

Memorandum



To: Idaho Water Resource Board
From: Cynthia Bridge Clark, Randy Broesch
Date: January 7, 2016
Re: Mountain Home Air Force Base Water Supply /Pipeline Project

The following is a status report on the Mountain Home Air Force Base (MHAFB) Water Supply/Pipeline Project (Project). The Project involves efforts by the State of Idaho to assist the Military to develop a sustainable water supply to the MHAFB.

Project Concept

The MHAFB currently relies on groundwater for its water supply, but diverts its water from a critical declining aquifer. The Idaho Water Resource Board (IWRB) intends to develop a pipeline and water treatment facility to deliver water from the Snake River to the MHAFB as an alternate water supply to existing use of groundwater. In 2014, with support from the Governor and Idaho State Legislature, the IWRB purchased senior Snake River water rights from the Simplot Corporation to provide water supply to the base. The surface water will be diverted out of the C.J. Strike Reservoir and delivered to the MHAFB where it will be treated and used for Domestic Commercial Municipal Industrial (DCMI) purposes on the base. The IWRB is expected to retain the senior water rights and enter into a water utility service agreement with the MHAFB for the delivery of the DCMI water. The IWRB will undertake the financing, design, construction, and maintenance methods to bring the project to fruition. The Governor's office, Legislature, and the IWRB recognize and are committed to supporting the MHAFB as a \$1 Billion annual economic generator in the local Idaho economy.

Project Status

Technical Planning Report - On August 5, 2015 staff issued the notice to proceed for services to complete a *Technical Planning Report*, which will provide a conceptual project plan to assist both staff and MHAFB with their planning efforts. The report will include:

- An evaluation of the current and future DCMI demand at the base
- Conceptual designs for the pump station at the C.J. Strike Reservoir, pipe conveyance alternatives, and treatment plant sizing criteria
- Identification of design standards and permitting requirements
- Preparation of detailed total project costs and preliminary operation and maintenance rates
- Development of a project schedule covering phases of the project from permitting and design to construction and commissioning
- Optional task – planning level design and cost estimates for a possible expansion of the pipeline to deliver water to other utility users if additional water rights from the Snake River were obtained by those entities

Completion of the *Technical Planning Report* is scheduled for February 26, 2016 (the optional task may be completed at a later date).

Regular Communication with MHAFB- In April of 2015, a significant outcome of a meeting with the MHAFB and Idaho Department of Water Resources (IDWR)/IWRB staff was the formation of a Core Action Group (CAG). The CAG is comprised of IDWR/IWRB staff and representatives from the MHAFB. It meets often to discuss the status of work and to resolve planning decisions to develop the *Technical Planning Report* and to exchange necessary information to assist with their respective processes.

Upon Completion of the Technical Planning Report - IDWR/IWRB staff will continue developing financing options, project delivery types, and stakeholder involvement. Meanwhile, MHAFB will advance internal contracting obligations in parallel with the required environmental compliance actions. The CAG expects to negotiate a water utility service agreement based upon the findings in the *Technical Planning Report*.

Schedule - The following are important milestones and estimated completion dates:

<u>Primary Milestone</u>	<u>Date</u>
Complete Planning Report	February/March 2016
Approval of Water Utility Service Agreement	October 2017
IWRB Resolution to Finance, Design, & Construct	October 2017
IWRB/Simplot Agreement Deadline to Deliver Water	February 2021

REQUIRED ACTIONS: No actions are required at this time.

Memorandum

To: Idaho Water Resource Board (IWRB)
From: Neeley Miller, IDWR Planning & Projects Bureau
Date: January 8, 2016
RE: Elmore County Aquifer Stabilization Funding Request



ACTIONS:

Consider request to provide funding for Elmore County Water Supply Study

House Bill 547 passed and approved by the 2014 legislature allocated \$5 million annually to the Idaho Water Resource Board (IWRB) for Statewide Aquifer Stabilization. Projects that address declining aquifers or existing or potential water use conflicts from throughout the state of Idaho are eligible to request aquifer stabilization funding through the IWRB.

Staff received a proposal for an Elmore County Water Supply Study and is bringing the proposal to the Board for discussion and funding consideration. Staff has invited representatives from Elmore County here today to discuss the proposed Elmore County Water Supply Study and provide you with a presentation on the proposed work.

Attached:

- 1) Elmore County Water Supply Study Proposal
- 2) Letters of Support
- 3) Funding Resolution for Consideration

BEFORE THE IDAHO WATER RESOURCE BOARD

IN THE MATTER OF AN AQUIFER) A RESOLUTION
STABILIZATION STUDY IN) TO ALLOCATE
COORDINATION WITH) FUNDS TO ELMORE
ELMORE COUNTY) COUNTY
_____)

WHEREAS, House Bill 547 passed and approved by the 2014 legislature allocated \$5 million annually from ongoing funds to the Idaho Water Resource Board (IWRB) for statewide aquifer stabilization, with the funds to be deposited into the Secondary Aquifer Planning, Management, and Implementation Fund; and

WHEREAS, through resolution, dated May 22nd, 2015, the IWRB adopted a budget for Fiscal Year 2016 for use of the continuously-appropriated Secondary Aquifer Planning, Management, and Implementation Fund and authorized expenditures for projects in priority aquifers; and

WHEREAS, many aquifers across Idaho are declining or have existing or potential conjunctive administration water use conflicts, including the Wood River, the Mountain Home Aquifer, the Treasure Valley Aquifer, the Palouse Basin Aquifer, the Rathdrum Prairie Aquifer and others; and

WHEREAS, the economy of southern Elmore County is dependent on water supplies that are insufficient to support existing uses and future development. Specifically, ground water pumping from the Mountain Home Plateau Aquifer exceeds annual natural recharge, resulting in chronic water level declines in the area of Cinder Cone Butte, Mountain Home Air Force Base, and the City of Mountain Home; and

WHEREAS, surface water delivered from streams draining to the Mountain Home Plateau are highly variable; water from these surface channels and reservoirs are insufficient in most years; and

WHEREAS, SPF Engineering at the request of Elmore County has develop a proposal for an Elmore County Water Supply Study. The specific objectives of the study are to 1) estimate existing and future irrigation, municipal, industrial and other water demand, 2) quantify current water supply deficits, 3) determine the economic benefit from improving Elmore County water supply to meet demands, and 4) estimate the approximate costs to develop additional water supplies to achieve water supply sustainability and to provide water for future economic development. The estimated cost for the study is \$109,000; and

NOW THEREFORE BE IT RESOLVED that the IWRB authorizes the expenditure of a total of \$_____ from the Secondary Aquifer Planning, Management, and Implementation Fund for the Elmore County Water Supply Study.

BE IT FURTHER RESOLVED that the Elmore County Water Supply Study Final Report shall identify the most cost-effective water supplies that can be developed to achieve aquifer stabilization and include a recommended course of action regarding future water supplies for Elmore County area.

BE IT FURTHER RESOLVED that Elmore County and their project managers are solely responsible and accountable for the oversight, management, and completion of this study.

DATED this 22th day of January 2016.

ROGER CHASE, Chairman
Idaho Water Resource Board

ATTEST _____
Vince Alberdi, Secretary
Idaho Water Resource Board

RECEIVED

JAN 07 2016

DEPARTMENT OF
WATER RESOURCES

MOFFATT
THOMAS

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January 5, 2016
via E-mail (Neeley.Miller@idwr.idaho.gov)
and U.S. Mail

Idaho Water Resource Board
Attn: Neeley Miller
Idaho Department of Water Resources
322 East Front Street
P. O. Box 83720
Boise, ID 83720-0098

Re: Revised Elmore County Water Study Proposal
MTBR&F File No. 26097.0000

Dear Board Members:

Based on communications with Cynthia Bridge Clark and Neeley Miller, SPF Water Engineering has revised the proposed Elmore County Water Supply Study. I have enclosed a copy the revised proposal. Please consider this to be a replacement of the proposal I provided to the Board with my correspondence of November 9, 2015.

Thank you for your consideration of Elmore County's request for funding assistance to proceed with this important study.

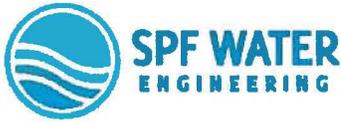
Sincerely,



Scott L. Campbell

SLC/kam
Enclosure

cc: Board of Commissioners Elmore County
Terry M. Scanlan
L.W. (Buzz) Grant III
Kristina M. Schindele



January 4, 2016

Elmore County Commissioners
c/o Scott Campbell
Moffatt Thomas
101 S. Capitol Blvd, 10th Floor
Boise, ID 83702

Subject: Proposal for Elmore County Water Supply Study

Dear Commissioners,

SPF Water Engineering, LLC (SPF) is pleased to provide the following proposal for a study of water supply alternatives for Elmore County. The purpose of the study is to explore alternative sources of water supply. Specific objectives are to (1) estimate existing and future irrigation, municipal, industrial, and other water demands, (2) quantify current water supply deficits, (3) determine the economic benefit from improving Elmore County water supplies to meet demands, and (4) estimate the approximate costs to develop additional water supplies to achieve water supply sustainability and to provide water for future economic development. Sizing of water supply development can be determined based on the anticipated economic benefit.

BACKGROUND

The economy of southern Elmore County is dependent on water supplies that are insufficient to support existing uses and future development. Specifically, ground-water pumping from the Mountain Home Plateau Aquifer exceeds annual natural recharge, resulting in chronic water-level declines in the area of Cinder Cone Butte, Mountain Home Air Force Base, and the City of Mountain Home. Appropriation of new water supplies in these areas for consumptive uses (e.g. irrigation) is prohibited, and curtailment of existing uses is threatened as water levels decline. In addition to inadequate ground water supplies, surface water delivered from streams draining to the Mountain Home Plateau are highly variable; water from these surface channels and reservoirs are insufficient in most years. The Snake River and the Boise River are potential sources of water to augment both ground and surface water supplies within the County.

Several water-related planning or administrative efforts are underway that may influence Elmore County water supply development. Some of these activities are outlined below and may have an influence on the proposed water study.

Idaho Water Resources Board. The Idaho Water Resource Board (IWRB) Aquifer Stabilization Committee is actively promoting efforts to improve ground water supplies

through aquifer recharge and other methods. However, the Committee lacks sufficient data and information to fully quantify water-supply needs in the Mountain Home Plateau. IWRB staff members have expressed interest in a comprehensive water-supply study, and have further indicated a preference for participation in such a study by a broad group of stakeholders, including the City of Mountain Home, Mountain Home Irrigation District, and independent ground-water users. Such participation could be demonstrated by letters of support for a study from cities (Mountain Home, Glens Ferry, Hammett), and other stakeholder groups such as chambers of commerce, Idaho Farm Bureau, Idaho Cattlemen's Association, and Idaho Water Users Association. The IWRB could potentially provide financial and technical support for an Elmore County water supply study.

IWRB Mountain Home Air Force Base Water Supply Study. The IWRB is currently conducting a water supply planning study for Mountain Home Air Force Base (MHAFB). MHAFB relies on ground water for its water supply, and the future of the base is jeopardized by declining ground-water levels and the lack of opportunities to develop additional ground-water supply. The IWRB study is evaluating MHAFB water demands and system capacity, developing a conceptual design and cost estimate for a water supply from the Snake River, and conducting a water-quality sampling study for surface water treatment system design. These results of these tasks will be summarized in a water supply planning report. Both Elmore County and the City of Mountain Home have expressed interest in participating in this study.

The findings of the current MHAFB study will be utilized in the broader Elmore County investigation described in this proposal. We do not anticipate a direct overlap between the two efforts.

Basin 61 Water District Formation. The Idaho Department of Water Resources (IDWR) held a public information meeting in Mountain Home on June 16, 2015 to discuss formation of a new water district in the Mountain Home area of Basin 61. Options discussed at the June meeting were (1) creation of a water district for ground-water rights, only; (2) addition of ground water rights to existing Basin 61 surface water districts for administration; or (3) creation of a single Basin 61 water district for administration of both ground water and surface water rights. IDWR's meeting presentation noted there is potential for immediate regulation of ground-water rights in the existing Mountain Home Ground Water Management Area and the Cinder Cone Butte Critical Ground Water Area. It also noted that IDWR might begin conjunctively managing surface and ground-water rights, which may further reduce available effective water supply in the County.

Air Force Community Partnership Process. The MHAFB has initiated a Community Partnership Process consisting of meetings with local stakeholders to address issues that include environmental, water, climate change, and emergency response topics. The Community Partnership Process participants might function as stakeholders in a County water supply study.

Arrowrock and Anderson Storage Augmentation Processes. To increase surface water storage in the Boise River Basin, the U.S. Army Corps of Engineers (USACOE) is studying

increasing the capacity of Arrowrock Reservoir, and the U.S. Bureau of Reclamation (USBOR) is investigating increasing the capacity of Anderson Ranch Reservoir. Elmore County has expressed interest in participating in both these processes as a means to augment the County water supply. To participate, it is necessary to quantify the County's need for additional water and evaluate the ability to deliver the water to County users at a feasible cost.

SCOPE OF WORK

The following scope of work outlines preliminary tasks needed to quantify regional water needs and explore possible sources of additional supply. Tasks 2 through 10 are preliminary in that they may be adjusted based on stakeholder input.

The study area for this investigation will be the portion of the Mountain Home Ground Water Management Area within Elmore County.

Task 1 – Project Outreach, Community Support, and Final Project Scoping

Elmore County has a diverse range of water users that depend on multiple water sources authorized under multiple water rights. A regional assessment of water needs and sources of additional supply depend on addressing these diverse interests. Thus, as an initial step in project development, we propose a series of telephone contacts and meetings to gather stakeholder input and better understand stakeholder concerns. The meetings will outline the preliminary project objectives and solicit input and suggestions to refine the project scope.

We anticipate scheduling 3 to 5 meetings. Where possible, the meetings will include multiple stakeholder groups for efficiency. Groups solicited for outreach might include cities, chambers of commerce, MHAFFB, Mountain Home Irrigation District, Idaho Department of Water Resources, IWRB, various associations that represent Elmore County water users (Cattlemen's, Farm Bureau, Idaho Water Users Association), Idaho Power Company, USACOE, and USBOR.

Experience shows that active stakeholder involvement, participation, and support in such regional water-supply assessments is crucial to project success. At each meeting, the proposed water supply study scope will be presented and stakeholder groups will be asked for suggestions to help refine project tasks. We understand that the County may also use the response from these meetings to seek financial support from stakeholders for the water-supply assessment or for follow-up actions.

A final scope of work and cost estimate for the water supply study will be refined after these meetings. The scope of work and cost estimate will reflect the input received from the stakeholder groups.

Task 2 - Evaluate Declines in Ground-Water Levels

SPF will evaluate declines in ground-water levels throughout the Mountain Home Plateau Aquifer to help estimate the average annual ground-water deficit. By determining the volume of aquifer storage loss, SPF will estimate recharge deficit (or excess pumping volume). These values will be compared to estimated annual pumping and natural recharge volumes to further refine the estimated average annual recharge deficit. Using these estimates, SPF will estimate annual volume of reduction in pumping (or increase in recharge) that is necessary to stabilize ground-water levels within pertinent subareas.

Task 3 – Water Right Analysis

SPF will conduct an analysis of existing water rights in the Mountain Home Plateau Aquifer. The analysis will tabulate consumptive water rights authorized for diversion of more than a minimum threshold amount (we recommend a preliminary threshold of 0.3 cfs). Irrigated areas will be located and quantified spatially using geographic information system software (GIS). The water right analysis will be used to estimate the number of acres which currently are authorized for irrigation on the Mountain Home Plateau. The analysis will identify lands irrigated with surface water, ground water, and surface water supplemented by ground water.

SPF will categorize the authorization of large-scale ground-water diversions based on priority date in 5-year increments. This information will be used to help quantify average annual changes in aquifer storage, and also help quantify potential water use if groundwater supplies are not constrained by water-level declines or curtailment. Recommendations for administrative water right actions will not be provided as part of this task.

Task 4 – Define Existing Water Supply Deficit

Using the analysis of ground-water levels (Task 2), irrigation-development history (Task 3), and estimates of current withdrawals based on water-right information (Task 3), SPF will estimate the current water supply deficit. The estimate will include a quantification of existing water uses, identification of shortfalls in current supply, and identification of anticipated shortfalls that may occur in the future because of increased regulation of ground-water supplies. This analysis will include evaluation of irrigation, municipal, industrial, domestic, and commercial uses.

This analysis will factor in existing and possible future water-supply shortfalls. Current known shortfalls include seasonal shortages of surface water supplies. Surface water irrigation uses will be evaluated in terms of dry and wet years. The analysis will include delivery data from Mountain Home Irrigation District if available. Future shortfalls may include priority-based curtailment of ground water pumping necessary to stabilize aquifer water levels (i.e., equal to the recharge deficit calculated in Task 2).

Task 5 – Develop Projections of Future Water Demand.

Projections of future water demands will be made for domestic, commercial, municipal and industrial (DCMI) uses, and for supplemental irrigation. Separate projections will be made for water-constrained and water-available conditions. The “water-constrained” condition is essentially the current water supply, while a “water-available” condition assumes that sufficient water supply can be imported to meet all reasonably anticipated needs. The projections will include MHAFB demands determined by the current IWRB planning study. The water-demand projections will build on 50-year projections of employment, population, and numbers of households currently being compiled for a Treasure Valley future water-demand assessment.

Task 6 - Economic Impact of Water Supply Deficiency

The economic impact of water supply deficiency will be calculated, based on estimates of opportunity costs associated with (1) deferred agricultural production due to water supply deficiency in drought years, (2) lost opportunities for agricultural development, (3) lost opportunities for commercial and industrial development, and (4) lost opportunities for residential and municipal growth. For example, the impact of surface water irrigators growing spring grain rather than higher value water-intensive crops such as sugar beets will be examined. Similarly, an estimate will be made of the economic cost of restricted growth due to lack of DCMI water supplies. SPF will subcontract with an economist to assist in the analysis.

Task 7 - Describe Potential Sources of Increased Water Supply

The Boise River and the Snake River are the two most likely sources of increased water supply to the Mountain Home Plateau. SPF will describe water availability from these sources and explain administrative (i.e., water right) constraints or opportunities. We will also briefly describe potential infrastructure for water delivery, likely consisting of at least one Boise River option and two Snake River options.

Task 8 - Describe Methods for Water Utilization

Methods for utilizing potential new water supplies will influence the way in which water is used. For example, it may be more cost effective to replace ground-water irrigation uses directly with surface water supplies than to treat surface water to drinking water standards, inject the water for aquifer recharge, and then redivert the recharged water for irrigation or municipal purposes. However, it may also be cost effective to provide ground-water recharge if locations can be determined where water can be recharged without pre-treatment. Methods of water utilization that will be considered include:

- Raw surface water direct use (including exchanging surface water for current ground water use);
- Treated surface water direct use;
- Aquifer recharge; and
- Aquifer recharge, storage, and recovery (ASR).

Water quality and treatment requirements for all uses will be considered. Similarly, timing of water uses versus timing of water availability will be addressed. The findings from this task will identify and describe the most cost-effective approaches for use of imported surface water supplies.

Task 9 - Preliminary Cost Opinions for Selected Direct Use and/or ASR Alternatives

SPF will estimate conceptual-level costs (Class 5 cost estimate) for construction, operation, and maintenance of facilities (including facilities of varying sizes). These cost estimates will be presented on a per acre-foot basis for comparing water-supply alternatives and associated economic benefits. The cost estimates will incorporate possible options for seasonal energy discounts that could serve to reduce operating costs (off-peak use of conventional energy, use of wind power, etc.). Based on estimated water delivery costs, a discussion of cost feasibility versus project capacity and water use will be provided.

Task 10 - Operational and Administrative Options

If a new water supply project is constructed, who will be the owner, operator, and/or administrator? SPF will outline potential options, including the IWRB, a County irrigation district, water district, water company, or public-private partnership (P3). The advantages and disadvantages of each described option will be discussed, and funding options will be identified. SPF would subcontract with an attorney to provide legal analysis of the available options.

Task 11 – Final Report

The results of Tasks 1 through 10 will be compiled in a final report that will include conclusions and recommendations for next steps. The report will identify the most cost-effective water supplies that can be developed to achieve aquifer stabilization. A timeline for implementation of recommendations will be included.

The report will initially be issued as a draft for comment from the County and selected stakeholders or funding agencies. Following receipt of comments, a final report will be issued.

NOT INCLUDED IN SCOPE OF WORK

The following items are not included in the scope of work. These items are deemed unnecessary for the project at this stage, but could be added upon request.

1. Environmental Evaluations
2. Detailed Facility Plans or Design
3. Right-of-Way Analyses

SCHEDULE

SPF proposes a 60-day schedule for stakeholder outreach. Following the outreach, 30 days would be required for final project scoping and cost estimate.

Approximately 180 days from notice to proceed will be required to complete Tasks 2 through 10, including draft report preparation. We anticipate 30 days for report review, followed by an additional 30 days to issue the final report.

ESTIMATED COSTS

Estimated cost for Task 1 is \$10,000, and includes up to 5 stakeholder meetings. Estimated cost for Tasks 2 through 11 is \$99,000. This cost estimate is subject to change based on input from stakeholder groups contacted as part of Task 1. The cost estimate includes budget amounts of \$10,000 for an economic consultant for Tasks 5 and 6, and \$5,000 for legal consultation on Task 10. Costs are detailed below in Table 1.

Table 1. Estimated Project Costs

Task	Task Description	Subtotals
1	Project Outreach, Community Support, and Final Project Scoping	\$10,000
2	Evaluate Declines in Ground-water Levels	\$8,000
3	Water Right Analysis	\$8,000
4	Define Water Supply Deficit	\$8,000
5	Develop Projections of Future Water Demand	\$8,000
6	Economic Impact of Water Supply Deficiency	\$7,000
7	Describe Potential Sources of Increased Water Supply	\$14,000
8	Describe Methods for Water Utilization	\$7,000
9	Preliminary Cost Opinions for Selected Direct Use and/or ASR Alternatives	\$17,000
10	Operational and Administrative Options	\$9,000
11	Final Report	\$13,000
	Total	\$ 109,000

SPF proposes to conduct the work on a time and materials basis, as detailed on the attached schedule of fees and conditions. A current hourly rate schedule is provided as Table 1. Direct costs (photocopy, postage, etc.) are billed at actual cost plus 15%. Invoices will be sent on a monthly basis.

AGREEMENT

If this proposal meets with your approval, it may serve as the basis for agreement by affixing a signature in the space provided below. This signature will be considered as a notice to

proceed on Task 1 only, with a budget upper limit of \$10,000. An additional authorization will be obtained prior to initiating subsequent tasks.

We look forward to working with you on this project. Please contact me with any questions.

