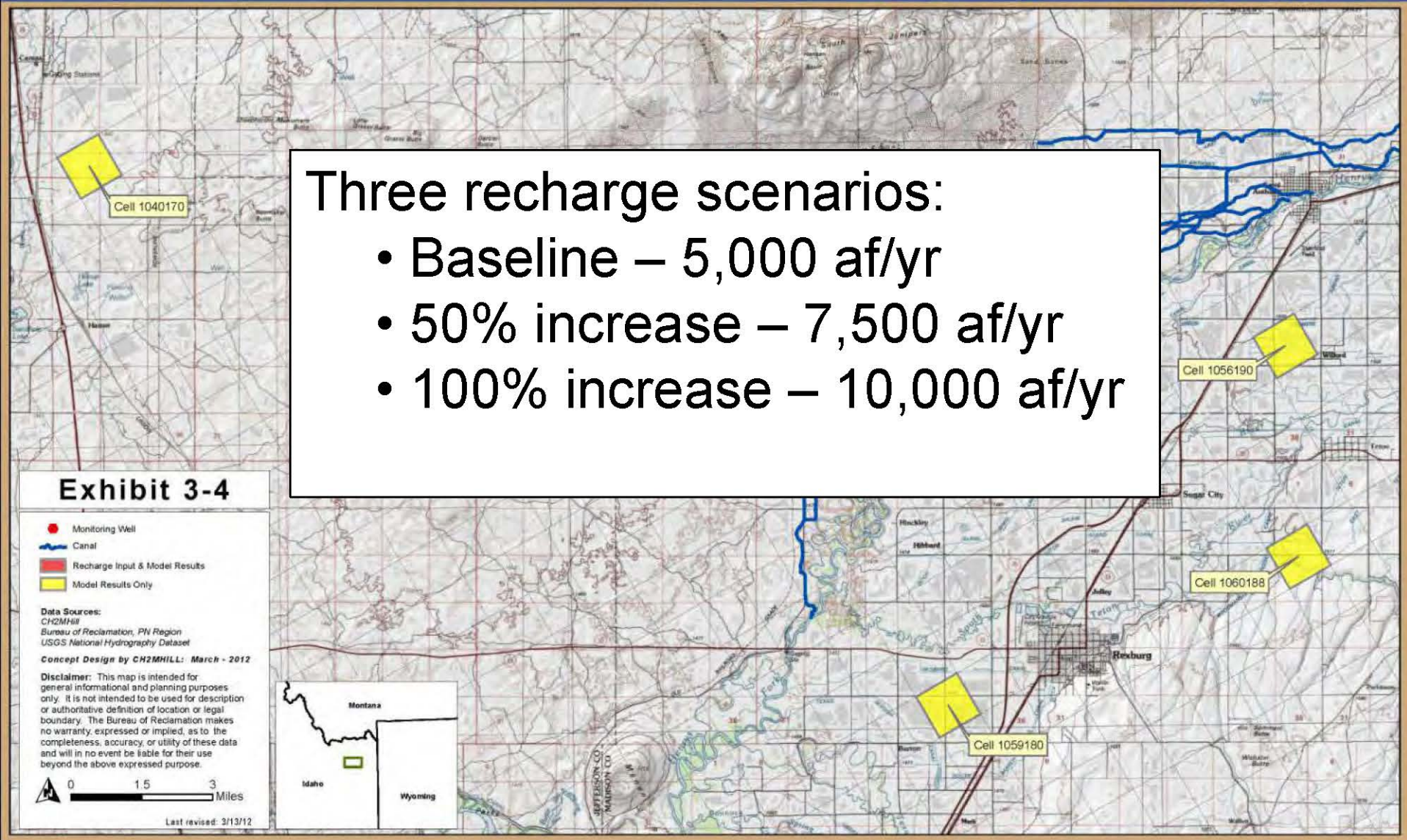
Managing Water in the West

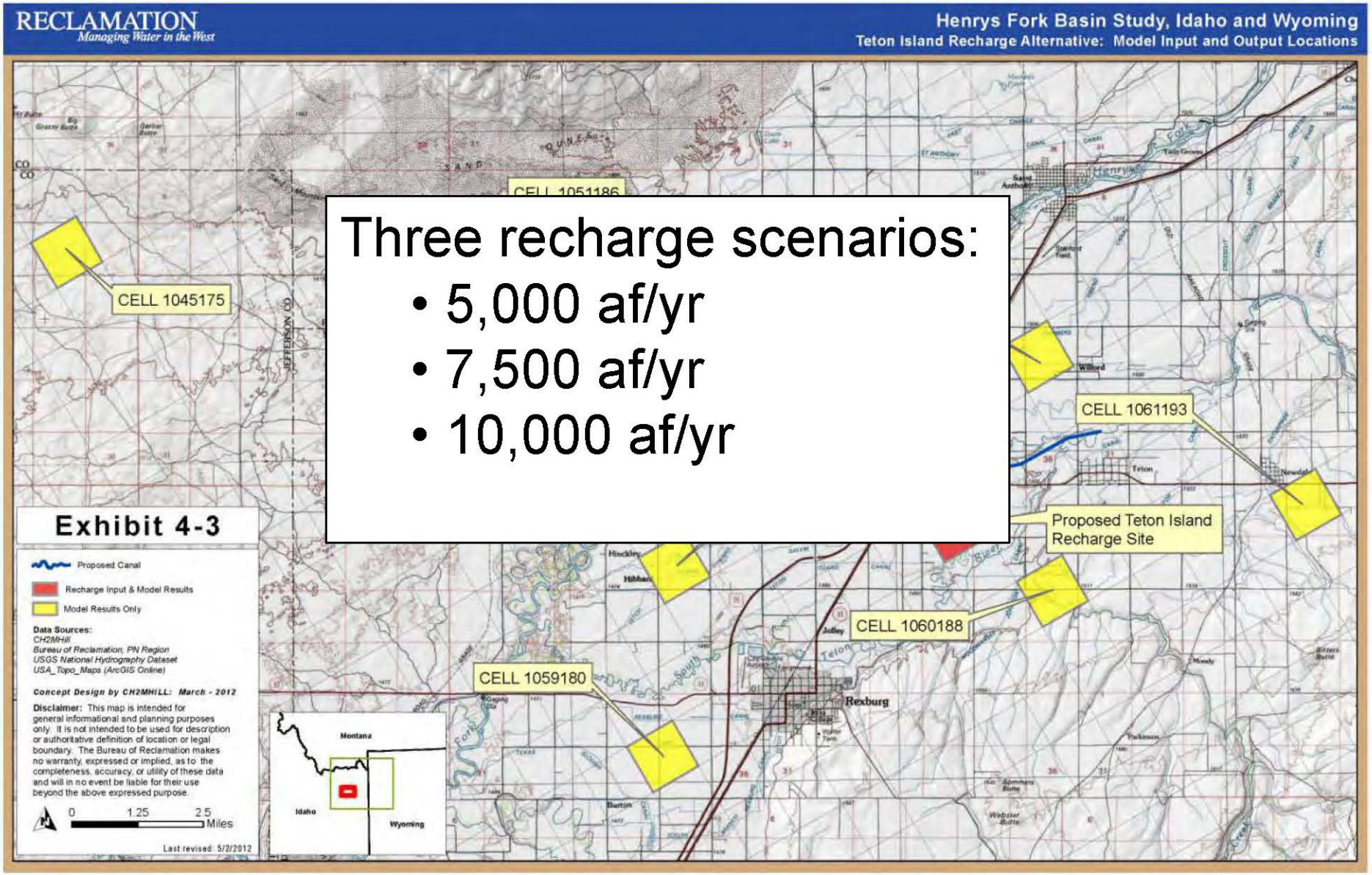
Henrys Fork Basin Study, Idaho and Wyoming
Egin Lakes Recharge Alternative: Model Input and Output Locations