Respectfully submitted,

Accepted By:

SPF WATER ENGINEERING, LLC

ELMORE COUNTY COMMISSIONERS

By 
Terry M. Scanlan, P.E., P.G.
Vice President

By _____

Date _____

TABLE 1 - SPF WATER ENGINEERING, LLC SCHEDULE OF HOURLY BILLING RATES		
Personnel	Title	2016 Billing Rate
Terry Scanlan, P.E., P.G.	Principal Engineer/Hydrogeologist	\$160
Christian Petrich, Ph.D., P.E., P.G.	Principal Engineer/Hydrologist	\$160
Cathy Cooper, P.E.	Principal Engineer	\$150
Bob Hardgrove, P.E.	Principal Engineer	\$150
Scott King, P.E.	Supervising Engineer	\$137
Eric Landsberg, P.E.	Senior Project Manager	\$143
Jason Thompson, P.E.	Project Manager	\$125
Kent Gingrich, P.E.	Project Manager	\$125
Peter Cooper, P.E.	Project Manager	\$125
Justin Leraris, P.E.	Project Manager	\$125
Marci Pape, P.E.	Project Engineer	\$91
Bryce Swillum, E.I.T.	Associate Engineer	\$91
Breanna Paulson, E.I.T.	Associate Engineer	\$80
Ashley Ritter, E.I.T.	Associate Engineer	\$75
Roxanne Brown	Senior Water Right Specialist	\$100
Lori Graves	Water Right Specialist	\$91
Steve Bennett	Designer I	\$87
Crystal Jensen	Business Development/Graphics/GIS Specialist	\$65
Julie Romano	Accounting/HR	\$65
Megan Tverdy	Administrative	\$55

Note: Hourly billing rates will be adjusted on January 1st each year.

**SCHEDULE OF FEES AND CONDITIONS
SPF WATER ENGINEERING, LLC (SPF)**

A. FEES AND PAYMENT

1. The fee for services will be based on SPF's standard hourly rates (including labor cost, overhead, and profit). Non-salary expenses directly attributable to the project, such as: (1) living and traveling expenses of employees when away from the home office on business connected with the project; (2) identifiable reproduction costs applicable to the work; and (3) outside services will be charged at actual cost plus 15% service charge to cover overhead and administration. Hourly rates are adjusted on an annual basis.
2. Payment shall be due within 30 days after date of monthly invoice describing the work performed and expenses incurred during the preceding month.
3. OWNER agrees that timely payment is a material term of this Agreement and that failure to make timely payment as agreed constitutes a breach hereof. In the event payment for services rendered has not been made within 60 days from the date of invoice, SPF may, after giving 7 days written notice to OWNER, and without penalty or liability of any nature, and without waiving any claim against OWNER, suspend all work on all authorized services as set forth herein. Upon receipt of payment in full for services rendered, plus interest charges, SPF will continue with all services not inconsistent with Article C.4 herein. Payment of all compensation due SPF pursuant to this Agreement shall be a condition precedent to OWNER using any of SPF's professional services work products furnished under this Agreement.
4. In order to defray carrying charges resulting from delayed payments, simple interest at the rate of 18% per annum (but not exceeding the maximum rate allowed by law) will be added to the unpaid balance of each invoice. The interest period shall commence 30 days after date of original invoice, and shall terminate upon date of payment. Payments will be first credited to interest and then to principal. No interest charge will be added during the initial 30-day period following date of invoice.

B. COMMENCEMENT OF WORK. The work will be commenced immediately upon receipt of written notice to proceed. If after commencement of work the project is delayed for any reason beyond the control of SPF for more than 60 days, the price and schedule for services under this Agreement are subject to revision. Subsequent modifications shall be in writing and signed by the parties to this Agreement.

C. MISCELLANEOUS PROVISIONS

1. INSURANCE/INDEMNIFICATION/LIMITATION OF LIABILITY

- (a) SPF will maintain statutory limits of insurance coverage for Workers' Compensation and Employer's Liability Insurance as well as Professional Liability, General Liability and Automobile Liability Insurance and will name Owner as an additional insured on the Professional Liability, General Liability and Automobile Liability Insurance policies if specifically requested in writing. General Liability and Automobile Liability Insurance shall not be less than \$1,000,000 per occurrence.
- (b) SPF asserts that it is skilled in the professional calling necessary to the services and duties proposed to be performed, and that it shall perform such services and duties in conformance to and consistent with the standards generally recognized as being employed by professionals of SPF's caliber in the same locality, and to that end SPF agrees to indemnify and hold harmless Owner, its officers, and employees from and against claims, suits, loss, damages, costs, and expenses arising out of or resulting from the negligent acts, errors, or omissions of SPF, its officers, employees or agents in the performance of its services and duties hereunder, but not from the negligence or willful misconduct of Owner, its officers, and employees.
- (c) SPF shall not be liable for damages arising out of or resulting from the actions or inaction of governmental agencies, including but not limited to, permit processing, environmental impact reports,

dedications, general plans and amendments thereto, zoning matters, annexations or consolidations, use or conditional use permits, and building permits.

- (g) Notwithstanding other terms of this Agreement to the contrary, SPF makes no warranty, whether express or implied, as to the actual capacity or drawdown of any proposed water well(s), or the quality or temperature of ground water, if any, which may be produced by any water well(s) to be drilled and developed pursuant to this Agreement. Owner understands and agrees that SPF's responsibility under this Agreement is to apply its hydrogeology expertise, and to exercise the usual standard of care in the engineering profession to develop what ground water may reasonably exist, and may be economically feasible to use, beneath the proposed site(s).

2. **DOCUMENTS**

- (a) All computer programs, software, and other like data developed during the course of the project, unless specifically developed for Owner, are and shall remain the sole property of SPF.
- (b) SPF's liability to Owner for any computer programs, software products, or related data furnished hereunder is limited solely to the correction of residual errors, minor maintenance, or update(s) as agreed. SPF makes no warranties of any kind, including any implied warranty of merchantability or of fitness for any particular purpose, or against infringement, with respect to computer programs, software products, related data, technical information, or technical assistance provided by SPF under this Agreement. In no event shall SPF, its officers, agents, or employees be liable under or in connection with this Agreement under any theory of tort, contract, strict liability, negligence, or other legal or equitable theory for incidental or consequential damages relating to any computer programs, software products, or related data furnished hereunder.

3. **TERMINATION OR ABANDONMENT.** If any portion of the work is terminated or abandoned by Owner, the provisions of this Schedule of Fees and Conditions in regard to compensation and payment shall apply insofar as possible to that portion of the work not terminated or abandoned. If said termination occurs prior to completion of any phase of the project, the fee for services performed during such phase shall be based on SPF's actual costs through termination of the portion of such phase completed prior to said termination.
4. **WAIVER.** SPF's waiver of any term, condition, or covenant or breach of any term, condition, or covenant, shall not constitute a waiver of any other term, condition, or covenant, or the breach thereof.
5. **ENTIRE AGREEMENT.** This Agreement, and its attachments, contains the entire understanding between Owner and SPF relating to professional engineering services. Any prior or contemporaneous agreements, promises, negotiations, or representations not expressly set forth herein are of no effect. Subsequent modifications or amendments to this Agreement shall be in writing and signed by the parties to this Agreement.
6. **SUCCESSORS AND ASSIGNS.** All of the terms, conditions, and provisions hereof shall inure to the benefit of and be binding upon the parties hereto, and their respective successors and assigns.
7. **CONSTRUCTION ESTIMATES.** Estimates of cost for the facilities considered and designed under this Agreement are prepared by SPF through exercise of its experience and judgement in applying presently available cost data, but it is recognized that SPF has no control over costs of labor and materials, or over the construction contractor's methods of determining prices, or over competitive bidding procedures, market conditions, and unknown field conditions so that SPF cannot and does not guarantee that proposals, bids, or the project construction costs will not vary from SPF's cost estimates.
8. **SEVERABILITY.** If any provision of this Agreement is declared invalid, illegal, or incapable of being enforced by any court of competent jurisdiction, all of the remaining provisions of this Agreement shall nevertheless continue in full force and effect, and no provision shall be deemed dependent upon any other provision unless so expressed herein.



City of Mountain Home

160 South 3rd East, PO Box 10, Mountain Home, ID 83647 (208)587-2104 Fax (208)587-2110

November 10, 2015

RECEIVED
NOV 12 2015
By _____ Time _____

Board of Elmore County Commissioners
150 South 4th East, Suite 3
Mountain Home, ID 83647

RE: Elmore County Water Needs Assessment and Aquifer Recharge Project Study
MTBR&F File No. 26097.0000

Dear Commissioners,

I am writing to provide the support of the City of Mountain Home for your efforts to pursue the Elmore County Water Needs Assessment and Aquifer Recharge Project Study ("Study"). Elmore County water supplies are scarce and diminishing. As you know, water supplies are the key to economic sustainability and growth. Unfortunately, Elmore County has never been provided the needed support by the state or federal government to develop sufficient water supplies to allow for healthy economic conditions. Based on these concerns, we encourage the Board of Elmore County Commissioners to pursue all possible funding options to complete the Study and ultimately provide for additional water supplies for Elmore County. We understand that the Idaho Water Resource Board may be able to provide funding for this purpose and we encourage its approval of this effort.

We are also aware of Elmore County's efforts to analyze the feasibility of participating in the Mountain Home Air Force Base pump and pipe line project for use of Snake River water. We support this effort and look forward to positive results.

We would like to receive periodic reports on your efforts to improve Elmore County's water supplies. We will provide appropriate assistance and encouragement as needed.

Thank you for your efforts.

Sincerely,

Tom Rist,
Mayor

DISTRICT 23
TWIN FALLS & OWYHEE COUNTIES

HOME ADDRESS
FLAT CREEK RANCH
ROGERSON, IDAHO 83302
(208) 857-2217



STATE CAPITOL
P.O. BOX 83720
BOISE, IDAHO 83720-0081
(208) 332-1300
FAX: (208) 334-2320
bbrackett@senate.idaho.gov

Idaho State Senate

SENATOR BERT BRACKETT

November 23, 2015

Board of Elmore County Commissioners
50 South 4th East, Suite 3
Mountain Home, ID 83647

Dear Commissioners,

I am writing to provide my support of your efforts to pursue the Elmore County Water Needs Assessment and Aquifer Recharge Project Study ("Study"). Elmore County water supplies are scarce and diminishing. As you know, water supplies are the key to economic sustainability and growth. Unfortunately, Elmore County has not received the needed support by the state or federal government to develop sufficient water supplies to allow for healthy economic conditions. Based on these concerns, I encourage the Board of Elmore County Commissioners to pursue all possible funding options to complete the Study and ultimately provide for additional water supplies for Elmore County. I understand that the Idaho Water Resource Board may be able to provide funding for this purpose and I encourage its approval of this effort.

I am also aware of Elmore County's efforts to analyze the feasibility of participating in the Mountain Home Air Force Base pump and pipe line project for use of Snake River water. I support this effort and look forward to positive results.

I would like to receive periodic reports on your efforts to improve Elmore County's water supplies. I will provide appropriate assistance and encouragement as needed.

Thank you for your efforts.

Sincerely,


Senator Bert Brackett, District 23

RECEIVED

NOV 30 2015

By MAIL Time



City of Mountain Home

160 South 3rd East, PO Box 10, Mountain Home, ID 83647 (208)587-2104 Fax (208)587-2110

November 10, 2015

RECEIVED

NOV 17 2015

By _____ Time _____

Board of Elmore County Commissioners
150 South 4th East, Suite 3
Mountain Home, ID 83647

RE: Elmore County Water Needs Assessment and Aquifer Recharge Project Study
MTBR&F File No. 26097.0000

Dear Commissioners,

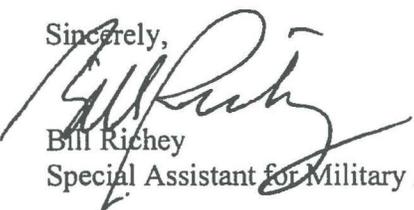
I am writing in support of your efforts to pursue the Elmore County Water Needs Assessment and Aquifer Recharge Project Study ("Study"). Elmore County water supplies are scarce and diminishing. In Elmore County and the Mountain Home area, groundwater is critical source of water supply for MHAFB, the City of Mountain Home, industry, agriculture, and domestic users. The Mountain Home aquifer is over-drafted by about 30,000 acre-feet annually resulting in in groundwater level decline of over 1 to 2 feet per year. The level of use and dependence on groundwater in the area is not sustainable. As you know, water supplies are the key to economic sustainability and growth. I would encourage the Board of Elmore County Commissioners to pursue all possible funding options to complete the Study and ultimately provide for additional water supplies for Elmore County. I also encourage the Idaho Water Resource Board's approval of this effort and to help provide funding for this purpose.

I am also aware of Elmore County's participation in the Air Force Partnership Workshop and their efforts to analyze the feasibility of participating in the Mountain Home Air Force Base pump and pipe line project for use of Snake River water. I encourage the counties continued support of Mountain Home AFB and I definitely support this effort and look forward to positive results.

I would like to continue to receive periodic reports on the counties efforts to improve Elmore County's water supplies. I will provide appropriate assistance and encouragement as needed.

Thank you for your efforts.

Sincerely,


Bill Richey
Special Assistant for Military Affairs

Mountain Home Irrigation District
140 S. 3rd W.
Mountain Home, ID 83647

Calvin Ireland, District 1

Mike Landers, District 2

David Ascuena, District 3

December 1, 2015

Board of Elmore County Commissioners
150 South 4th East, Suite 3
Mountain Home, Id 83647

RECEIVED

DEC 04 2015

By MAI Time

RE: Elmore County Water Needs Assessment and Aquifer Recharge Project Study

MTBR&F File No. 26097.0000

Dear Commissioners,

We are writing this letter in conditional support of Mountain Home Irrigation District for your efforts to pursue the Elmore County Water Needs Assessment and Aquifer Recharge Project Study ("Study"). Our primary concern is for the retention or increase supply of water for the irrigators/members of our District. Elmore County water supplies are scarce and diminishing. As you know, water supplies are the key to economic sustainability and growth. Unfortunately, Elmore County has never been provided the needed support by the state or federal government to develop sufficient water supplies to allow for healthy economic conditions. Based on these concerns, we encourage the Board of Elmore County Commissioners to pursue all possible funding options to complete the Study and ultimately provide for additional water supplies for Elmore County. We understand that the Idaho Water Resource Board may be able to provide funding for this purpose and we encourage its approval of this effort.

Although our primary concern is for the welfare of our District Members, we also wish to be good neighbors and look out for the welfare of the water needs of all the residents of the Mountain Home area. With this in mind, we are aware of Elmore County's efforts to analyze the feasibility of participating in the Mountain Home Air Force Base pump and pipe line project for use of Snake River water. We support this effort and look forward to positive results.

We would like to receive periodic reports on your efforts to improve Elmore County's water supply.

Thank you for your efforts.

Sincerely,



Calvin Ireland, President, Mtn. Home Irrigation Dist.



Mike Landers, Mtn. Home Irrigation Dist. Board Member



David Ascuena, Mtn. Home Irrigation Dist. Board Member

Work #: 208-587-4867

Fax #: 208-587-8168

Email: headgate2000@yahoo.com

Terry Seegrist, District Manager

Stefanie Kazyaka, Secretary

November 20, 2015

Board of Elmore County Commissioners
150 South 4th East, Suite 3
Mountain Home, ID 83647

RECEIVED

DEC 01 2015

By MAIL Time _____

RE: Elmore County Water Needs Assessment and Aquifer Recharge Project Study
MTBR&F File No. 26097.0000

Dear Commissioners,

I am writing to provide the support of Milton Peter Nielsen for your efforts to pursue the Elmore County Water Needs Assessment and Aquifer Recharge Project Study ("Study"). Elmore County water supplies are scarce and diminishing. As you know, water supplies are the key to economic sustainability and growth. Unfortunately, Elmore County has never been provided the needed support by the state or federal government to develop sufficient water supplies to allow for healthy economic conditions. Based on these concerns, we encourage the Board of Elmore County Commissioners to pursue all possible funding options to complete the Study and ultimately provide for additional water supplies for Elmore County. We understand that the Idaho Water Resource Board may be able to provide funding for this purpose and we encourage its approval of this effort.

We are also aware of Elmore County's efforts to analyze the feasibility of participating in the Mountain Home Air Force Base pump and pipe line project for use of Snake River water. We support this effort and look forward to positive results.

We would like to receive periodic reports on your efforts to improve Elmore County's water supplies. We will provide appropriate assistance and encouragement as needed.

Thank you for your efforts.

Sincerely,


M. PETER NIELSEN
LEGISLATIVE REPRESENTATIVE

RECEIVED

DEC 04 2015

By _____ Time _____

November 27, 2015

Board of Elmore County Commissioners
150 South 4th East, Suite 3
Mountain Home, ID 83647

RE: Elmore County Water Needs Assessment and Aquifer Recharge Project Study
MTBR&F File No. 26097.0000

Dear Commissioners,

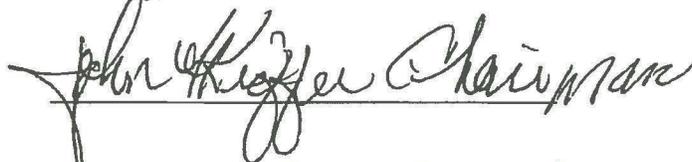
I am writing to provide the support of Elmore Soil & Water Conserv. District for your efforts to pursue the Elmore County Water Needs Assessment and Aquifer Recharge Project Study ("Study"). Elmore County water supplies are scarce and diminishing. As you know, water supplies are the key to economic sustainability and growth. Unfortunately, Elmore County has never been provided the needed support by the state or federal government to develop sufficient water supplies to allow for healthy economic conditions. Based on these concerns, we encourage the Board of Elmore County Commissioners to pursue all possible funding options to complete the Study and ultimately provide for additional water supplies for Elmore County. We understand that the Idaho Water Resource Board may be able to provide funding for this purpose and we encourage its approval of this effort.

We are also aware of Elmore County's efforts to analyze the feasibility of participating in the Mountain Home Air Force Base pump and pipe line project for use of Snake River water. We support this effort and look forward to positive results.

We would like to receive periodic reports on your efforts to improve Elmore County's water supplies. We will provide appropriate assistance and encouragement as needed.

Thank you for your efforts.

Sincerely,



JOHN KIEFFER, CHAIRMAN

ELMORE SOIL & WATER CONSERVATION DISTRICT

MEMORANDUM



To: Aquifer Stabilization Committee
From: Wesley Hipke
Subject: ESPA Managed Recharge – Payment Structure for Deliveries Above American Falls Reservoir
Date: January 12th, 2016

This memo is a follow-up to the previous memos relating to the payment structure for diversion of IWRB recharge water above American Falls Reservoir (Upper Valley). The original memos provided background and alternatives for a revised payment structure for IWRB recharge in the Upper Valley.

The following payment structure was developed based on suggestions from individual IWRB members and staff. The following payment structure is the result of discussion from the previous Committee meeting and is provided for consideration and review by the Aquifer Stabilization Committee (Committee).

Proposed Conveyance Payment Structure:

- 1) **Base Rate** – determined by 5-year aquifer retention zone in which the contracted canal companies or irrigation district is located using ESPAM2.1:
 - 40% or greater retained in aquifer at 5 years \$6.00/AF delivered
 - 20% up to 40% retained in aquifer at 5 years \$5.00/AF delivered
 - 15% up to 20% retained in aquifer at 5 years \$4.00/AF delivered
- 2) **Cold Weather Incentive** – an additional incentive of \$1.00/AF for cold weather delivery of IWRB recharge between Dec. 1st and Mar. 31st. This incentive is provided to compensate the operators for the additional work and oversight required when recharging in freezing temperatures.
- 3) **Delivery Incentive** – an additional \$1.00/AF bonus would be applied if recharge water is delivered over 75% of the days when the IWRB recharge right is in priority and IWRB issues a Notice to Proceed.

The “Base Rate” establishes the priority placed by the IWRB on retention to support aquifer stabilization. . The “Cold Weather Incentive” is provided to compensate canal companies for the additional operational activities required to maintain conveyance during cold weather conditions. The Delivery Incentive is intended to encourage operators to recharge as many days as possible when the IWRB recharge water right is in priority.

The proposed payment structure for the Upper Valley is comparable to the Lower Valley structure. The Lower Valley structure is an increasing scale from \$3/ac-ft up to \$14/ac-ft depending on the number of days an entity recharges water. The average rate for the Lower Valley is \$7/ac-ft, assuming 120 days of recharge.

Example

The following table illustrates potential payments to canals in different retention zones comparing the maximum, an average, and minimum delivery rate. The average delivery rate assumes that the delivery incentive criterion is met and a portion of the recharge occurs during the cold weather period resulting in an additional \$0.20 per acre-foot (ac-ft). The minimum delivery rate assumes that the recharge does not occur during the cold weather period and recharge is delivered for less than 90% of the days the IWRB recharge is available.

Upper Valley Payment Structure Comparison						
5-Yr Retention Zones	Maximum		Average		Minimum	
	Rate (\$/AF)	Conveyance Fee*	Rate (\$/AF)	Conveyance Fee*	Rate (\$/AF)	Conveyance Fee*
>40%	\$8.0	\$107,109	\$7.2	\$96,398	\$6.0	\$80,332
20% - 40%	\$7.0	\$93,720	\$6.2	\$83,009	\$5.0	\$66,943
15% - 20%	\$6.0	\$80,332	\$5.2	\$69,621	\$4.0	\$53,555

* 150 cfs for 45 days - 13,389 AF, estimated volume of water recharged in those years when it is in priority in the Upper Valley.

Actual amounts and payments vary based on water availability and conveyance capacity. It is estimated that these delivery costs would occur approximately every other year.

Conveyance Priority Structure:

The payment structure should also define a process by which managed recharge deliveries are prioritized between entities. This is particularly important during periods where there is limited water available for managed recharge. Key factors to be considered with a Conveyance Priority Structure include:

- Prioritize managed recharge in areas that maximize retention to meet the IWRB’s goal of stabilizing the ESPA.
- Prioritize locations with greater recharge capacity to support the IWRB’s goal of recharging 250,000 AF/yr.
- Prioritize locations capable of accommodating variable volumes of recharge when water is available and under variable recharge conditions that exist in the Upper Valley.

Previous Priority Structure:

The following Conveyance Priority Structure was stipulated in the previous Upper Valley Recharge Conveyance Resolution.

The flow/volume of water available for recharge above American Falls would be allocated as follows:

- 50% of the flow available for recharge would be divided equally between three aquifer retention zones:

- Greater than 40%,
 - 20% to 40%,
 - 15% to less than 20%
- Within the retention zone the flow/volume would be divided equally between the interested entities that had an active Water Conveyance contract with IWRB.
 - If the flow/volume of recharge water allocated to a retention zone is not utilized the flow/volume will be redistributed at the Board's discretion.
- 50% of the flow available for recharge would be utilized at the Board's discretion.

Under these guidelines, equal allocation of available water to multiple entities within an aquifer retention zone can result in unreasonably low delivery rates and payments. In the case of the spring 2015 recharge, five entities were interested in recharging 170 cfs within one retention zone. Had the IWRB split the water equally, each entity would have delivered 34 cfs for the 17 days recharge water was available. The conveyance payments would have been \$3,000 to \$5,700 depending on the retention zone. When splitting the volume up within the retention zones it has been suggested by one of the recharge partners that the size or diversion/recharge capacity should be considered when distributing the IWRB's recharge right.

Alternative Priority Structure:

The following is an alternative to the previous methodology that takes into account retention rate and focuses on entities with the largest capacity. The intent is to prioritize recharge in the areas with the greatest retention and ensure the diversion rates are sufficient to make it worth the entity's time.

Recharge capacity for each site/location would be determined before each recharge event based on reported and historic recharge capacities and the conditions of the sites at the time of the specific event. Determining the capacity before each recharge event/season ensures that the entities are able and willing to conduct recharge. This can be helpful especially in the late winter months where a canal might not be able to conduct recharge or ongoing maintenance could keep them from delivering recharge water. Only the canals/entities with active conveyance contracts would be considered.

All participating entities would be rated using the point system outlined in the following tables. The points from the Retention Rate would be added to the points from the Diversion Capacity to obtain an overall rating.

Retention Rate	Retention Rate Points
>40%	3
20% to 40%	2
15% to < 20%	1

Diversion Capacity	Diversion Capacity Points
>300	2.5
200 to <300	2
100 to <200	1.5
50 to <100	1
<50	.5

The available flow rate for IWRB managed recharge would be divided equally between the top three rated entities. If the flow rate is greater than an entity's recharge capacity the excess water will be assigned to the remaining of the top three entities. Excess flow above the top three rated entities' capacity would be allocated to the next highest rated entity. The diversion rate assigned to any entity would be adjusted to take into account any other potential stream flow limitations at the point of diversion.

Below are some examples of how this system would work:

Pre-irrigation season using canals

Entity	Retention Rate	Capacity (cfs)	Score	Ranking
FMID/Egin Bench	59%	300	5.5	1
Aberdeen-Springfield	21%	250	4	2
Snake River Valley	20%	75	3	4
Great Feeder	18%	300	3.5	3
Progressive	18%	90	2.5	5

In this scenario, anything less than 850 cfs would be split equally between FMID/Egin Bench, Aberdeen-Springfield, and Great Feeder. Anything over 850 would go to Snake River Valley, over 925 would then go to Progressive.

Irrigation season limited to off-canal sites

Entity	Retention Rate	Capacity (cfs)	Score	Ranking
FMID/Egin Bench	59%	150	4.5	1
Aberdeen-Springfield	21%	200	4	2
Snake River Valley	20%	30	2.5	3
Great Feeder	18%	0	--	--
Progressive	18%	0	--	--

During the irrigation season, recharge is limited by the capacity of the main canal and off-canal sites above normal irrigation deliveries.



ESPA Managed Recharge Update

Aquifer Stabilization Committee Meeting

Wesley Hipke
January 19, 2016

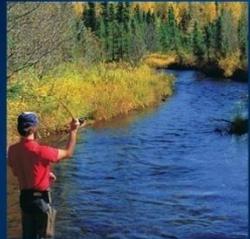


IWRB ESPA Managed Recharge – Lower Valley

• Recharge Summary

- Recharge Right in Priority: Oct 23rd – present
- IWRB Recharge Rate (Jan 18th) = 240 cfs
- Total Recharged (as of Jan 18th) = 28,693 af *

*Preliminary Data



Twin Falls Canal



MP 31 Recharge Site

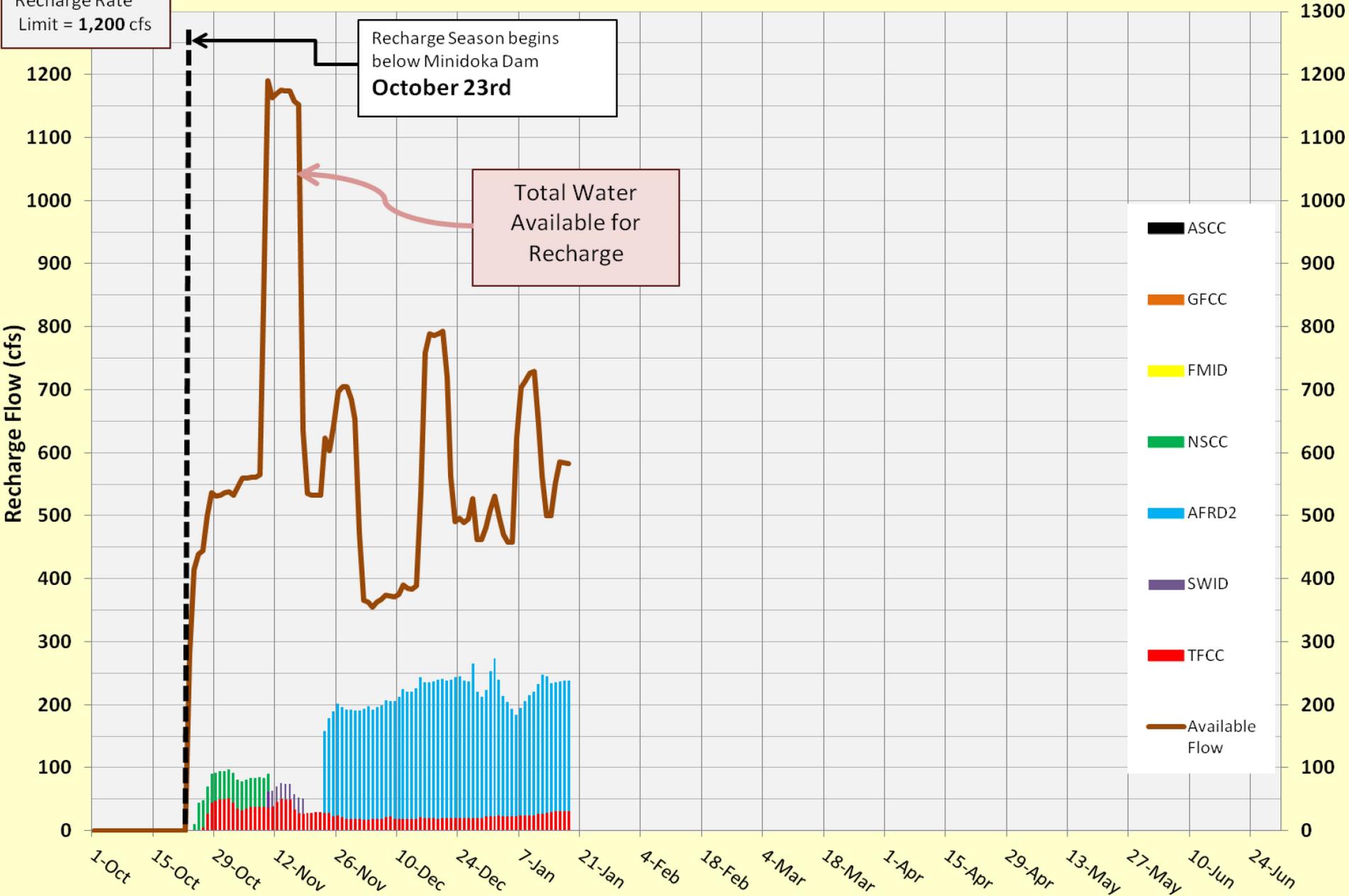
Total IWRB Managed Recharge Rates During 2015 - 2016 Season

Total Volume of Recharge = **28,693** af as of January 18, 2016

Recharge Rate
Limit = **1,200** cfs

Recharge Season begins
below Minidoka Dam
October 23rd

Total Water
Available for
Recharge



Preliminary Data

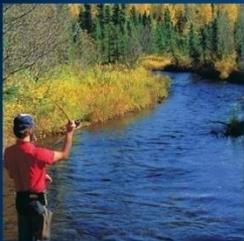
Dates of Recharge

ESPA Managed Recharge Summary

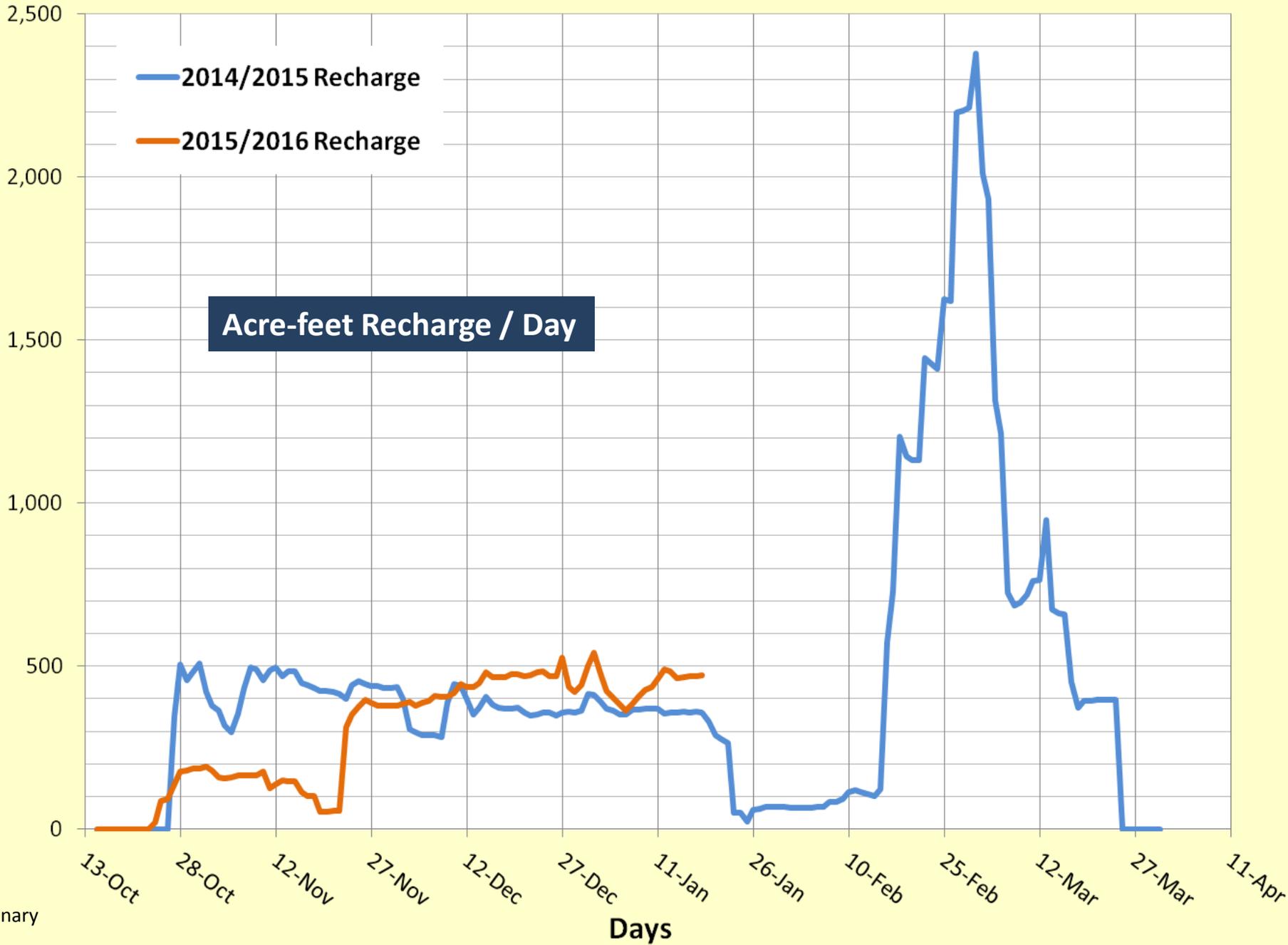
Oct. 23rd, 2015 – Jan. 18th, 2016

ESPA Area	Canal System	5-Year Retention Time (%)	Mean Recharge Rate (cfs)	Days Recharged	Volume Recharged (Acre-feet)
Lower Valley	American Falls Reservoir District No. 2 (Milner-Gooding Canal)	~36	196	57	22,163
	North Side Canal Company	~37	42	18	1,482
	Southwest Irrigation District	~54	25	9	446
	Twin Falls Canal Company	~45	27	85	4,602
TOTAL					28,693

*Preliminary Data



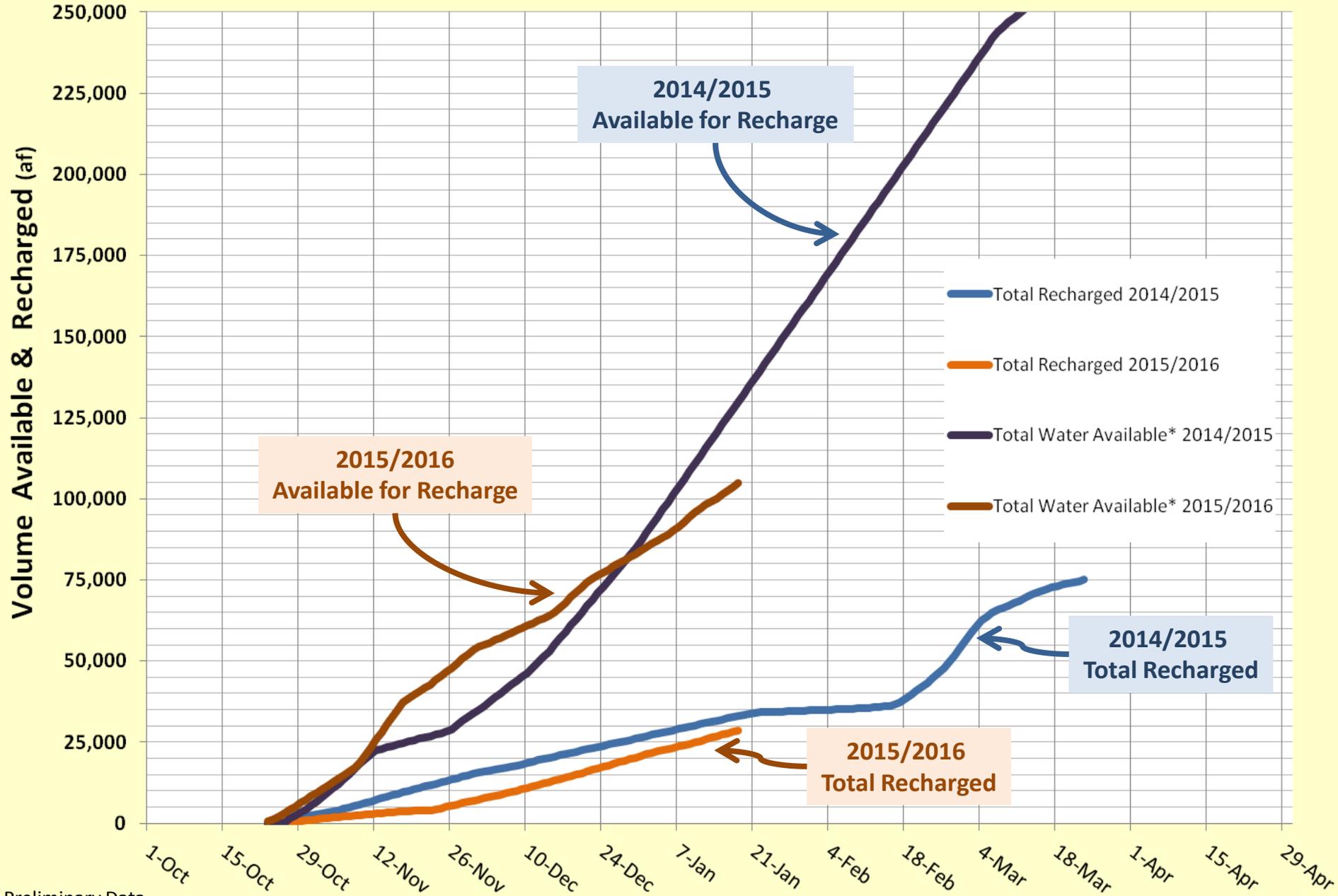
ESPA Managed Recharge - Daily Recharge



Preliminary
Data

ESPA Lower Valley Managed Recharge

(Availability & Recharge comparison between 2014/2015 and 2015/2016)



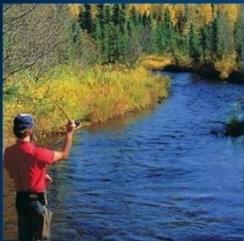
ESPA Managed Recharge Expansion Projects

• Lower Valley

- Infrastructure improvements for winter-time deliveries
- Maximize existing recharge facilities
- Development of new recharge facilities

• Upper Valley

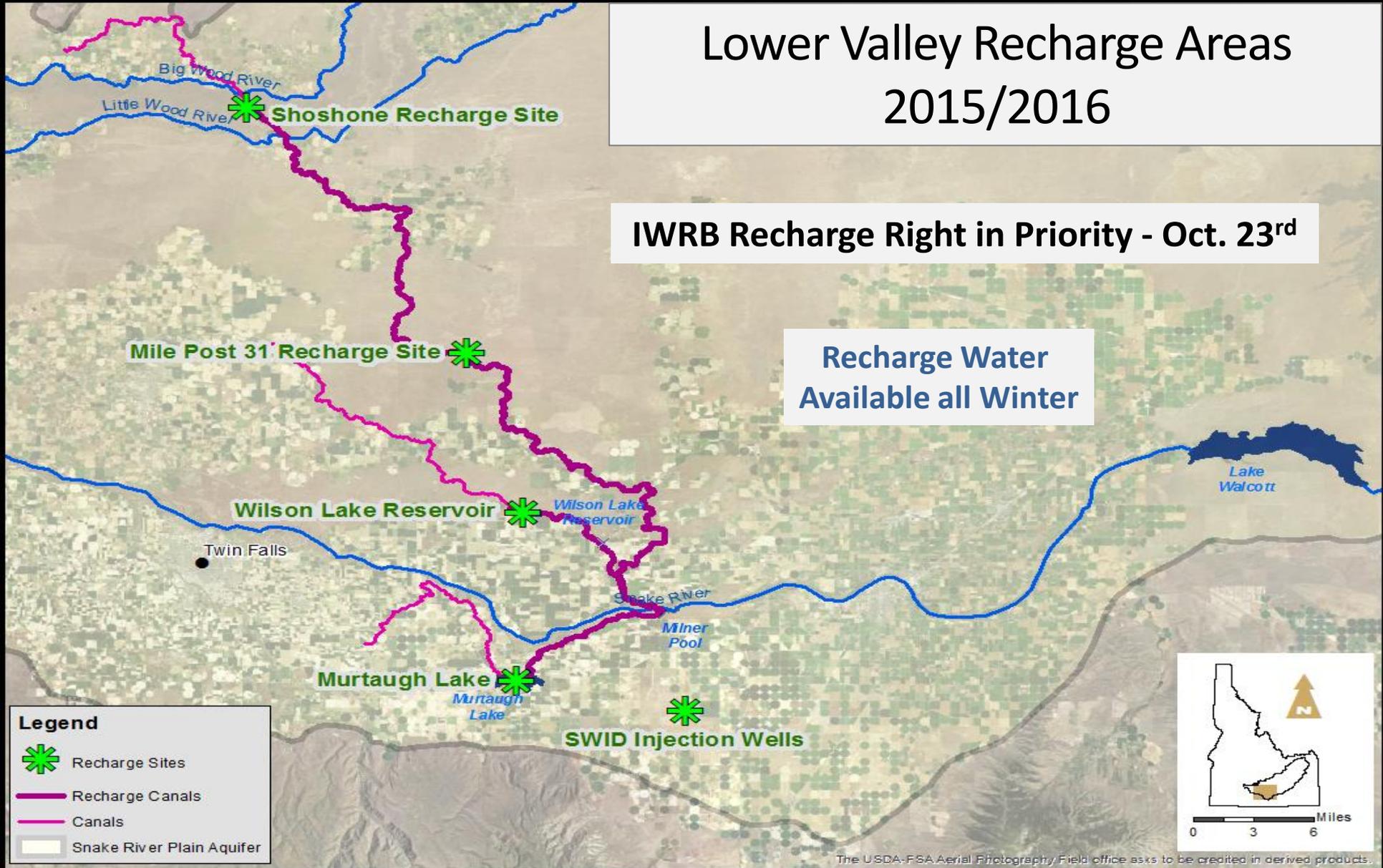
- Infrastructure improvements to facilitate highly variable availability of recharge timing and volumes
- Maximize/Improve existing recharge facilities
- Development of new recharge facilities