Three recharge scenarios:

- Baseline – 5,000 af/yr
- 50% increase – 7,500 af/yr
- 100% increase – 10,000 af/yr

Teton Island
Recharge Modeling



Recharge Cost Estimate -ESPA

Alternative	Sub Alternative	Total Estimated Construction Costs	Delivered to ESPA	Cost Per Acre Foot Increase to ESPA
West Egin Lakes	50% Increase		22%	
	2,500 addition ac-ft	$10,060,000	550	$18,291
	100% increase 5,000 addition ac-ft	$13,620,000	1100	$12,382
Teton Island			8%	
	5,000	$4,550,000	400	$11,375
	7,500	$5,690,000	600	$9,483
	10,000	$7,470,000	800	$9,338

Further Managed Recharge Study Needs

- ✓ None identified – State of Idaho to pursue current recharge program

Agricultural Conservation Alternatives

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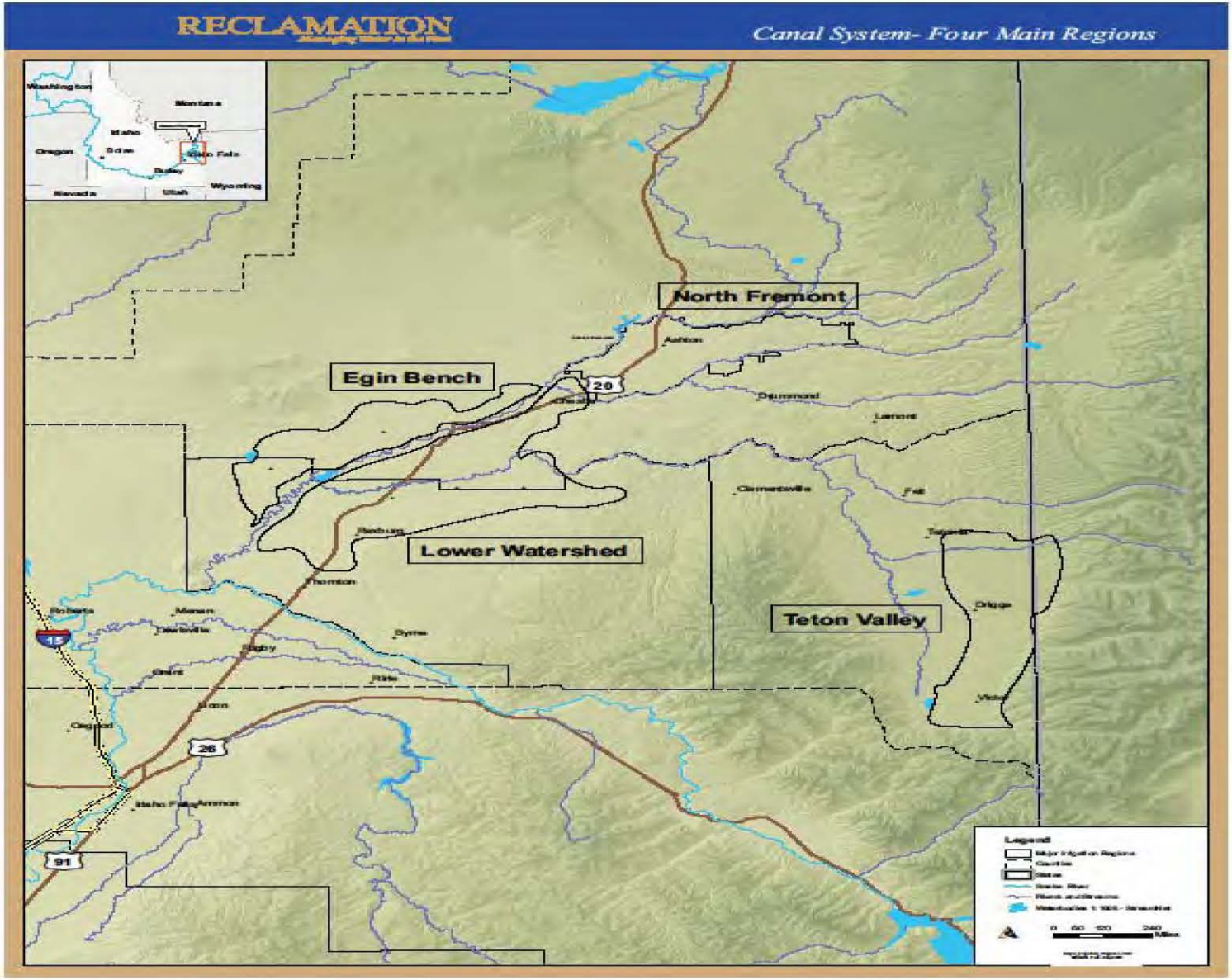
Conservation Alternatives