Lower Valley Recharge Areas 2015/2016

IWRB Recharge Right in Priority - Oct. 23rd

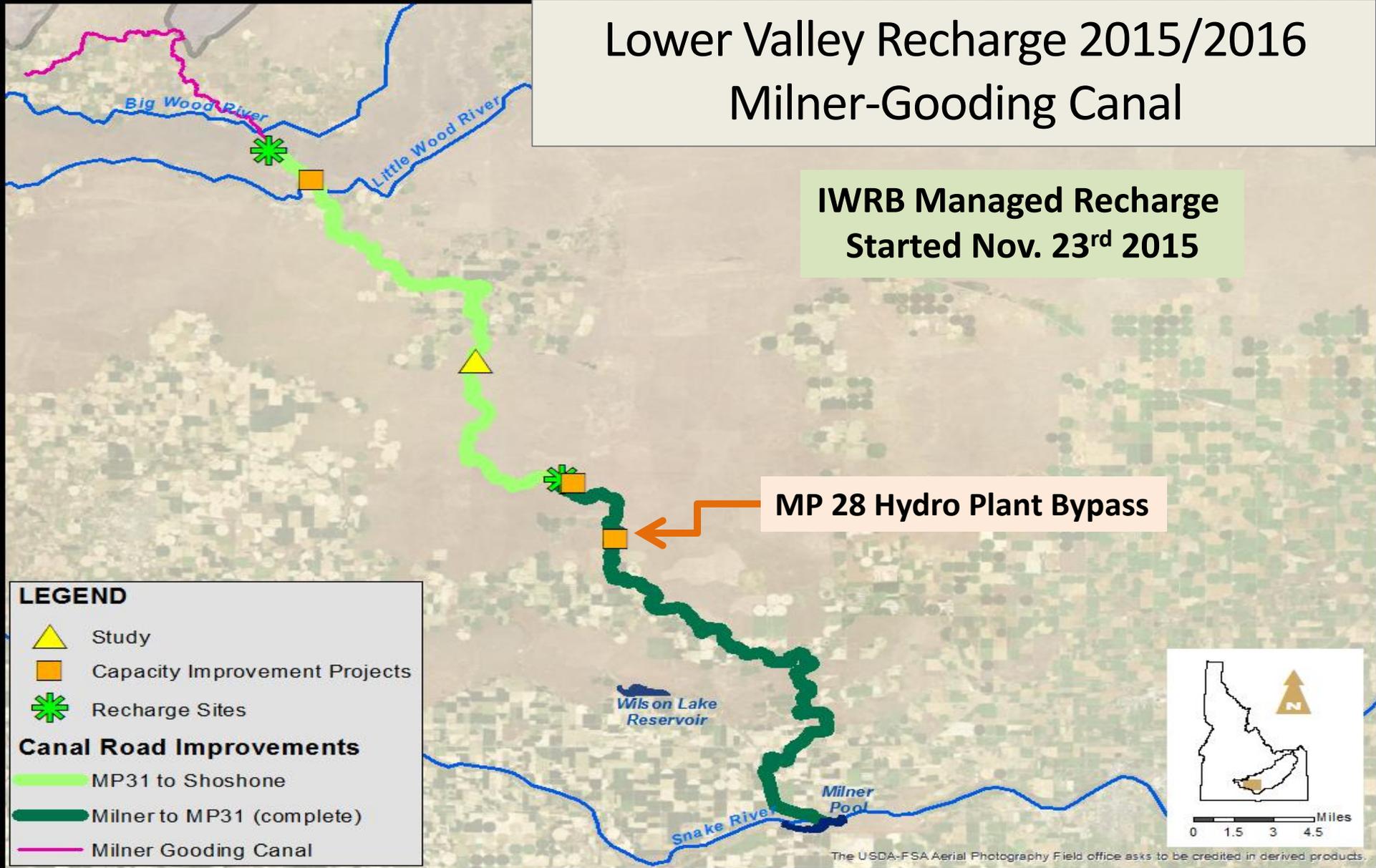
Recharge Water
Available all Winter



Lower Valley Recharge 2015/2016 Milner-Gooding Canal

IWRB Managed Recharge
Started Nov. 23rd 2015

MP 28 Hydro Plant Bypass

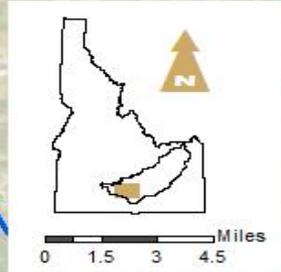


LEGEND

- Study
- Capacity Improvement Projects
- Recharge Sites

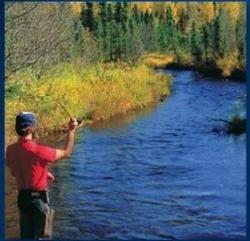
Canal Road Improvements

- MP31 to Shoshone
- Milner to MP31 (complete)
- Milner Gooding Canal



AFRD2 Managed Recharge Expansion Projects

- MP 28 Hydro Plant Bypass – Completed Nov 20th



Lower Valley Recharge 2015/2016 Milner-Gooding Canal

IWRB Managed Recharge
Started Nov. 23rd

MP 31 Expansion

MP 28 Hydro Plant

Wilson Lake Reservoir

Milner Pool

Snake River

Big Wood River

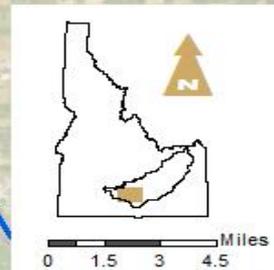
Little Wood River

LEGEND

-  Study
-  Capacity Improvement Projects
-  Recharge Sites

Canal Road Improvements

-  MP31 to Shoshone
-  Milner to MP31 (complete)
-  Milner Gooding Canal



AFRD2 Managed Recharge Expansion Projects

• MP 31 Expansion - est. Completion Fall 2016

• Maximize the Recharge Site

• 2014/2015 avg. diversion = 162 cfs

• Pool depth = 18 ft

• 2015/2016 avg. diversion = 196 cfs

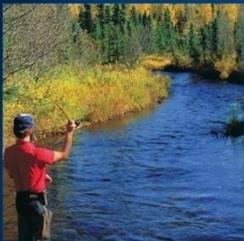
• Pool depth = 22 ft

• Potential Improvements

250 – 300 cfs

• Construct a more robust check dam

• Larger turn out gates to the facility



AFRD2 Managed Recharge Expansion Projects

- MP 31 Recharge Site



Nov

December 18th

Lower Valley Recharge 2015/2016 Milner-Gooding Canal

IWRB Managed Recharge
Started Nov. 23rd

Dietrich Drop Hydro Plant

MP 31 Recharge Site

MP 28 Hydro Plant

Wilson Lake Reservoir

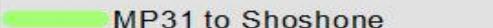
Milner Pool

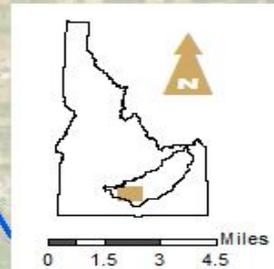
Snake River

LEGEND

-  Study
-  Capacity Improvement Projects
-  Recharge Sites

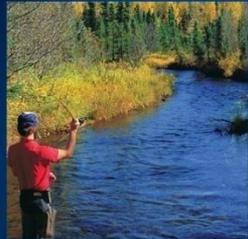
Canal Road Improvements

-  MP31 to Shoshone
-  Milner to MP31 (complete)
-  Milner Gooding Canal



AFRD2 Managed Recharge Expansion Projects

- Dietrich Drop Hydro Plant



Lower Valley Recharge 2015/2016 Milner-Gooding Canal

IWRB Managed Recharge
Started Nov. 23rd

Concrete Flume

▲ Dietrich Drop Hydro Plant

■ MP 31 Recharge Site

■ MP 28 Hydro Plant

Wilson Lake Reservoir

Milner Pool

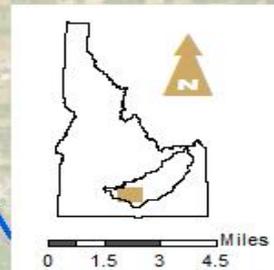
Snake River

LEGEND

- ▲ Study
- Capacity Improvement Projects
- ✱ Recharge Sites

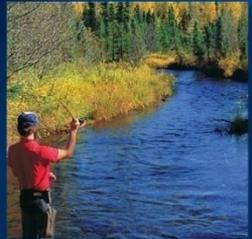
Canal Road Improvements

- MP31 to Shoshone
- Milner to MP31 (complete)
- Milner Gooding Canal

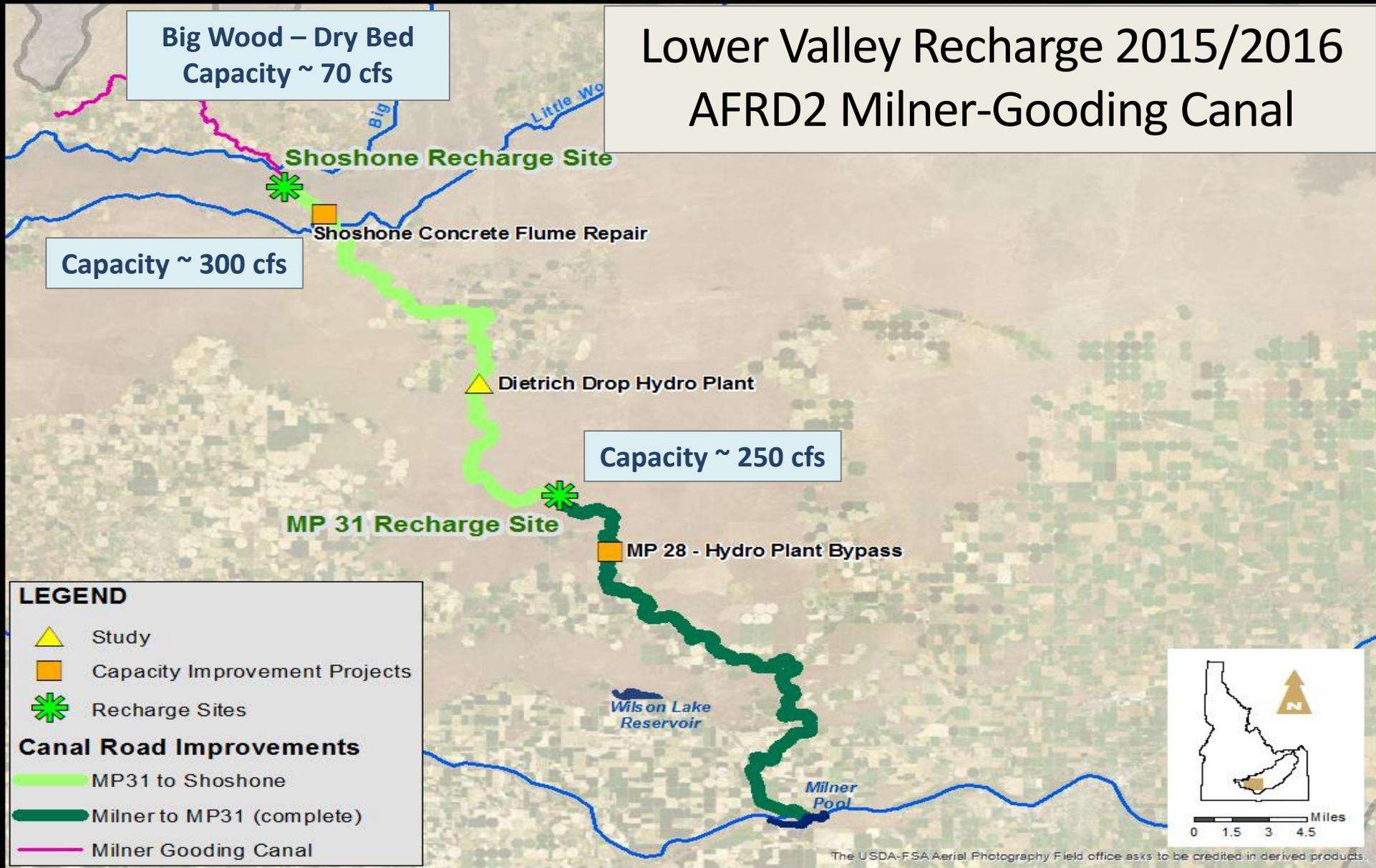


AFRD2 Managed Recharge Expansion Projects

- Concrete Flume



Lower Valley Recharge 2015/2016 AFRD2 Milner-Gooding Canal



Big Wood – Dry Bed
Capacity ~ 70 cfs

Capacity ~ 300 cfs

Capacity ~ 250 cfs

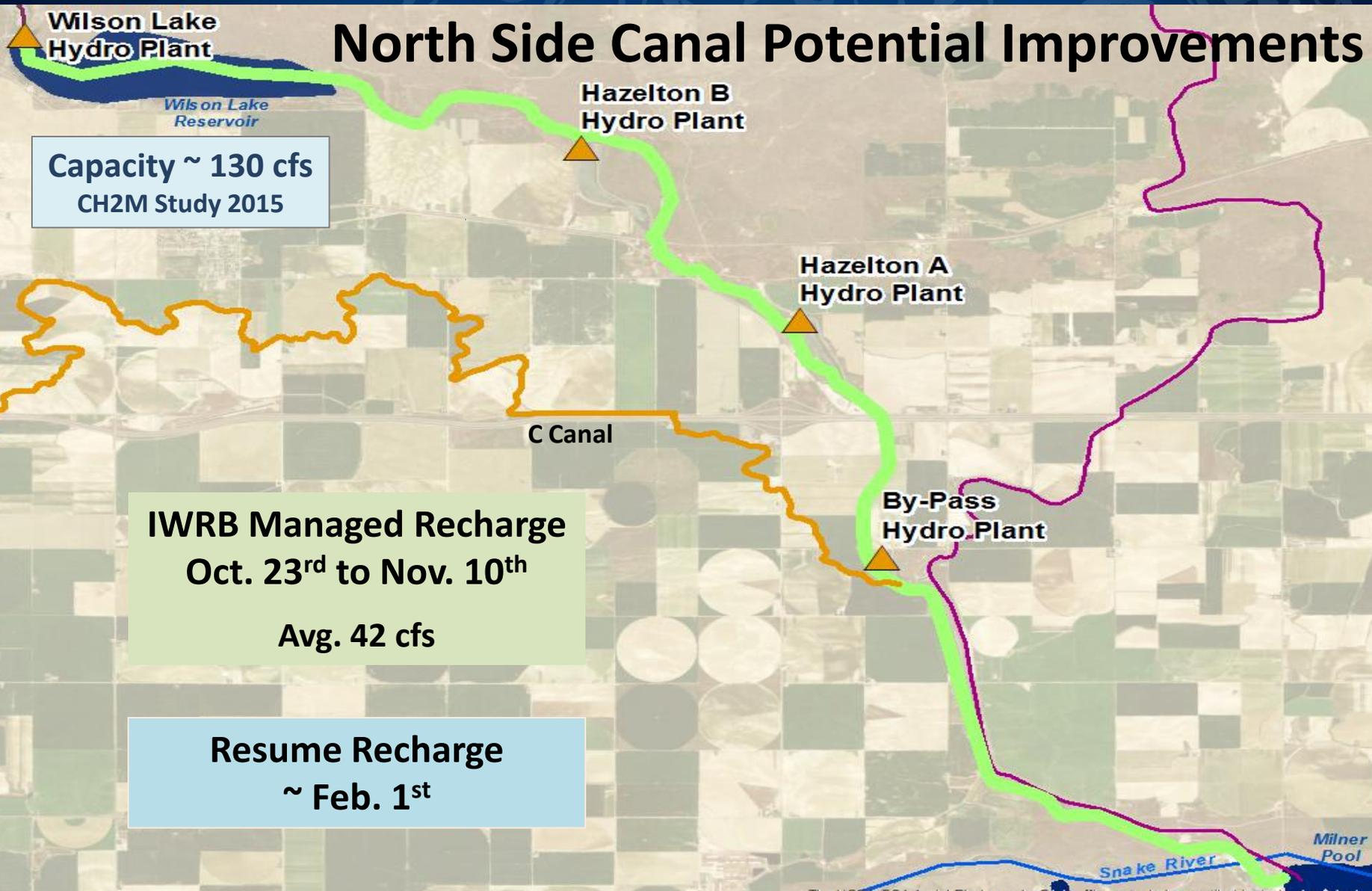
LEGEND

- Study
- Capacity Improvement Projects
- Recharge Sites

Canal Road Improvements

- MP31 to Shoshone
- Milner to MP31 (complete)
- Milner Gooding Canal

North Side Canal Potential Improvements



Capacity ~ 130 cfs
CH2M Study 2015

IWRB Managed Recharge
Oct. 23rd to Nov. 10th
Avg. 42 cfs

Resume Recharge
~ Feb. 1st

North Side Canal Potential Improvements

Wilson Lake Hydro Plant

Wilson Lake Reservoir

By-pass Canal

Hazelton B Hydro Plant

Hazelton A Hydro Plant

By-Pass Hydro Plant

Snake River

Milner Pool

Option 1



Option 2



Isolation Structures - Hazelton A & B



De-icing system

Option 3

By-pass Canal



De-icing system

North Side Canal Potential Improvements

Option 1 – per CH2M

\$1.1 M

- Overflow weir improvements
- De-icing system all locations
- Highest O&M cost and potential unforeseen issues at hydro plants effecting recharge

Option 2 – per CH2M

\$2.8 M

- Isolate Hazelton A & B using weir's
- De-icing system at other locations

Option 3 – per CH2M

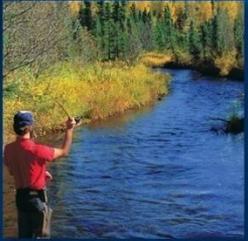
\$5.0 M

- By-pass canal utilizing the C Canal
- De-icing system at other locations
- Highest Cost and limited future capacity



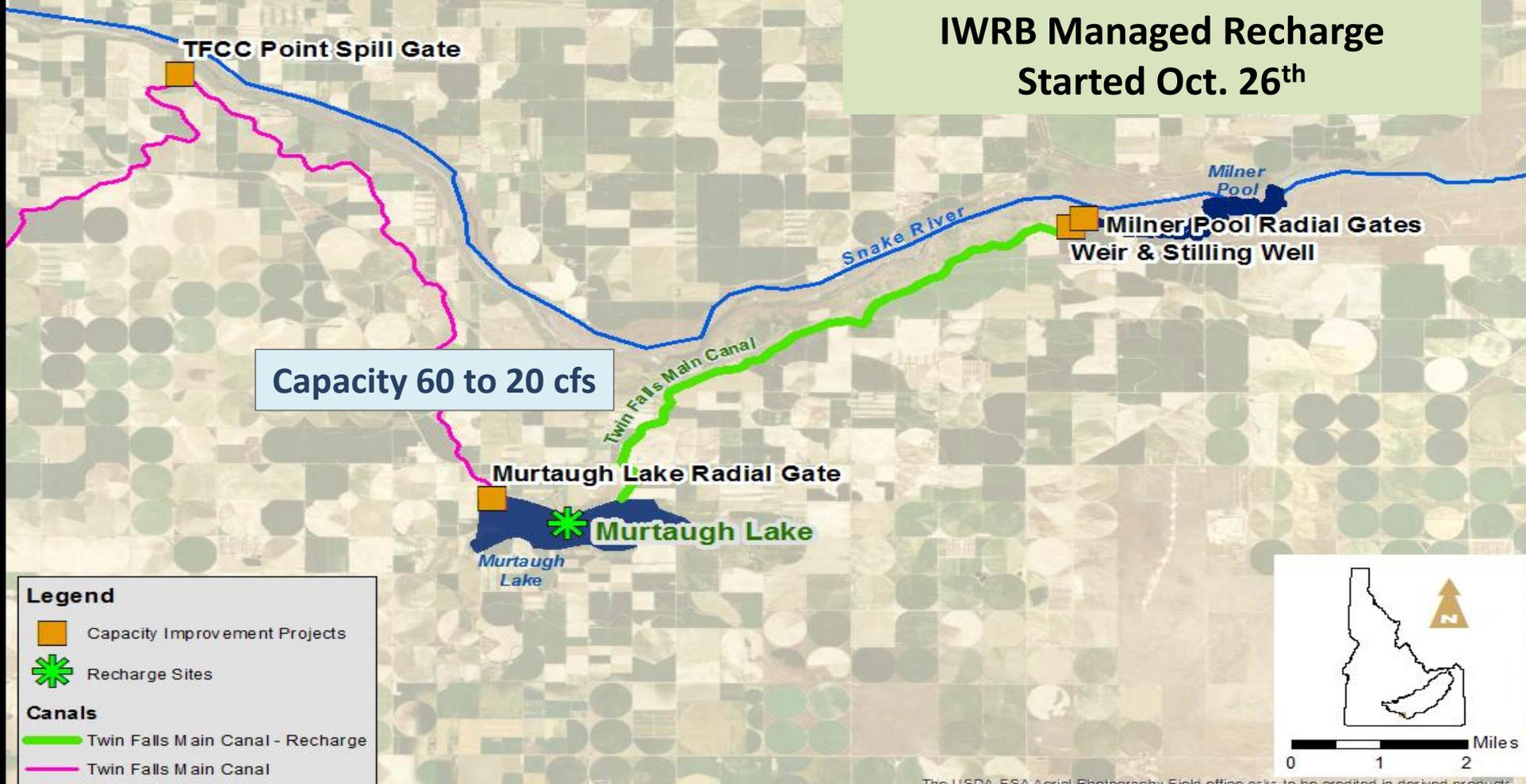
NSCC Managed Recharge Projects

- North Side Canal / Wilson Lake



Lower Valley Recharge 2015/2016 Twin Falls Canal

IWRB Managed Recharge
Started Oct. 26th



TFCC Managed Recharge Expansion Projects

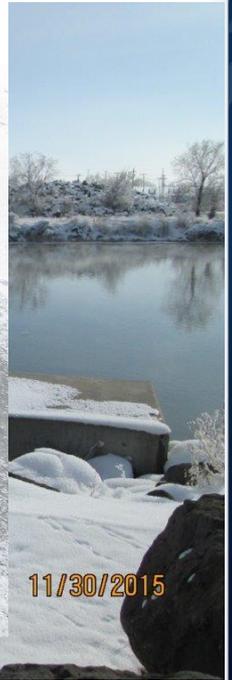
- Twin Falls Canal / Murtaugh Lake



November

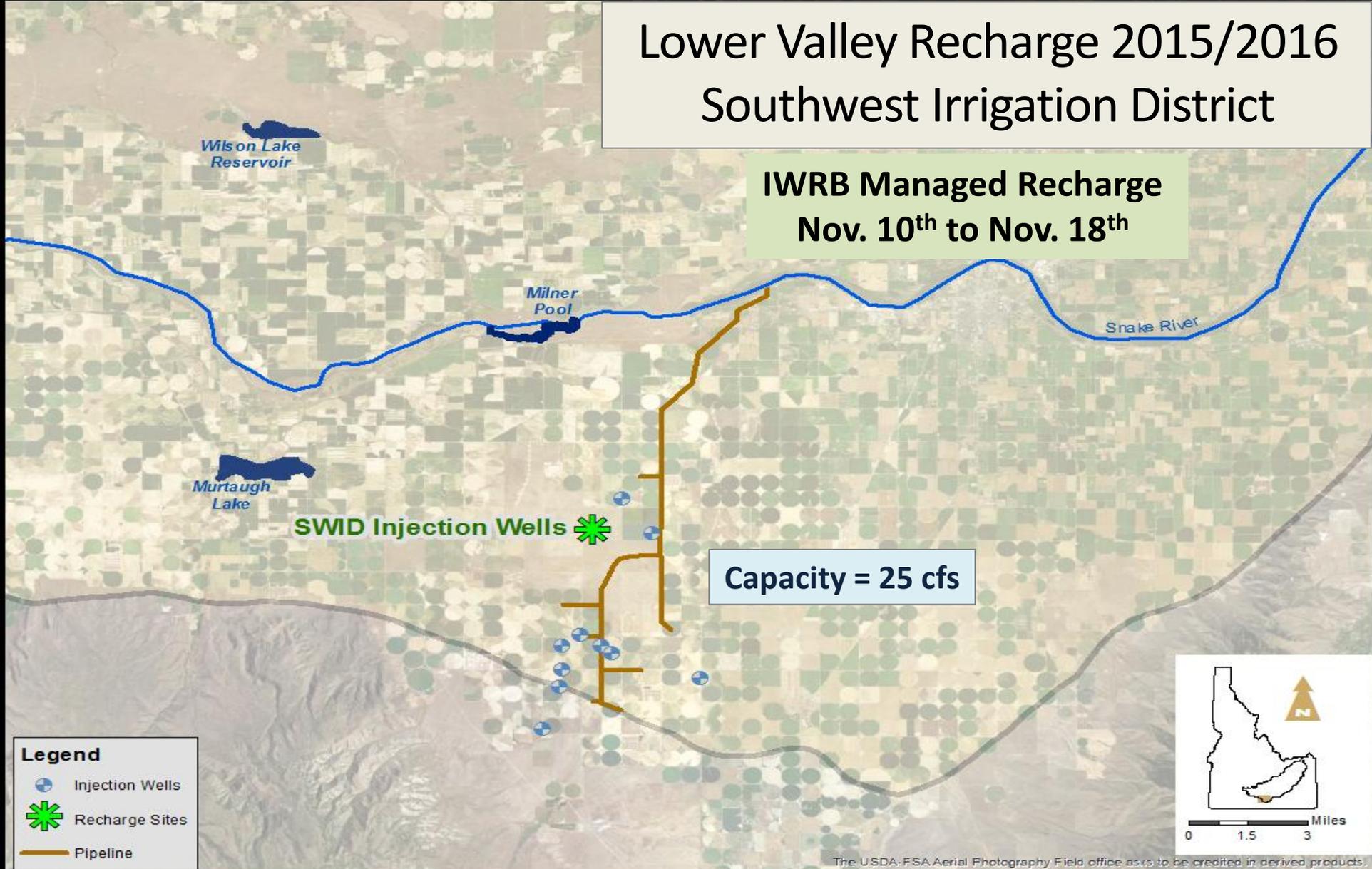
January 6th

11/30/2015



Lower Valley Recharge 2015/2016 Southwest Irrigation District

IWRB Managed Recharge
Nov. 10th to Nov. 18th



Upper Valley Managed Recharge

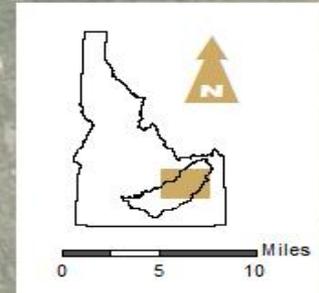
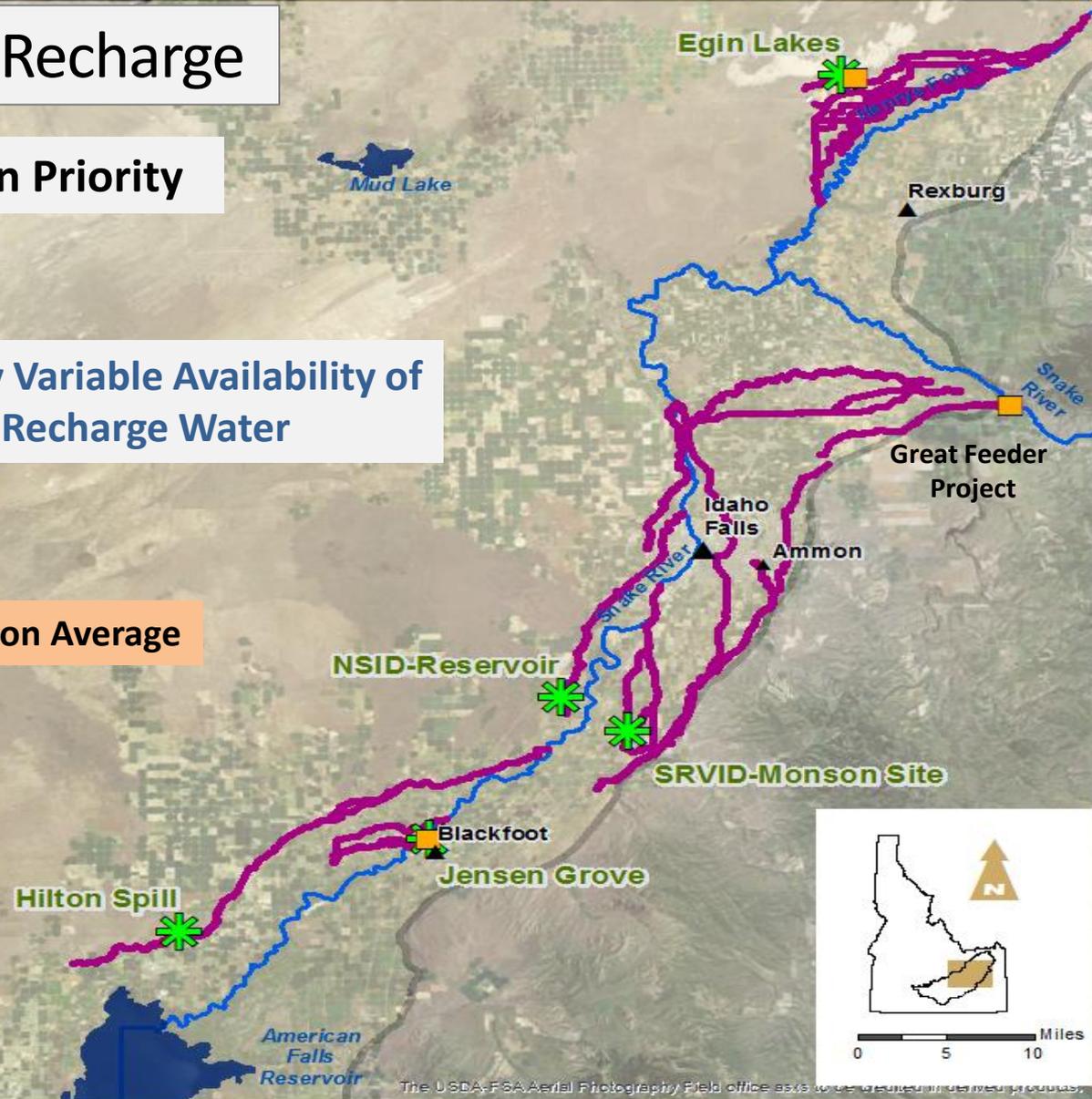
IWRB Recharge Right NOT in Priority

Highly Variable Availability of Recharge Water

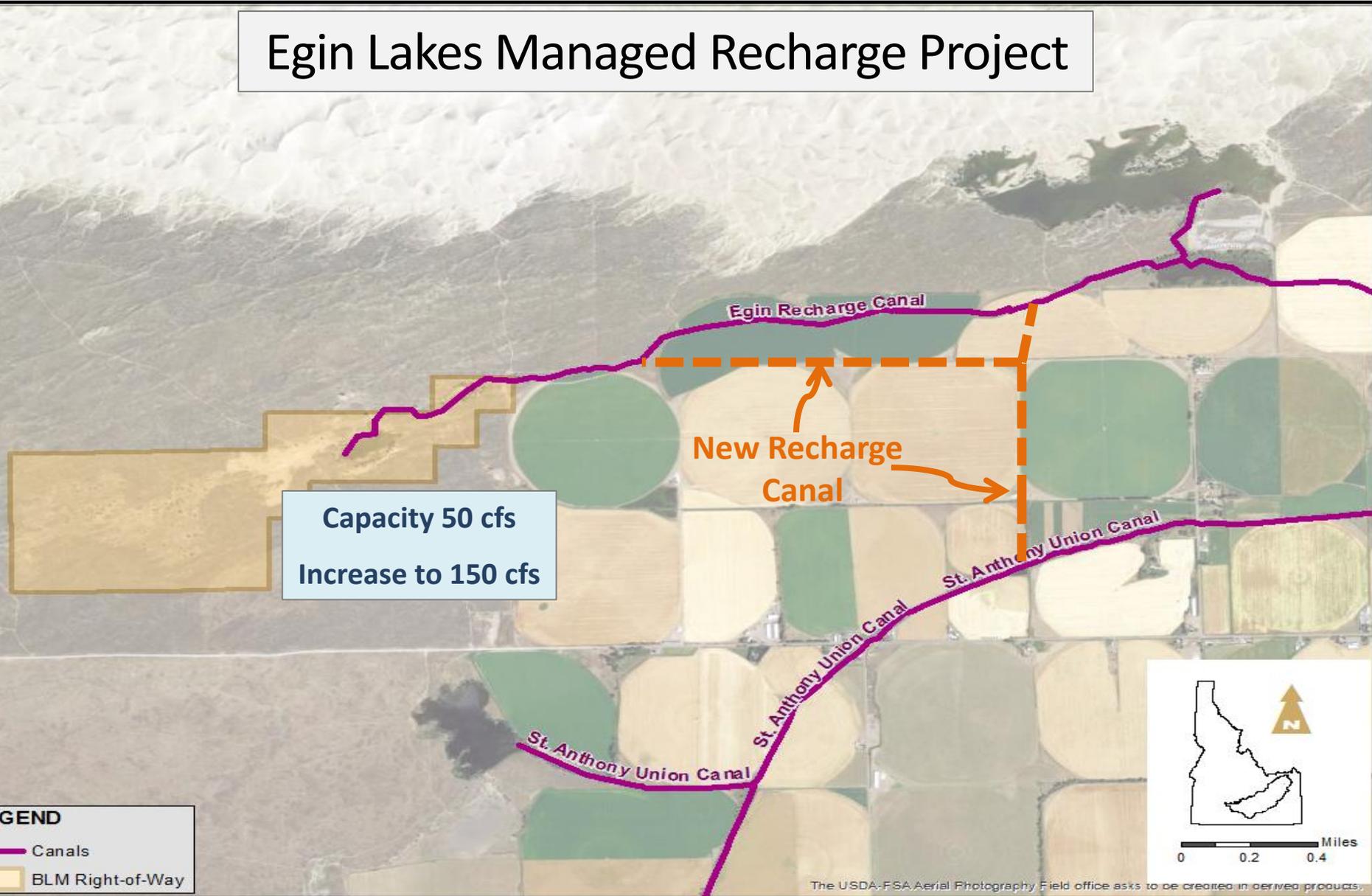
Water Available Every Other Year on Average

LEGEND

-  Capacity Improvement Projects
-  Current Recharge Site
-  Recharge Canals
-  Snake River Plain Aquifer

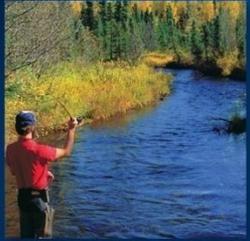


Egin Lakes Managed Recharge Project



Egin Lakes Managed Recharge Project

- New Recharge Canal



November

January 8th

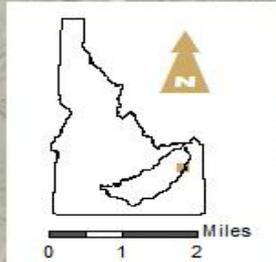
December 14th

Great Feeder Improvement Project



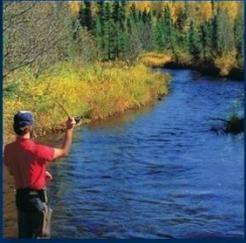
Legend

-  Capacity Improvement Project

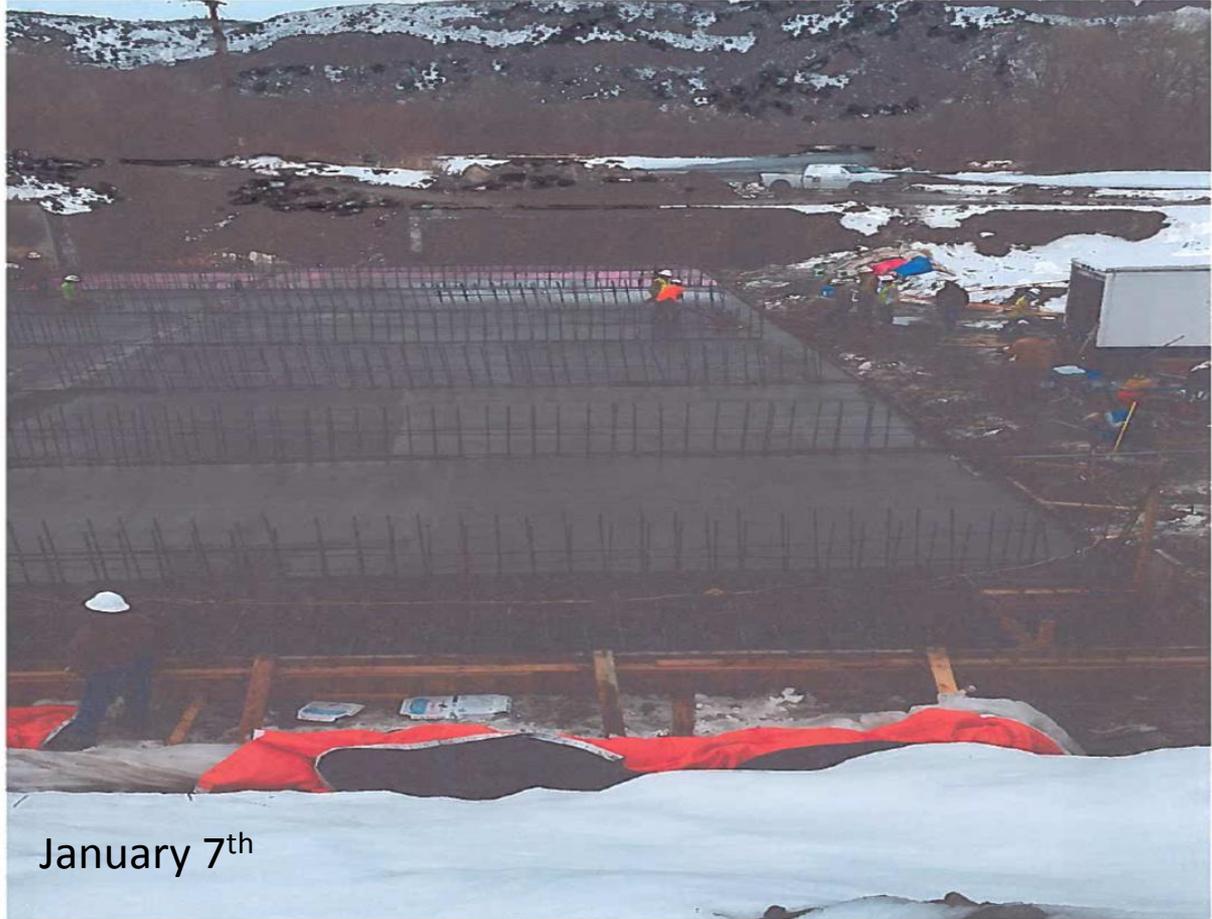


Great Feeder Improvement Project

- New Recharge Canal



Novem



January 7th



23rd

Jensen Grove Improvement Project



LEGEND



Current Recharge Site



ESPA Managed Recharge Capacity

- **Lower Valley**

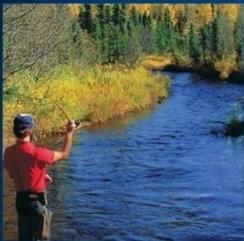
- Winter Time Capacity

- 2014/2015 190 cfs
- 2015/2016 270 cfs
- 2016/2017 570 cfs

- **Upper Valley**

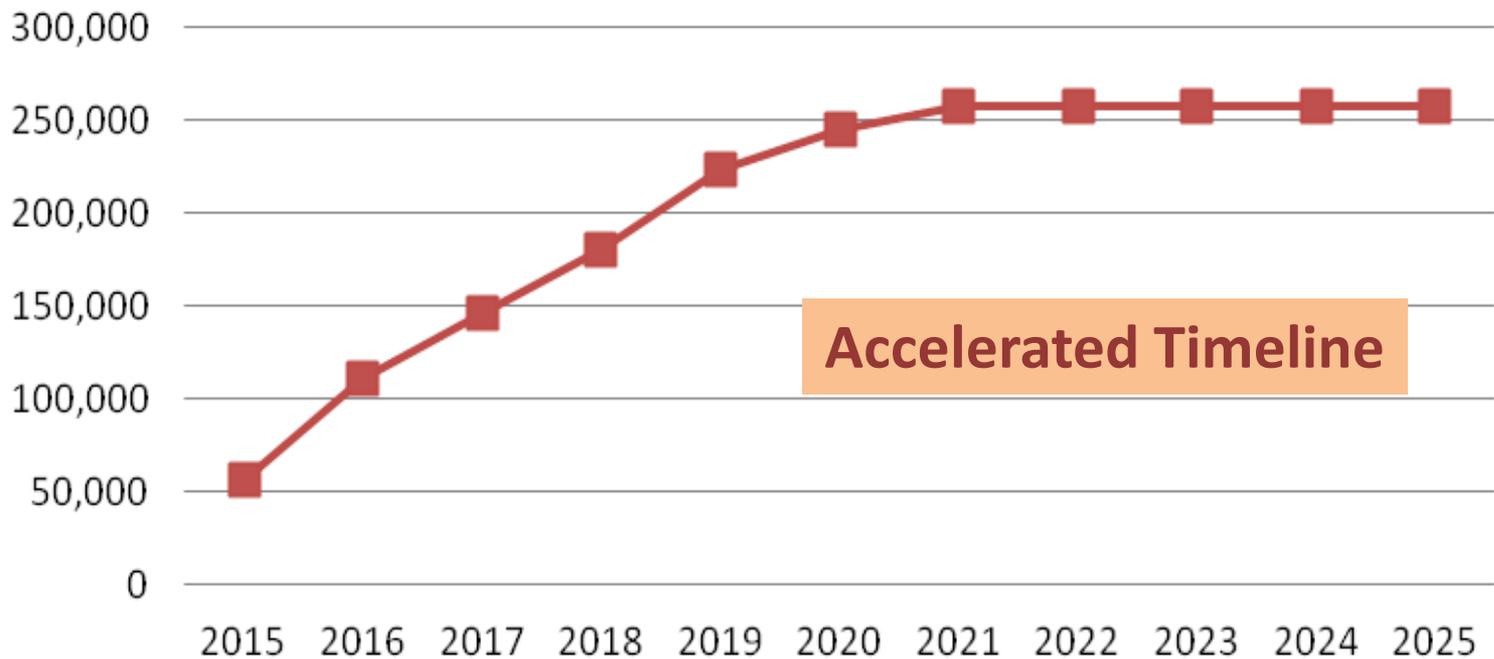
- Off-Canal Capacity

- 2014/2015 200 cfs
- 2015/2016 400 cfs
- 2016/2017 500 cfs



ESPA Managed Recharge Capacity

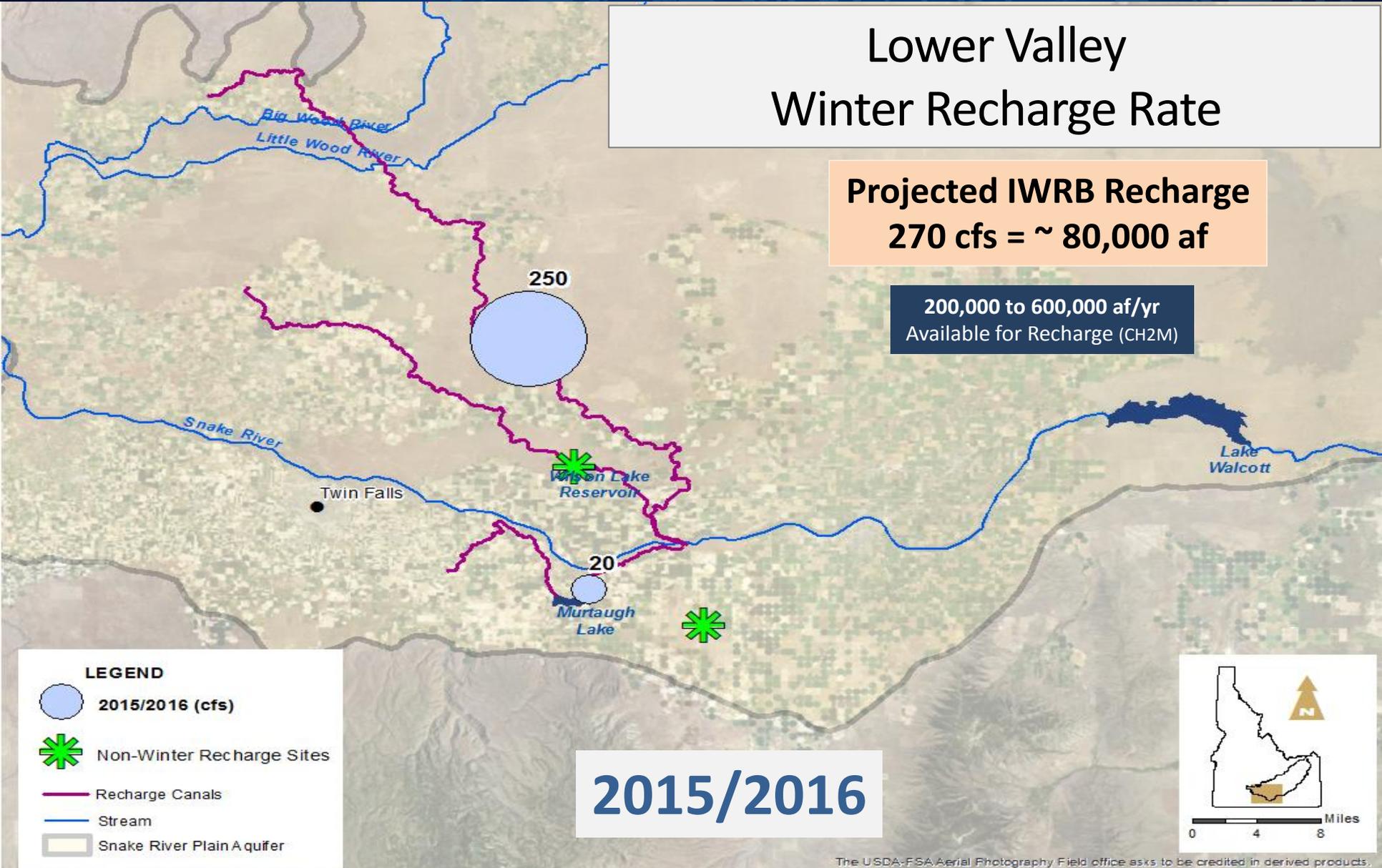
Projected Recharge Volume (average annual acre-feet)



Lower Valley Winter Recharge Rate

Projected IWRB Recharge
270 cfs = ~ 80,000 af

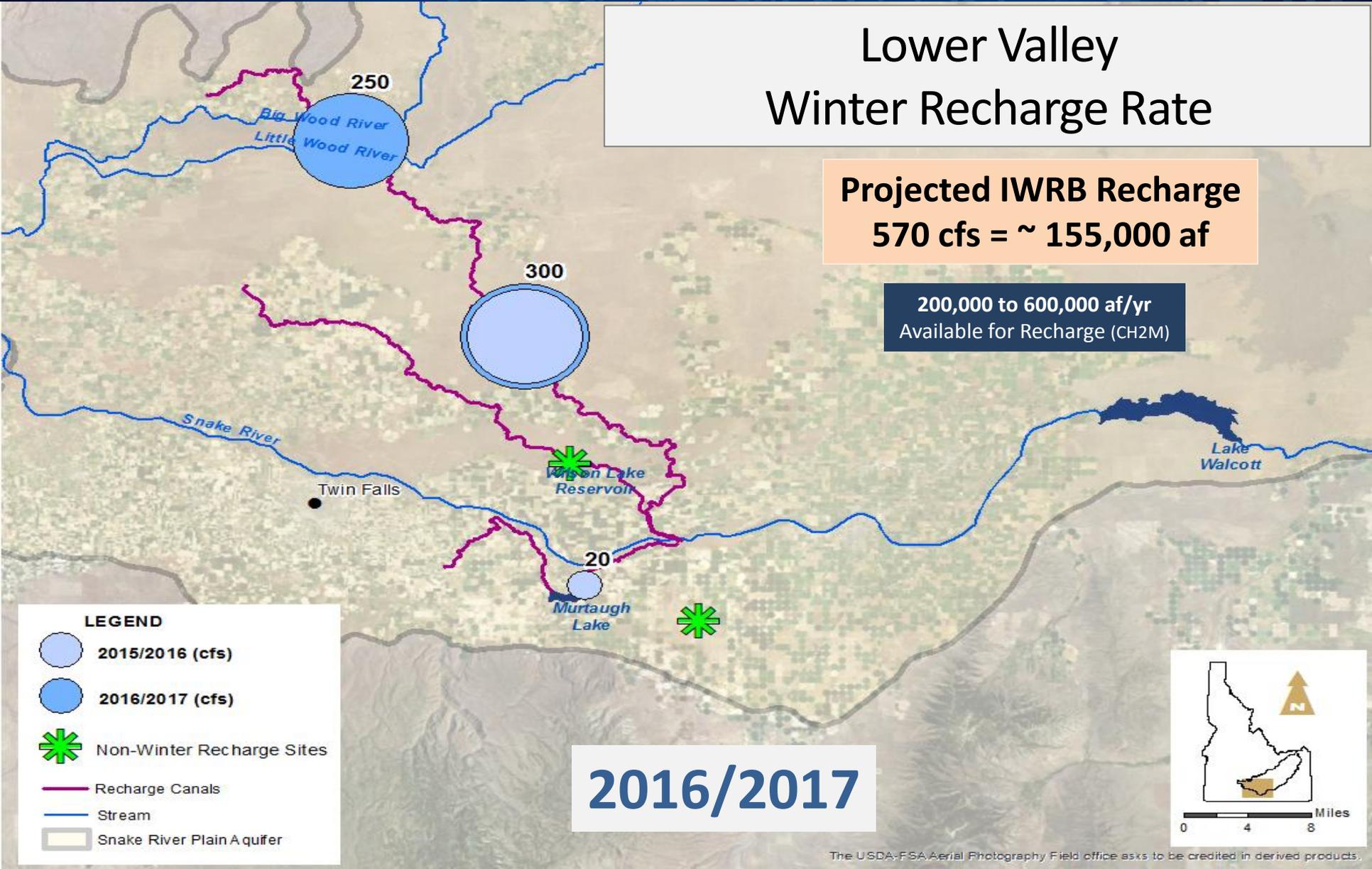
200,000 to 600,000 af/yr
Available for Recharge (CH2M)