1. Canal Automation
2. Demand Reduction
3. Lining and Piping of Canals
4. Recharge Using Existing Canals
5. Conversion from Flood to Sprinkler (not done)

Methodology – Dr. Van Kirk's Model

"The USDA Study appears to be a carefully done study based on sound methods and valid data. Its water budget work and products will be useful…."

(Bryce Contor/RMEA)



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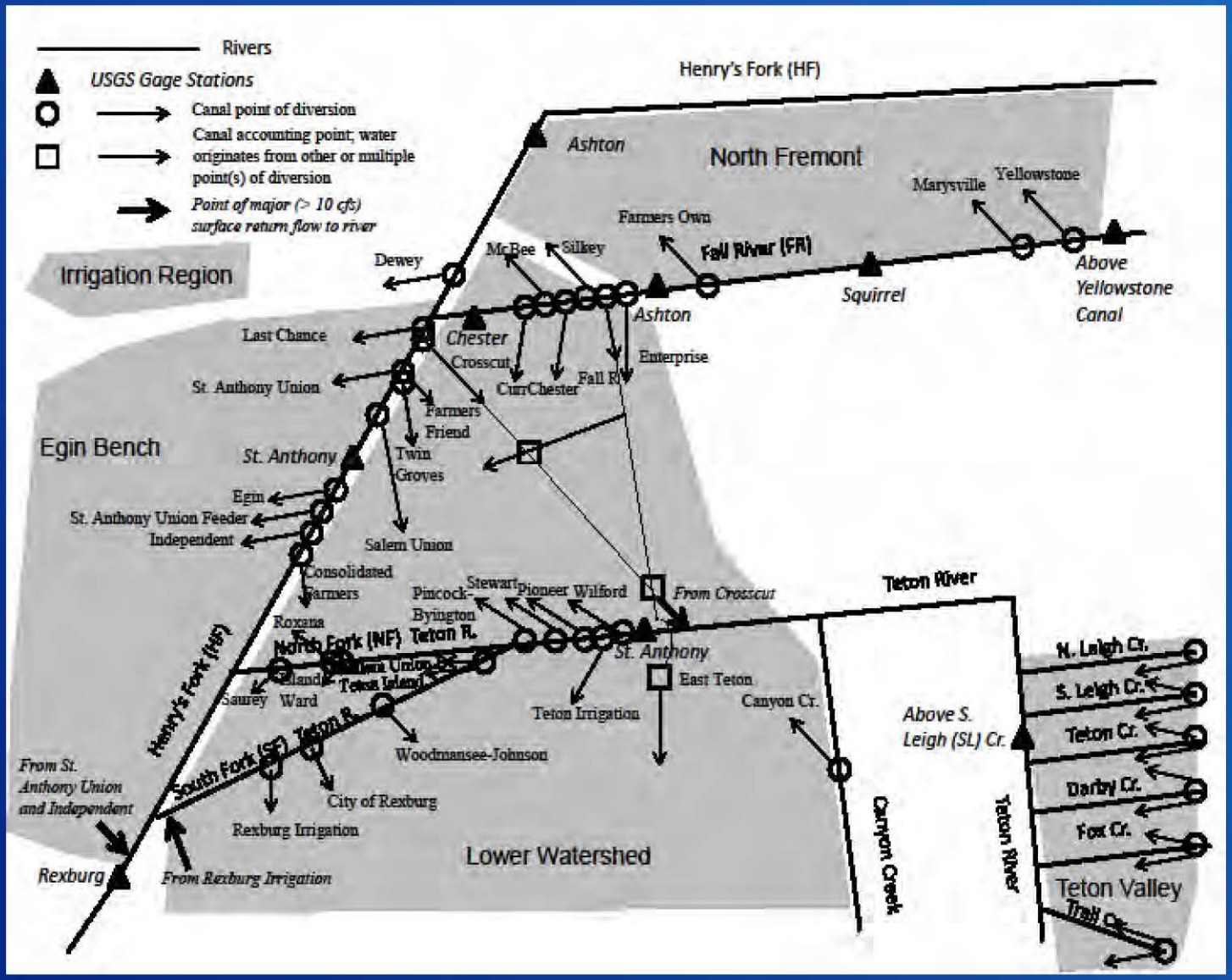