Lower Valley Winter Recharge Rate

Projected IWRB Recharge
570 cfs = ~ 155,000 af

200,000 to 600,000 af/yr
Available for Recharge (CH2M)



LEGEND

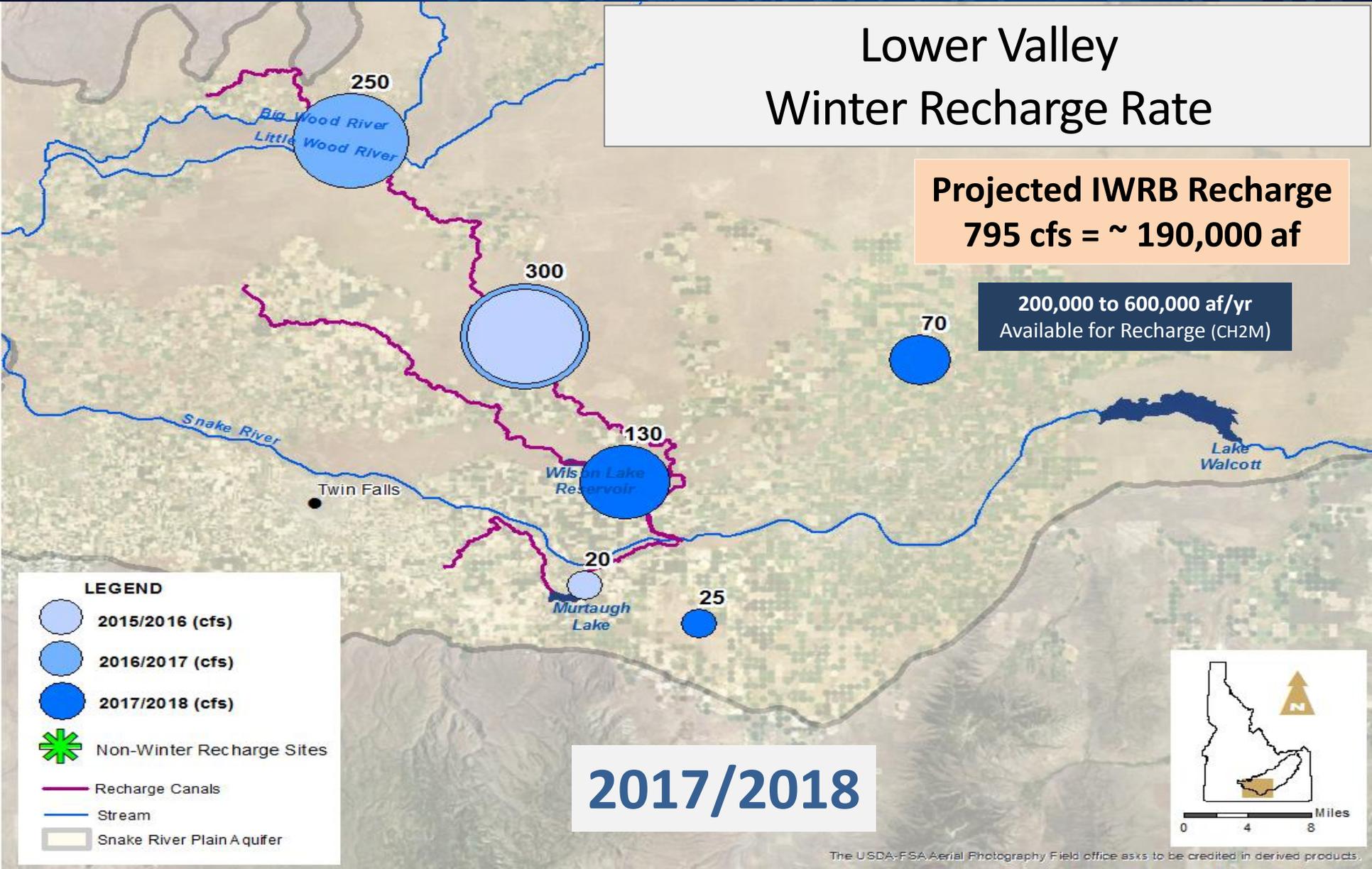
- 2015/2016 (cfs)
- 2016/2017 (cfs)
- Non-Winter Recharge Sites
- Recharge Canals
- Stream
- Snake River Plain A quifer

2016/2017

Lower Valley Winter Recharge Rate

Projected IWRB Recharge
795 cfs = ~ 190,000 af

200,000 to 600,000 af/yr
Available for Recharge (CH2M)

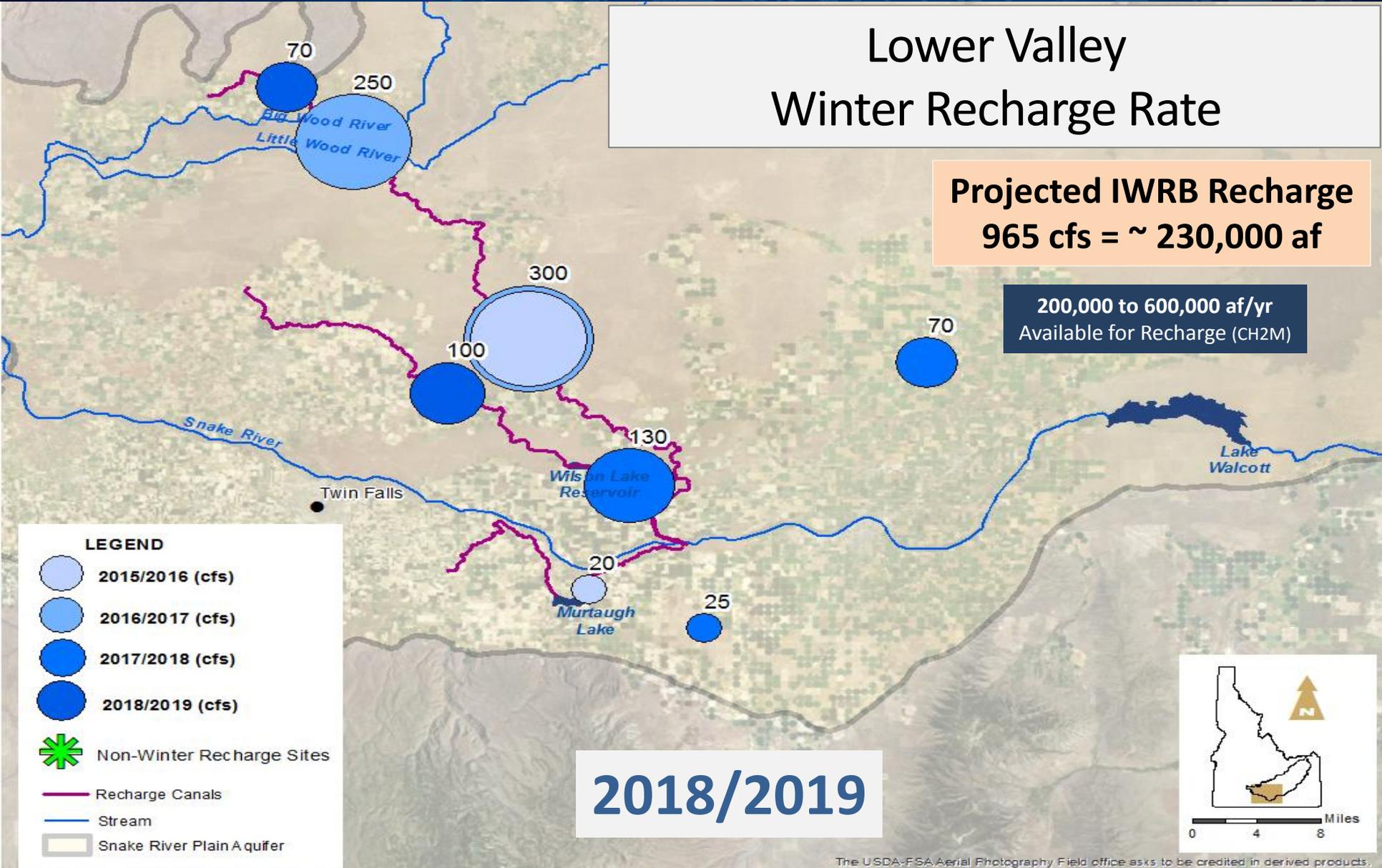


2017/2018

Lower Valley Winter Recharge Rate

Projected IWRB Recharge
965 cfs = ~ 230,000 af

200,000 to 600,000 af/yr
Available for Recharge (CH2M)



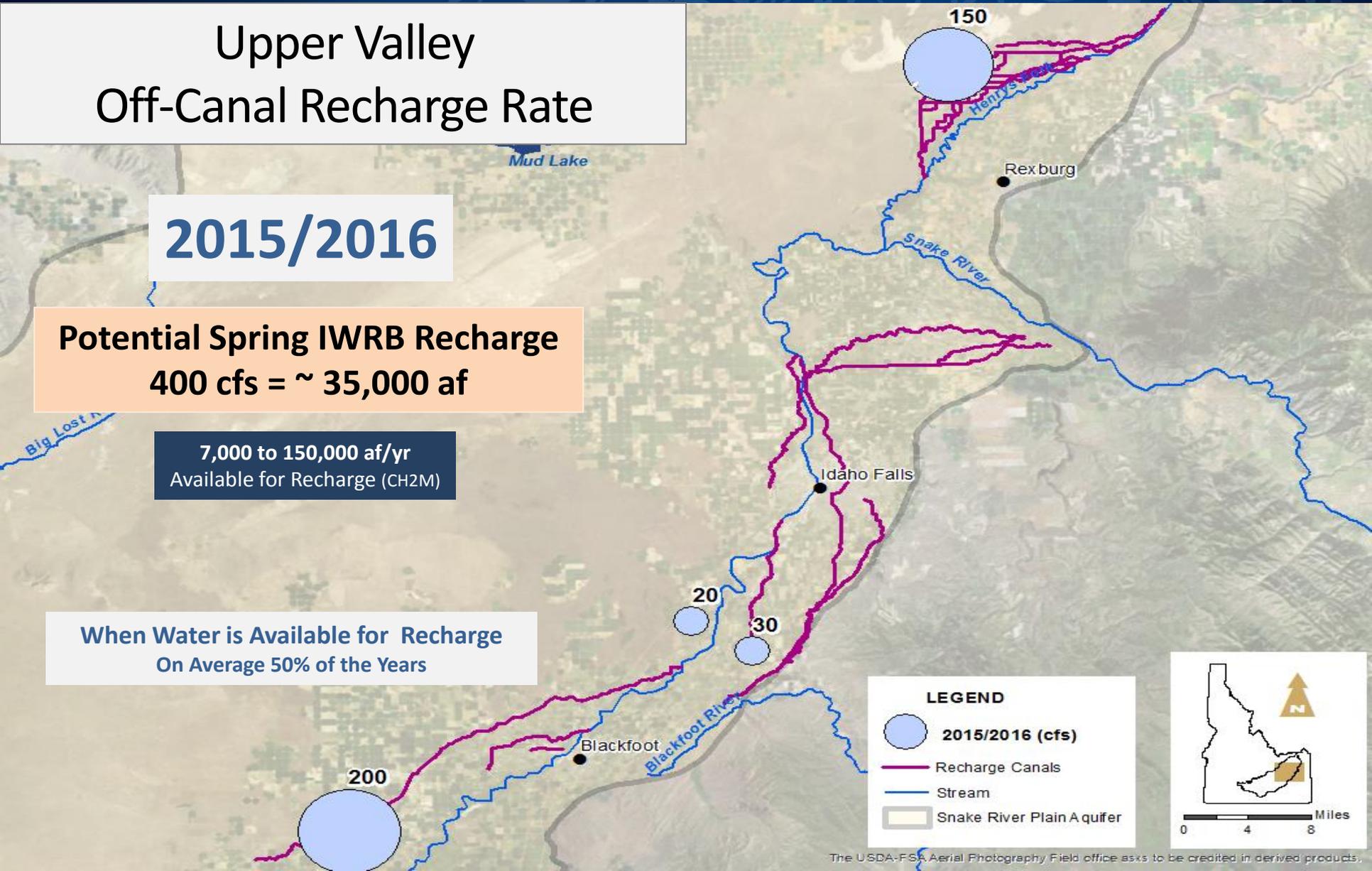
Upper Valley Off-Canal Recharge Rate

2015/2016

Potential Spring IWRB Recharge
400 cfs = ~ 35,000 af

7,000 to 150,000 af/yr
Available for Recharge (CH2M)

When Water is Available for Recharge
On Average 50% of the Years



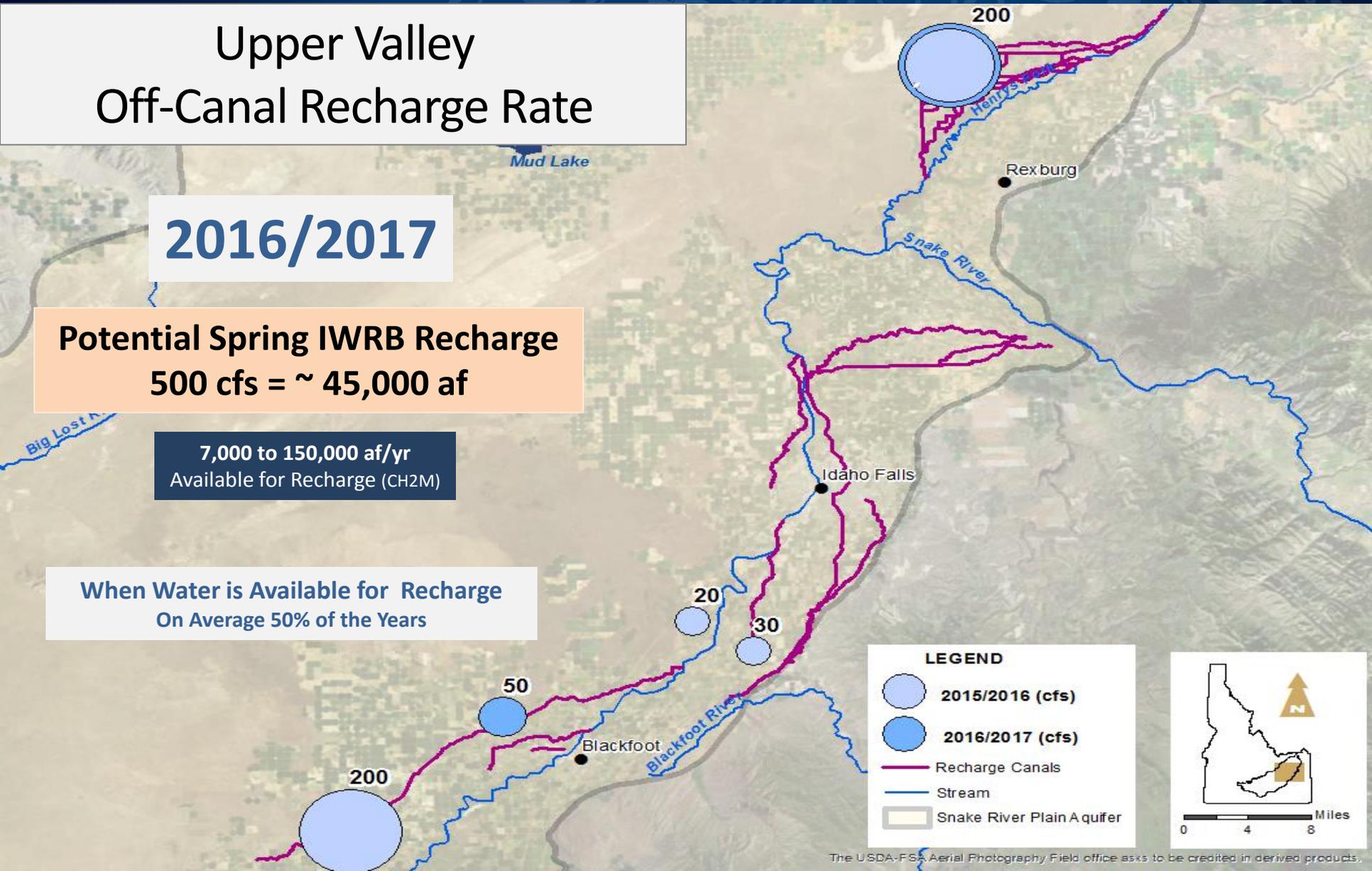
Upper Valley Off-Canal Recharge Rate

2016/2017

Potential Spring IWRB Recharge
500 cfs = ~ 45,000 af

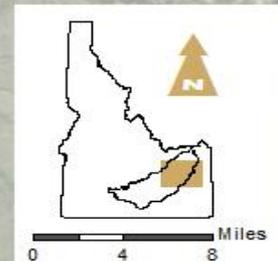
7,000 to 150,000 af/yr
Available for Recharge (CH2M)

When Water is Available for Recharge
On Average 50% of the Years



LEGEND

- 2015/2016 (cfs)
- 2016/2017 (cfs)
- Recharge Canals
- Stream
- Snake River Plain A quifer



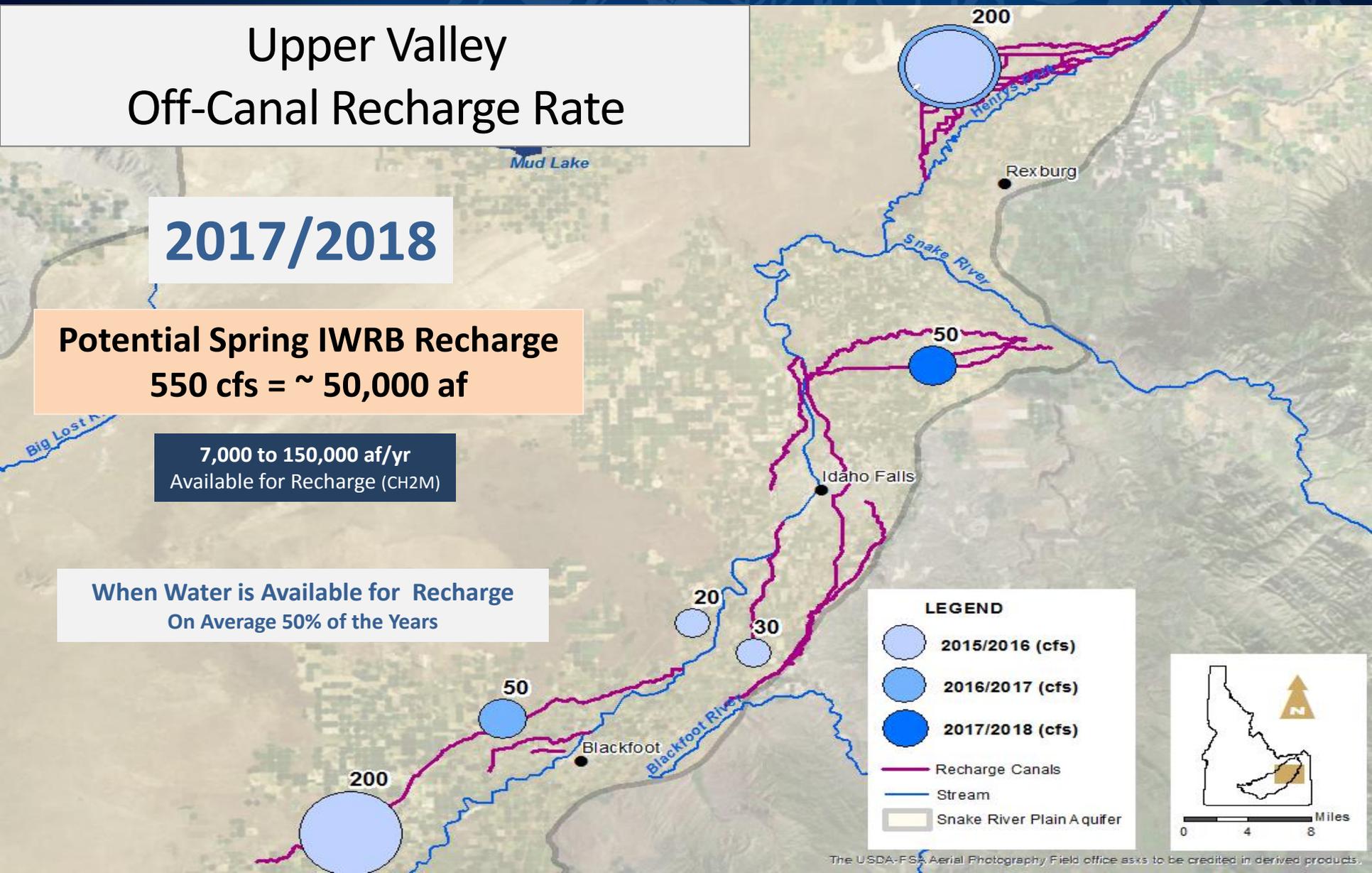
Upper Valley Off-Canal Recharge Rate

2017/2018

Potential Spring IWRB Recharge
550 cfs = ~ 50,000 af

7,000 to 150,000 af/yr
Available for Recharge (CH2M)

When Water is Available for Recharge
On Average 50% of the Years



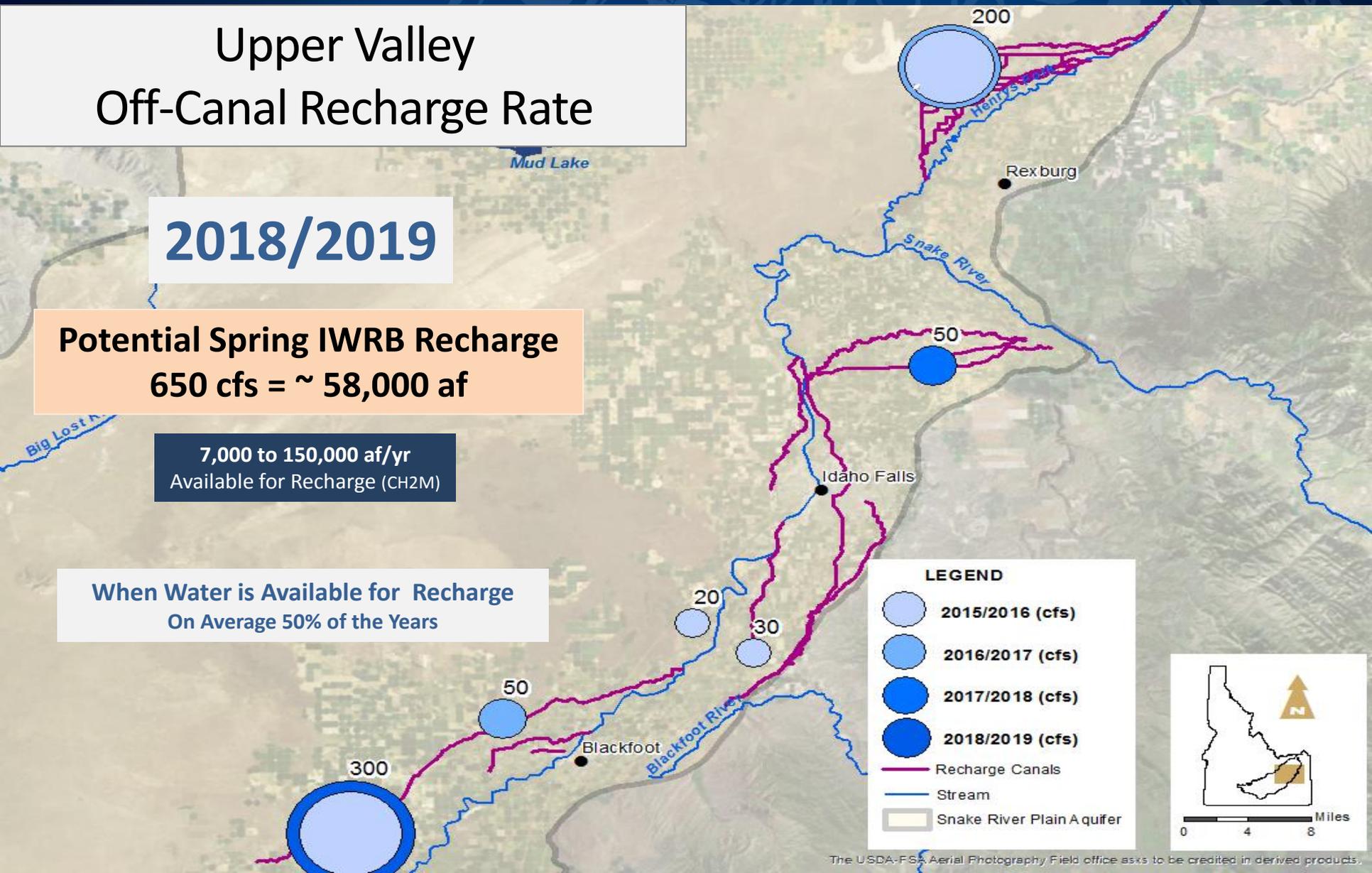
Upper Valley Off-Canal Recharge Rate

2018/2019

Potential Spring IWRB Recharge
650 cfs = ~ 58,000 af

7,000 to 150,000 af/yr
Available for Recharge (CH2M)