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Automated Canals – Langemann Gates

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Conservation Alternatives

1. Canal Automation
2. Demand Reduction
3. Lining and Piping of Canals
4. Recharge Using Existing Canals
5. Conversion from Flood to Sprinkler (not done)

Further Conservation Alternative Study Needs

- ✓ Automated Canals
  - develop plan for high priority installations
  - document opportunity for fish screening w/costs
  - expand concept to include benefits from increased flow measurement & marketing

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Further Conservation Alternative Study Needs

- ✓ Irrigation Pipelines – North Freemont
  - Document opportunities, benefits, costs
- ✓ Hydrologic Impacts
- ✓ Environmental Impacts

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Municipal and Industrial Conservation Alternative

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M&I Conservation – Summary of Existing City Water Use

Average Daily Use

Gallons per Capita per Day	Driggs	Victor	Idaho Falls	Rexburg	Nampa	Meridian	Caldwell
	950	200	406	183	93	111	109

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Further Municipal and Industrial Conservation Study Needs

- ✓ None identified – Individual cities to pursue as applicable

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Market Based Alternatives

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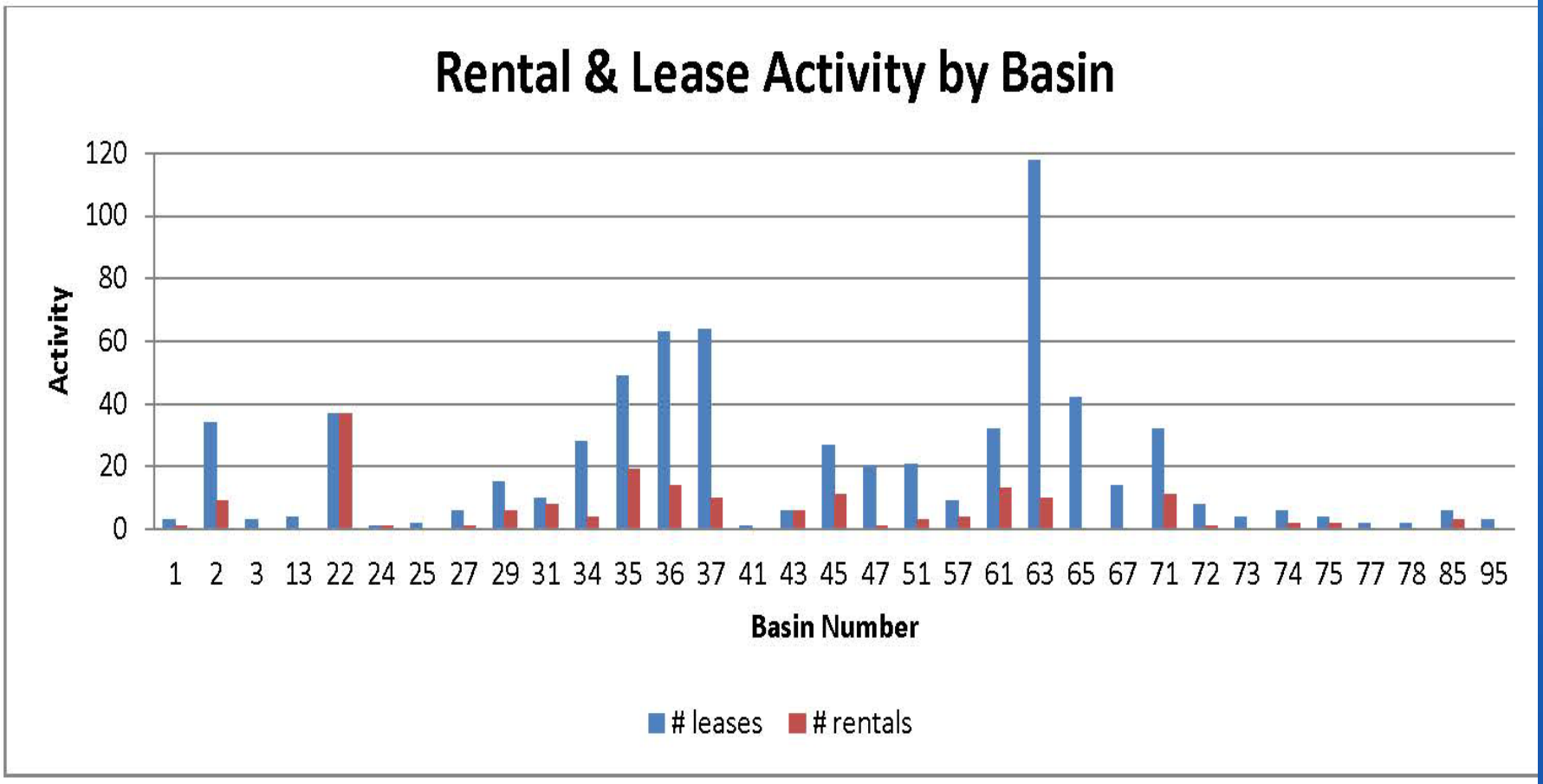
Current Market

Regional Rental Pool – Water District 1

- one of the most active in Idaho, 350,000 acre feet leased in 2012 (flow augmentation, irrigation, mitigation, etc.)