When Water is Available for Recharge
On Average 50% of the Years

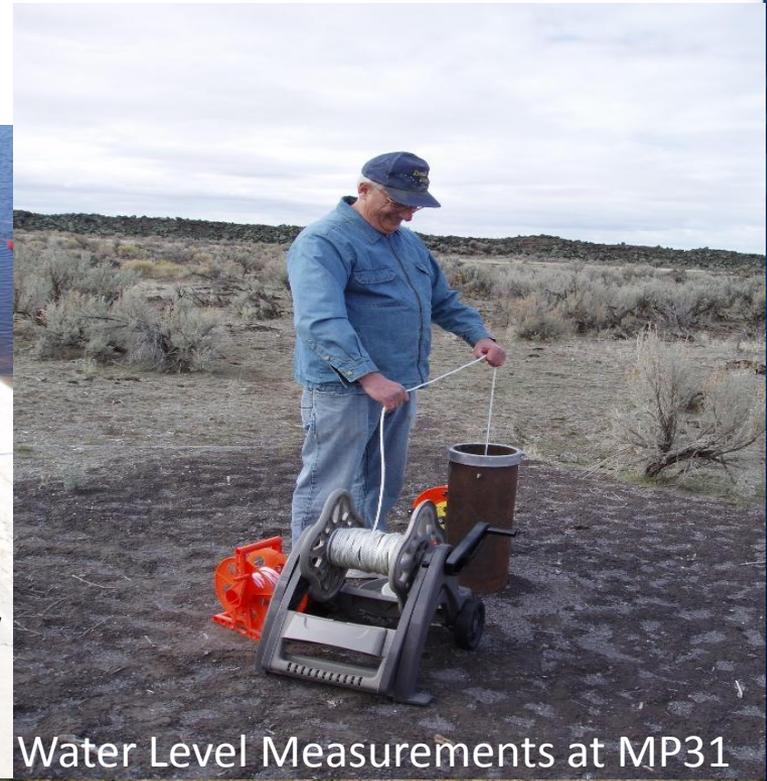
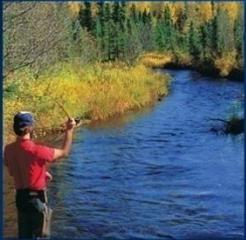


LEGEND

- 2015/2016 (cfs)
- 2016/2017 (cfs)
- 2017/2018 (cfs)
- 2018/2019 (cfs)
- Recharge Canals
- Stream
- Snake River Plain A quifer

ESPA Managed Recharge – Monitoring

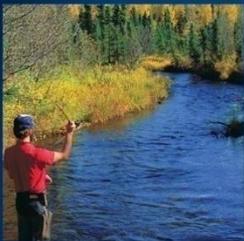
- Water Quality Program
- Recharge Flow Measurements
- Water Level Monitoring



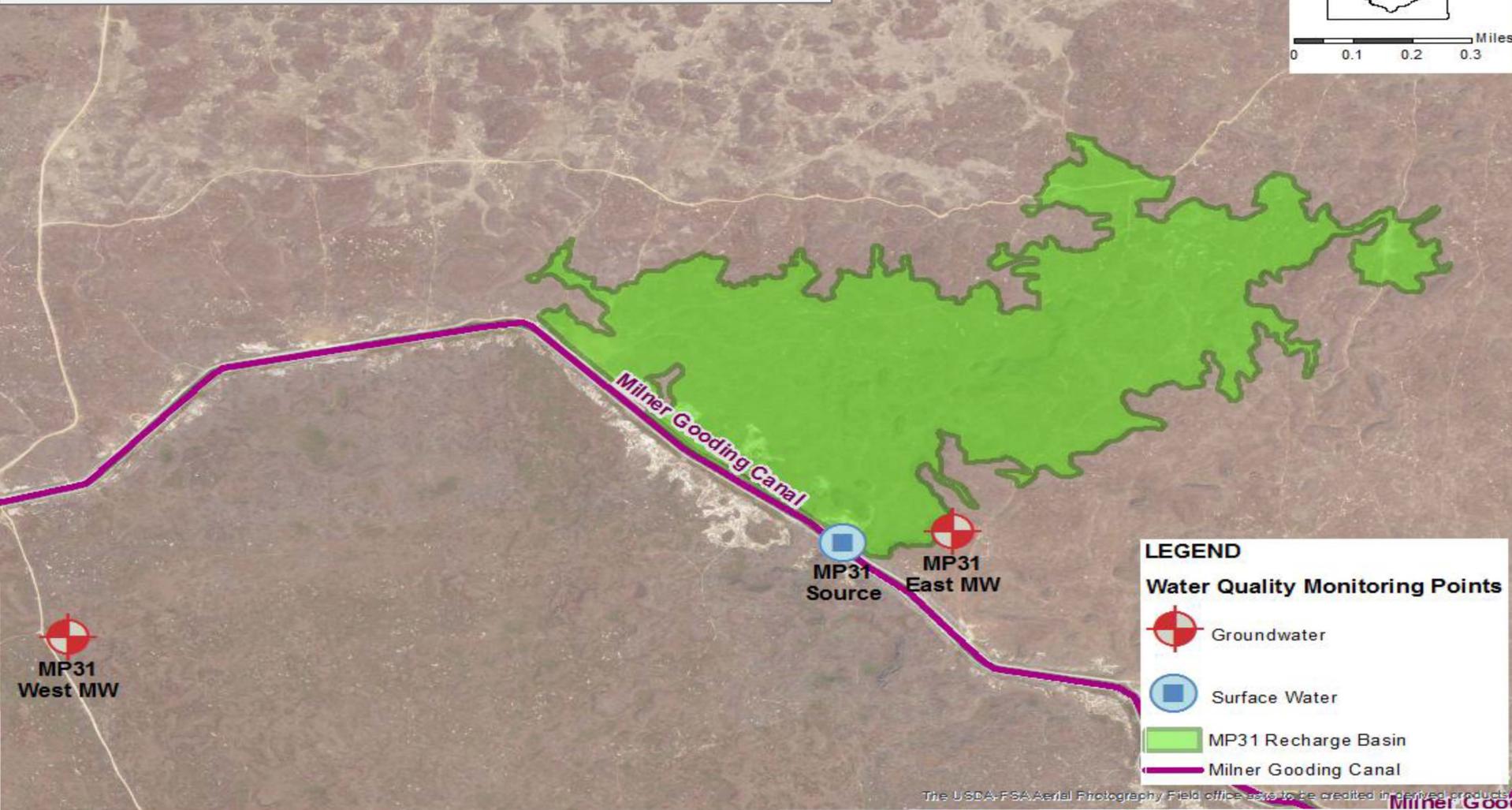
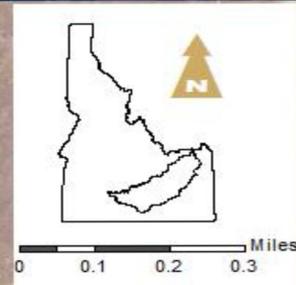
ESPA Managed Recharge – Monitoring

• Water Quality

- IDEQ Approved Groundwater Monitoring Program
 - MP 31 Recharge Site
 - Shoshone Recharge Site
- **Water Quality Sampling**
 - Source Water
 - Groundwater
- **Parameters and Frequency defined by IDEQ**
- **Sampling Frequency**
 - Prior and After Recharge Activities
 - Monthly Sampling During Recharge Activities
- **Sites Visited by IDWR groundwater protection staff**



MP 31 Recharge Site Water Quality Monitoring



LEGEND

Water Quality Monitoring Points

-  Groundwater
-  Surface Water
-  MP31 Recharge Basin
-  Milner Gooding Canal

ESPA Managed Recharge – Monitoring

• MP31 Water Quality Sampling

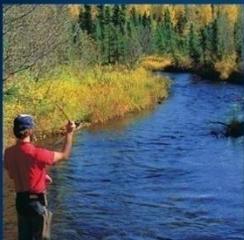
- East Monitor Well, West Monitor Well, Surface Water

- **2014/2015**

- Oct, Nov, Dec, Jan, Mar, & Apr

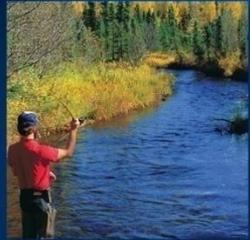
- **2015/2016**

- Nov, Dec/Jan



ESPA Managed Recharge – Monitoring

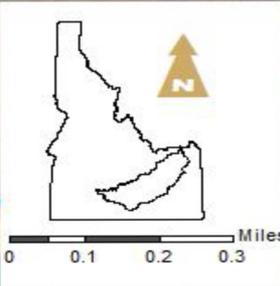
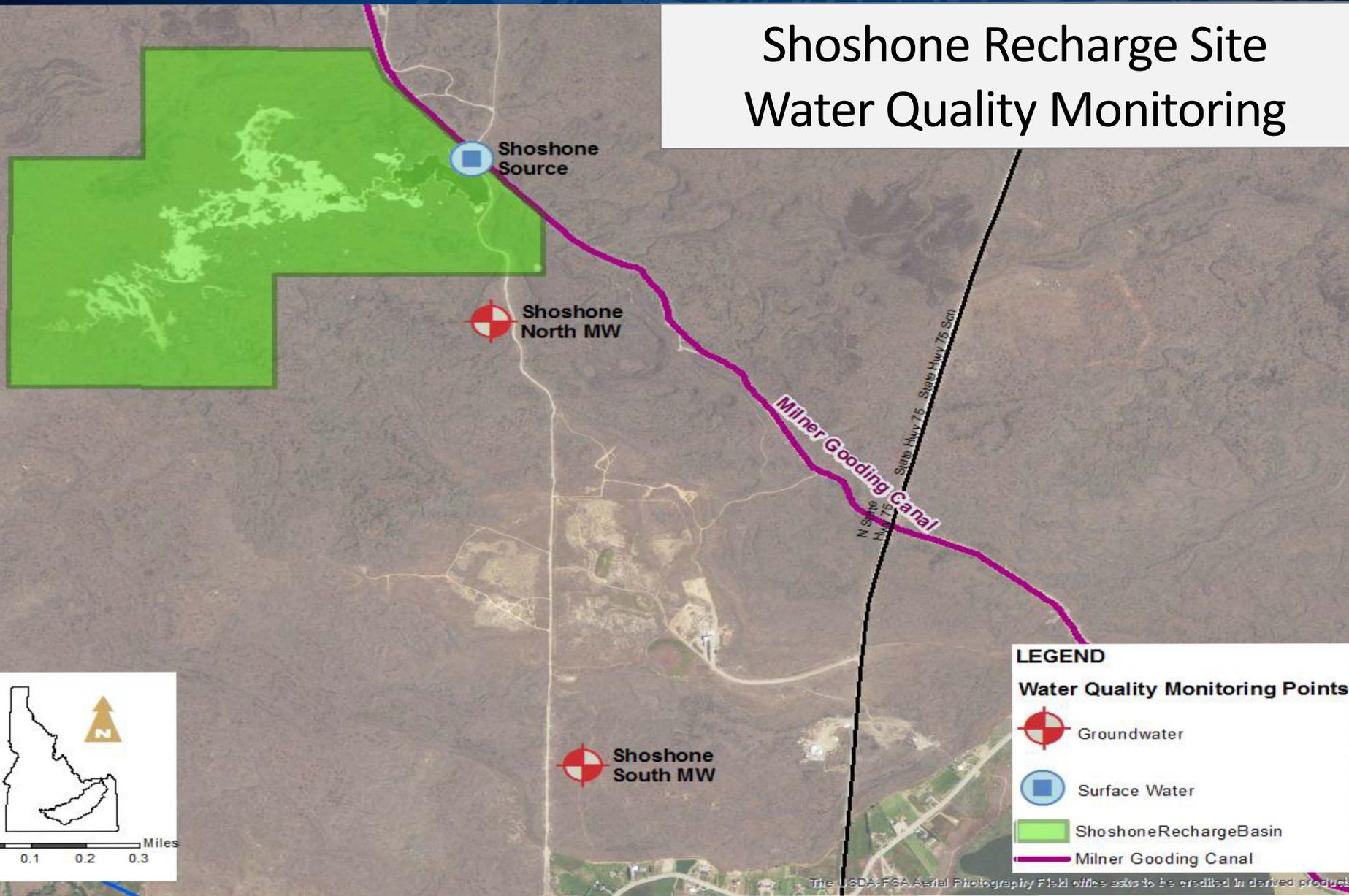
- MP 31 Water Quality Sampling



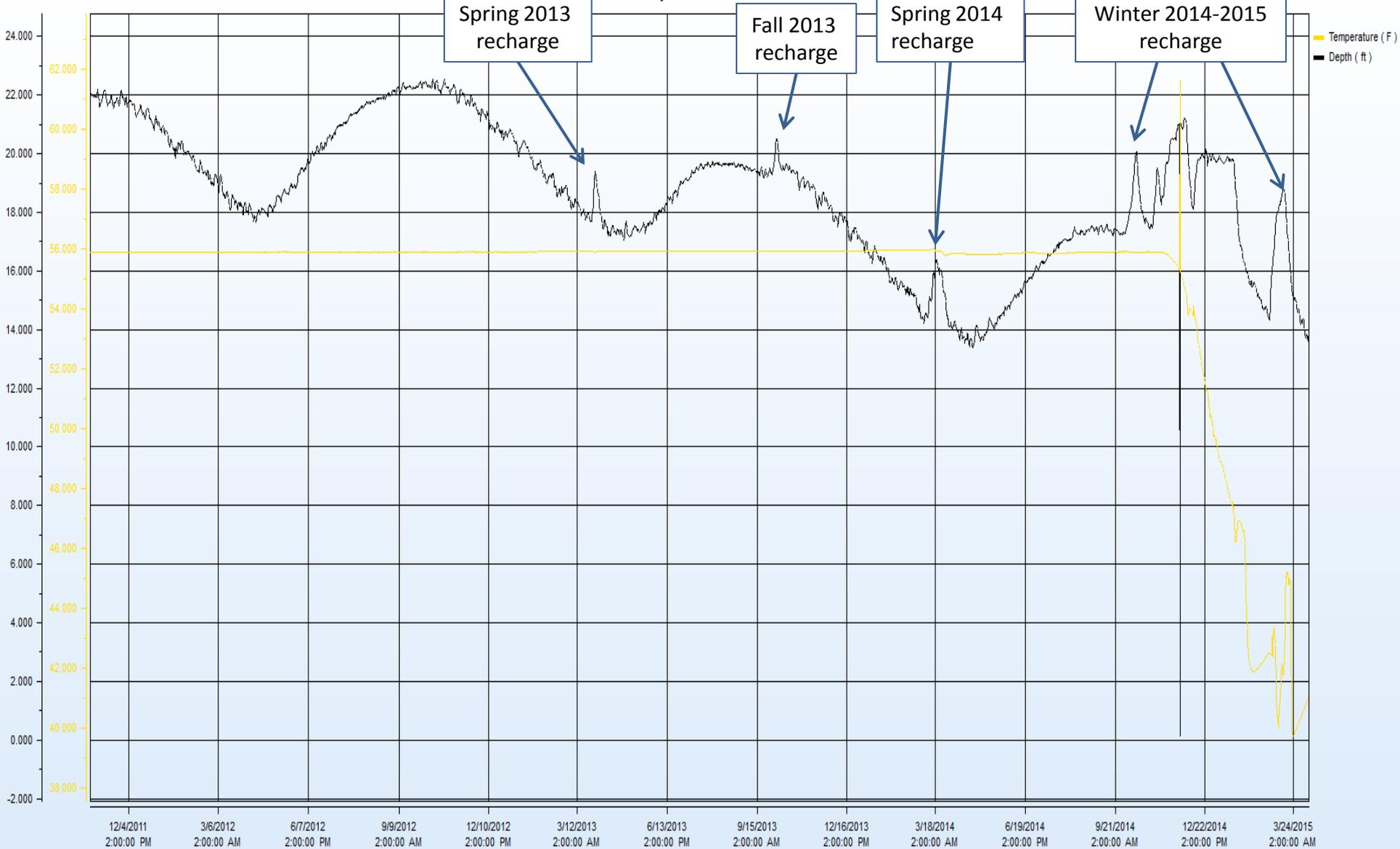
December

December 29th

Shoshone Recharge Site Water Quality Monitoring



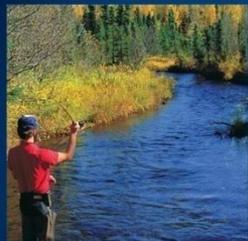
mile post 31 east well



Upper Valley Conveyance Compensation

Items to Consider

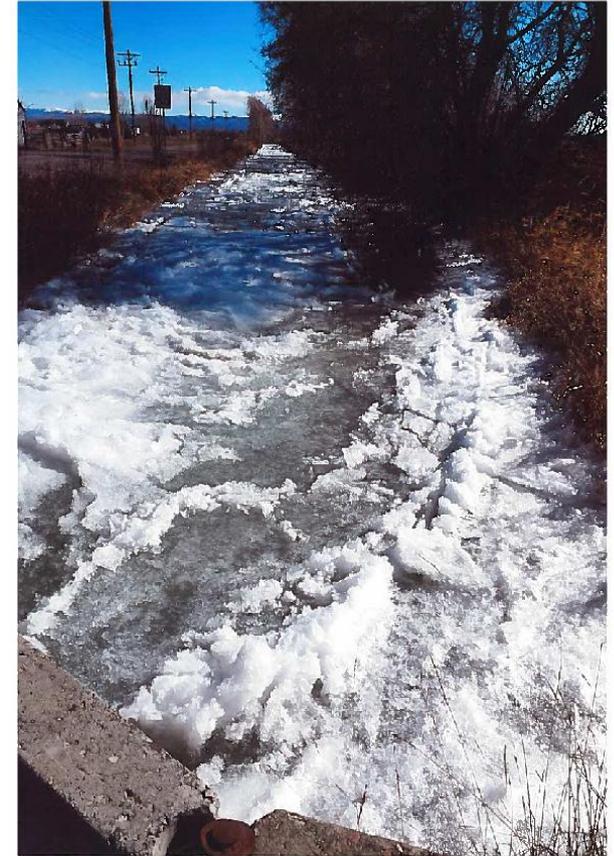
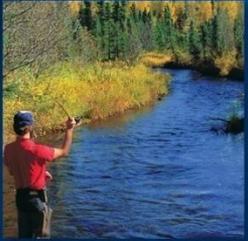
- Conveyance Payment Structure
- Priority Structure for Allocating Limited Volumes
- Long-Term Contracts



Conveyance Payment Structure

Alternate Payment Structure

- Base Rate -5-year Retention
 - >40% \$6/AF
 - 20% - 40% \$5/AF
 - 15% - 20% \$4/AF
- Cold Weather Incentive
 - Dec. 1st to Mar. 31st \$1/AF
- Deliver Incentive (% of days)
 - >75% \$1/AF

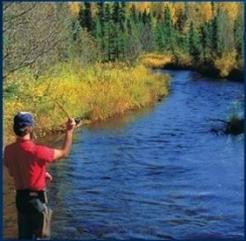


Allocating Limited Volumes – Previous

- 50% of Flow Split Equally between Retention Zones
 - In Retention Zone - Divided Equally between Entities
 - Flow not Utilized Redistributed by the IWRB
- 50% of Flow Distributed at IWRB's Discretion

Issues

- If limited volume and multiple entities in a retention zone conveyance payment would be low.
- Should size of the system impact flow distribution.



Allocating Limited Volumes – Alternate

Focus on Retention Rate and Diversion Capacity

- Site/Location Rated on Retention Rate & Diversion Capacity

Retention Rate	Retention Rate Points
>40%	3
20% to 40%	2
15% to < 20%	1

Diversion Capacity	Diversion Capacity Points
>300	2.5
200 to <300	2
100 to <200	1.5
50 to <100	1
<50	.5

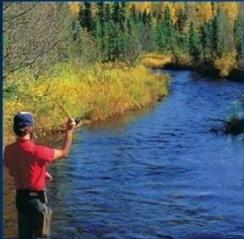
- Available Flow Rate Divided Equally Between the Top Three Rated Sites
- Excess to Next Highest Rated Site



Allocating Limited Volumes – Alternate

- Pre-Irrigation Season

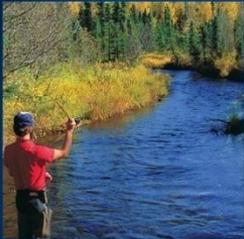
Entity	Retention Rate	Capacity (cfs)	Score	Ranking
FMID/Egin Bench	59%	300	5.5	1
Aberdeen-Springfield	21%	250	4	2
Snake River Valley	20%	75	3	4
Great Feeder	18%	300	3.5	3
Progressive	18%	90	2.5	5

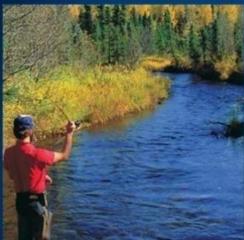


Allocating Limited Volumes – Alternate

- Irrigation Season

Entity	Retention Rate	Capacity (cfs)	Score	Ranking
FMID/Egin Bench	59%	150	4.5	1
Aberdeen-Springfield	21%	200	4	2
Snake River Valley	20%	30	2.5	3
Great Feeder	18%	0	--	--
Progressive	18%	0	--	--





Questions

Elmore County Aquifer Stabilization Study Proposal

Idaho Water Resource Board

January 19, 2016

Terry Scanlan, P.E., P.G.
Christian Petrich, Ph.D, P.E., P.G.