Water Supply Bank – Basin 22



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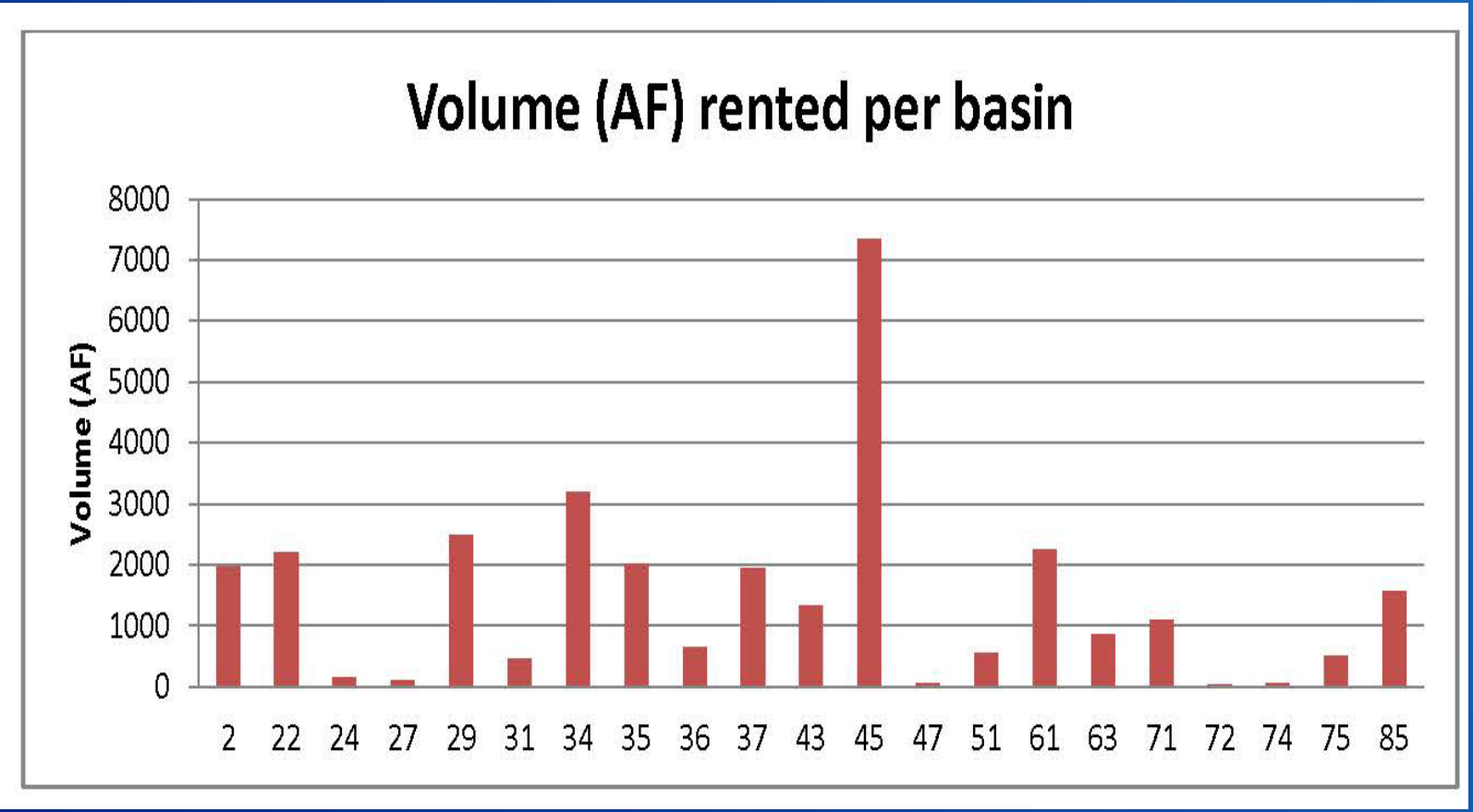
Water Supply Bank – Basin 22



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Further Water Market Study Needs

- ✓ Investigate Use of Water Markets In Conjunction with Alternatives Evaluated
  - -Stored Water Marketing
  - - Pipeline in North Fremont
  - - Changes in Stream Flows due to Irrigation Scheduling (automated canals)
- ✓ Demand Reduction - Deficit Irrigation

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Phase II Study Needs

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Carry Forward / Additional Study Storage

- ✓ Compare Teton Dam
- ✓ Reconfigure Lane Lake design – eliminate Bitch Creek as source
- ✓ Spring & Moody Creek – w/natural flows
- ✓ Upper Badger
- ✓ Raise Island Park & Ashton Dam

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Carry Forward /Additional Study Water Managment

- ✓ Automated Canals
- ✓ Pipelines in North Fremont
- ✓ Investigate Use of Water Markets In Conjunction with Conservation & Storage Alternatives
- ✓ Demand Reduction / Marketing

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Carry Forward / Additional Study Impacts

- ✓ Document Hydrologic Impacts of Alternatives
- ✓ Document Environmental Impacts of Alternatives
- ✓ Climate Change

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