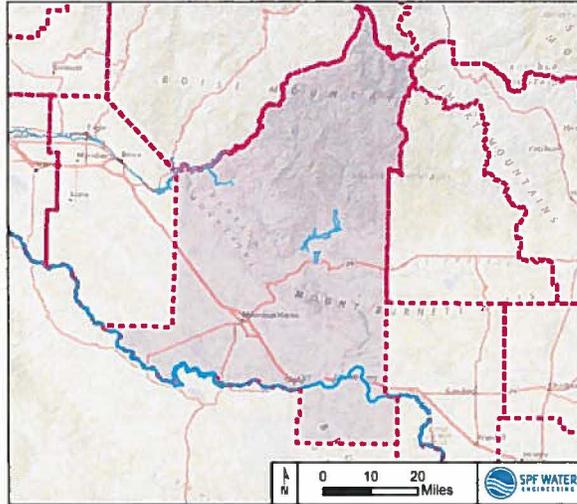


Overview

- **Review Elmore County water-supply concerns**
- **Outline proposal (prepared for Elmore County) to**
 - **Characterize existing water supply deficit**
 - **Describe approaches for stabilizing groundwater levels**
 - **Explore possible alternatives for additional water supply**
 - **Evaluate economics of additional water supply development**

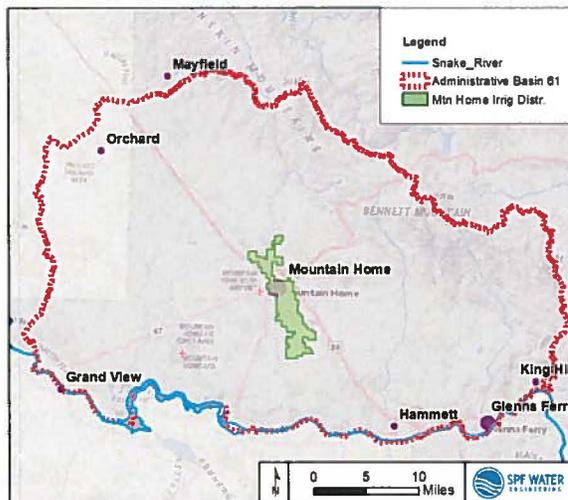
Elmore County

- Extends from Sawtooth Mountains to Snake River
- Area of concern is the southern portion (Mountain Home Plateau)



Administrative Basin 61

- Many users within the Plateau depend on groundwater
- Surface water use is from Danskin and Bennett Mtns and Snake River

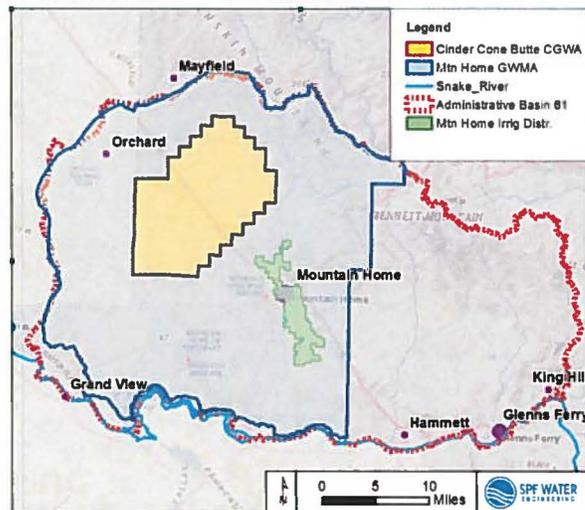


Concerns

- Elmore County water supplies are insufficient to support existing uses and future development
- Appropriation of new groundwater supply for consumptive uses is restricted
- Existing uses are threatened by curtailment as groundwater levels decline

Management Areas

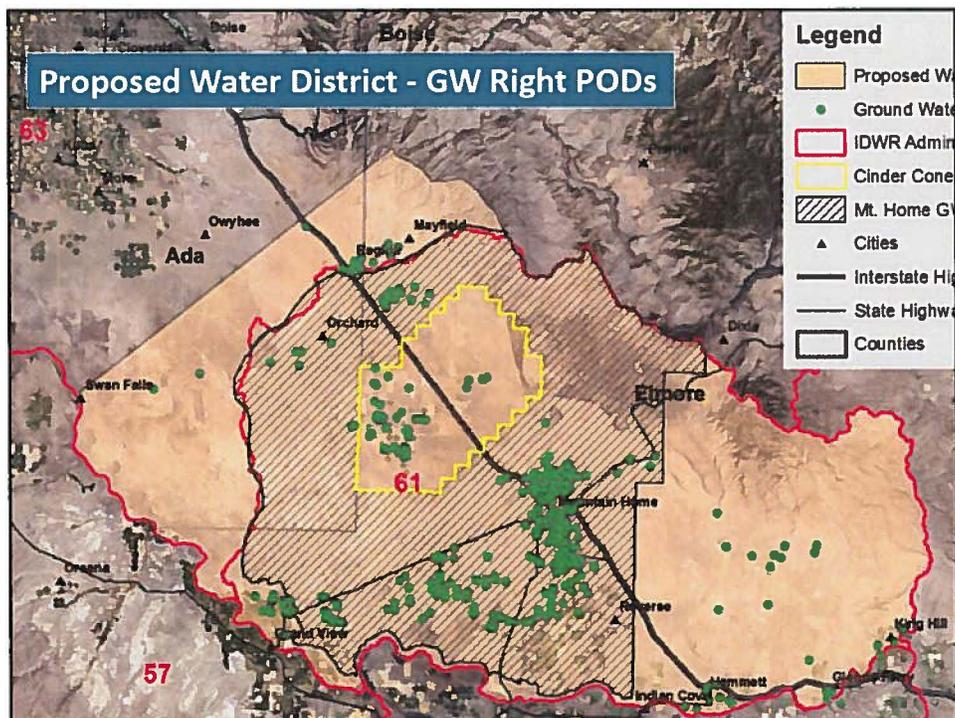
- Cinder Cone Butte Critical Ground Water Area (1981)
- Mountain Home Ground Water Management Area (1982)

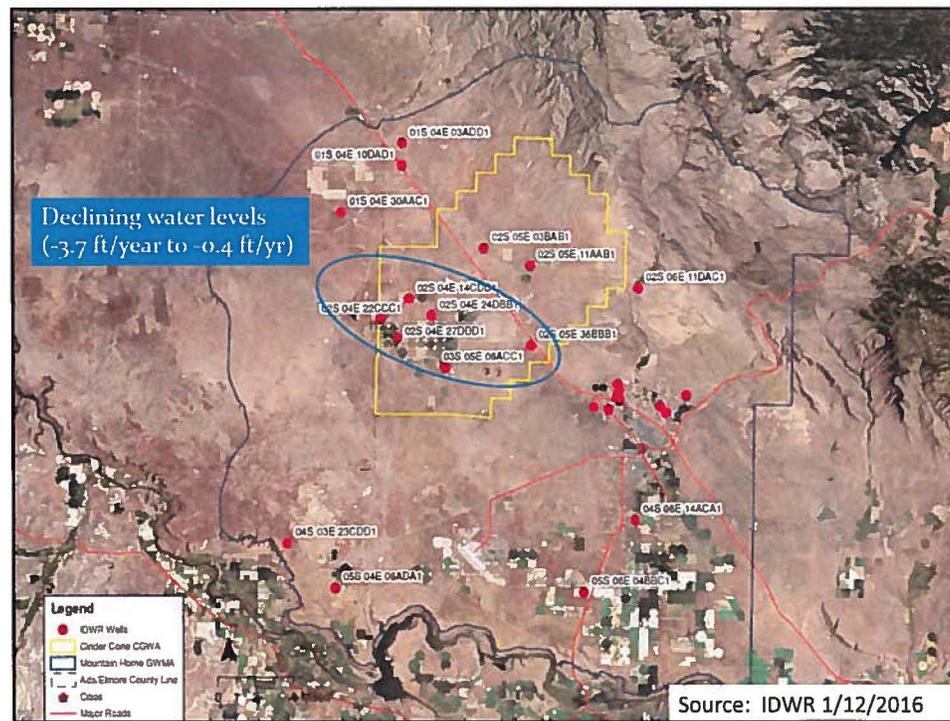
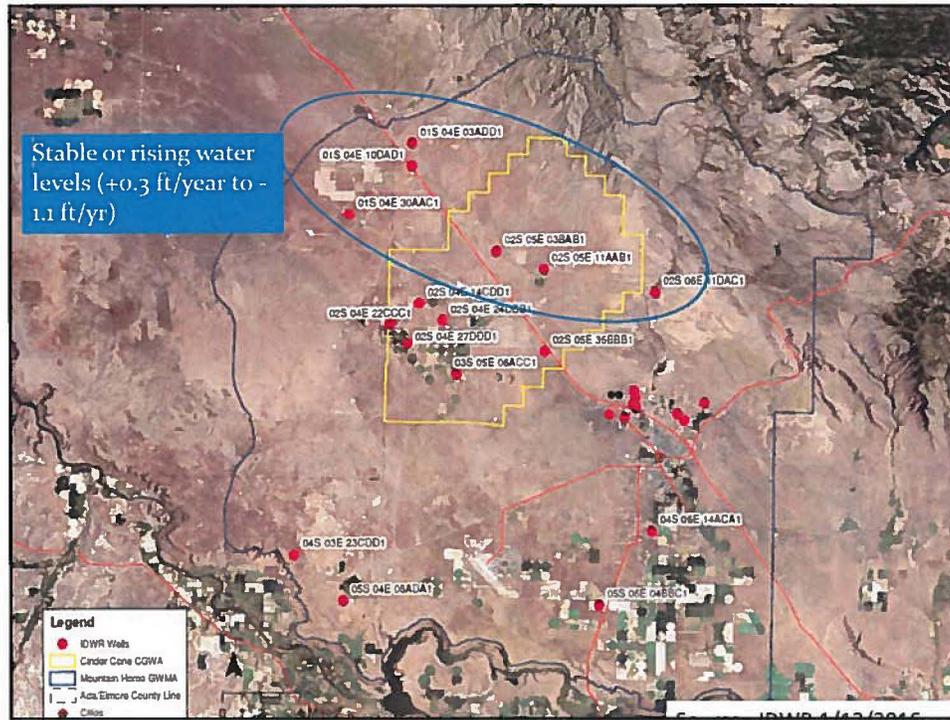


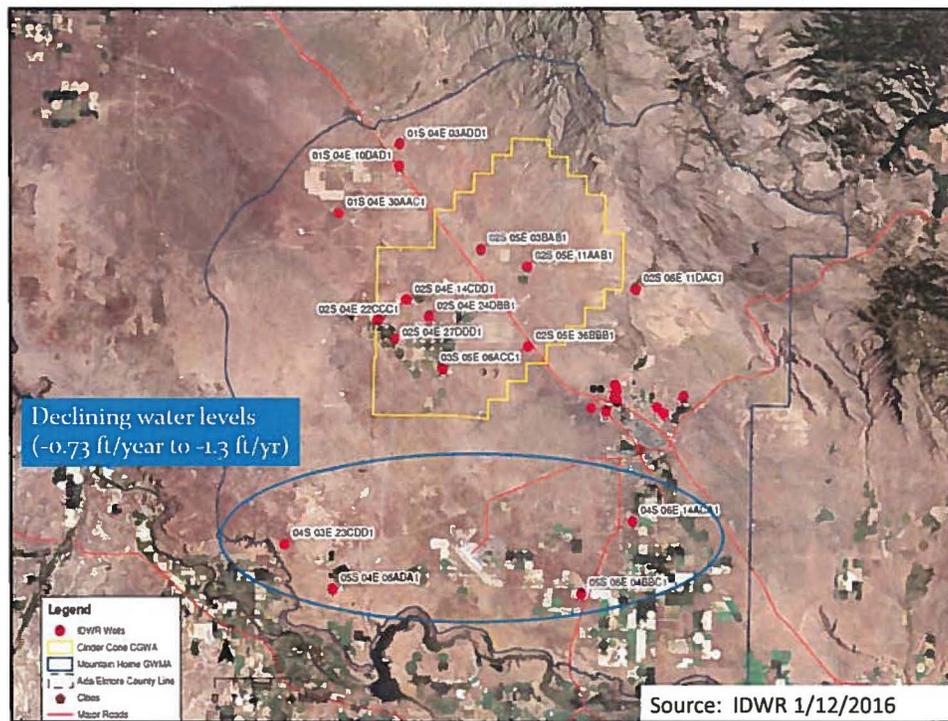
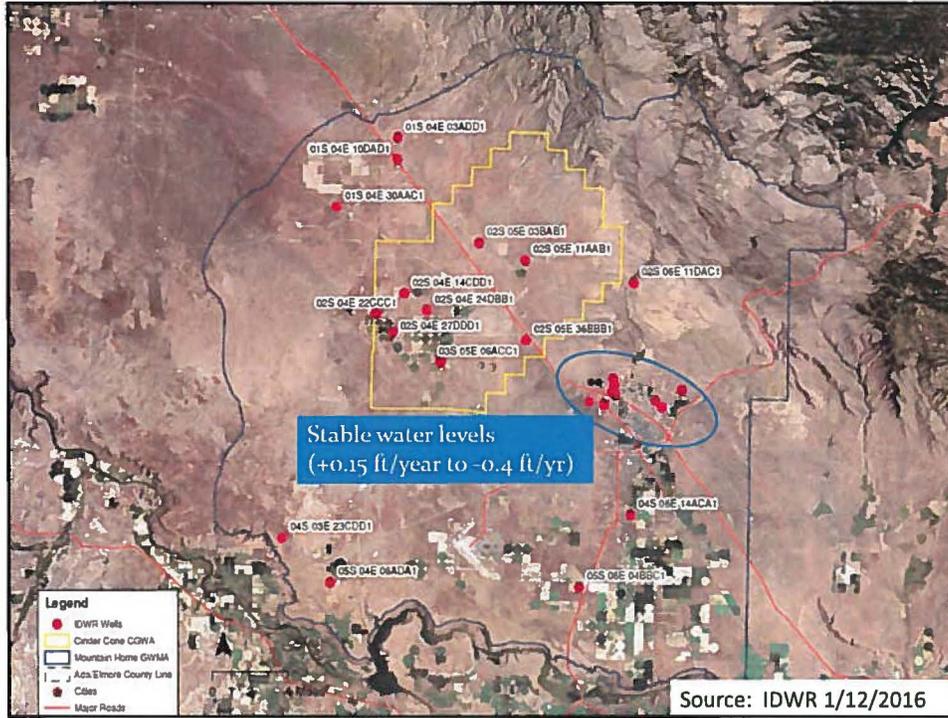
Proposed Basin 61 Water District

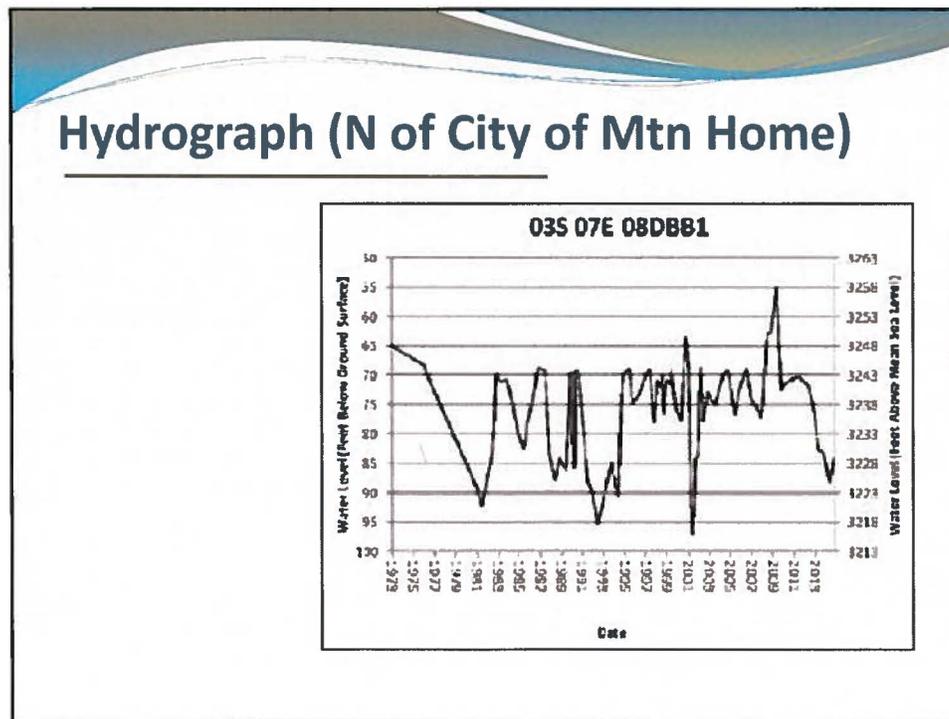
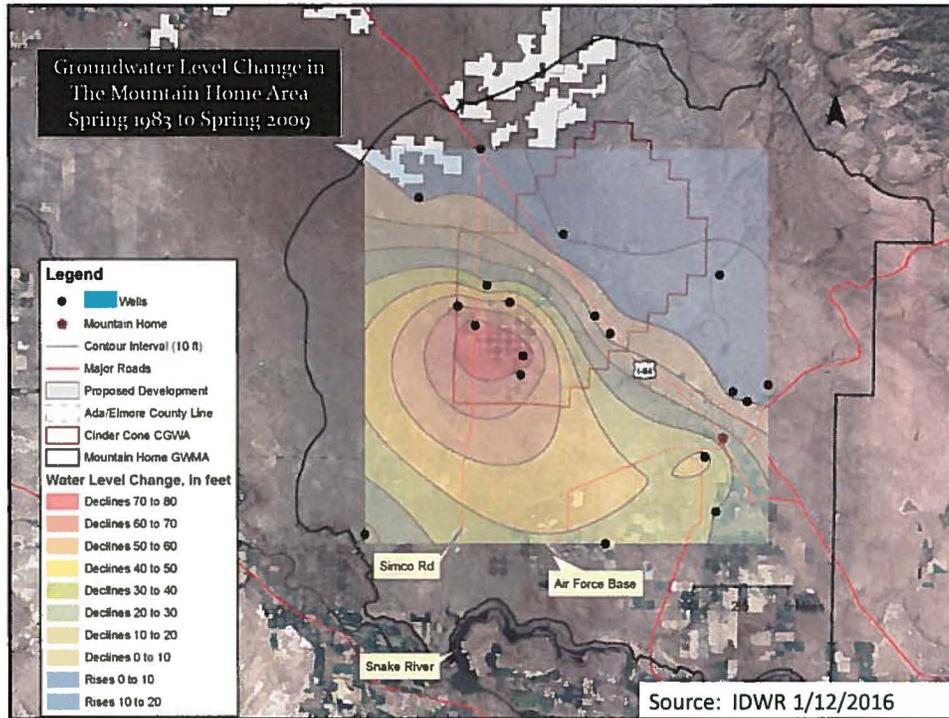
- Formation of Basin 61 Water District being considered as a result of concerns about groundwater-level declines
- District would include about 460 ground water rights (and 460 wells)
 - ~ 250 rights w/irrigation use > 5 acres (~ 240 wells)
 - ~ 140 rights w/ irrigation use <= 5 acres (~ 120 wells)
 - ~ 70 non-irrigation rights
 - 41 groundwater rights > 0.24 cfs (~100 wells)
 - In aggregate, ground water rights authorize gross diversion of approximately 568 cfs

Source: IDWR 1/12/2016





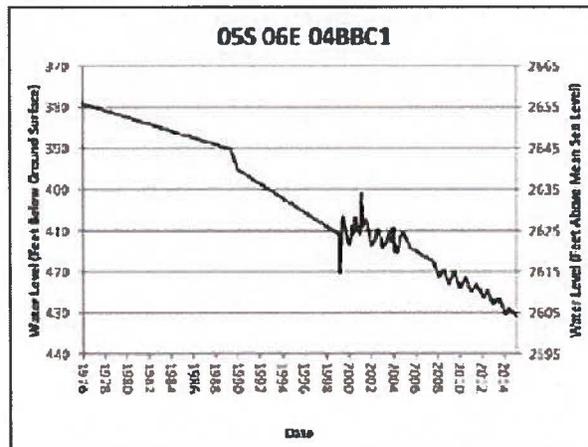




Hydrograph (Ctr of Cinder Cone CGWA)

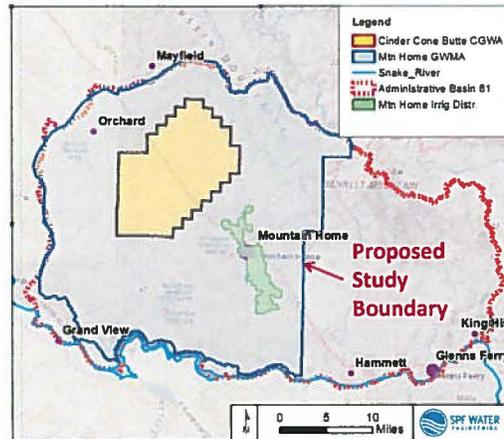


Hydrograph (east of Mtn Home AFB)



Purpose and General Objectives

- **Purpose: Improve Mountain Home Plateau water-supply sustainability**
- **General Objectives:**
 - Better quantify water-supply deficit
 - Explore possible sources of additional supply
 - Evaluate cost-effectiveness of additional supply



Specific Objectives

1. Review groundwater-level declines
2. Approximate groundwater diversions based on water-right analysis
3. Define existing water-supply deficit
4. Develop projections of future water demand
5. Explore economic impact of water-supply deficiency
6. Describe possible sources of additional water supply
7. Prepare preliminary cost opinions for selected direct-use and ASR alternatives
8. Explore operational and administrative options for additional water delivery

Approach

1. **Refine project scope**
 - Based on stakeholder meetings and comments
 - IWRB/IDWR comments
2. **Evaluate groundwater-level declines**
 - Prepare groundwater-level hydrographs for study area
 - Describe groundwater-level trends
 - Review existing estimates of natural recharge
 - Evaluate historical reduction in aquifer storage

Approach (*continued*)

3. **Evaluate consumptive use based on water right review and other data sources**
 - Estimate the number of acres currently authorized for surface water and groundwater irrigation
 - Estimate consumptive use based on acres authorized for irrigation (based on large-POU water rights)
 - Review history of groundwater development
 - Categorize groundwater diversions based on 5-year priority-date increments
 - Basis for comparison with historical groundwater-level trends (next task)

Approach (continued)

- 4. Describe existing water-supply deficit**
 - Reconcile irrigation-development history with groundwater-level trends
 - Estimate water-supply deficit based on estimates of current consumptive use and historical groundwater-level trends
 - Review surface-water supply in dry and wet years
- 5. Review projections of future water demand**
 - Domestic, commercial, municipal, and industrial (DCMI) uses
 - Supplemental irrigation needs
 - Consider impacts of “water-constrained” conditions

Approach (continued)

- 6. Discuss economic impact of water-supply deficiency**
 - Consider
 - Deferred agricultural production resulting from water-supply deficiency in drought years
 - Lost opportunities for economic development
 - Possible impact of groundwater curtailment
 - SPF will subcontract with an economist to assist with this analysis
- 7. Describe potential sources of additional water supply**
 - Most likely sources: Boise River and Snake River
 - Describe water availability and potential infrastructure needed for water delivery

Approach (*continued*)

- 8. Describe water-utilization approaches**
 - Describe possible methods for using additional water supply, e.g.
 - Direct use of untreated surface water (e.g., offset groundwater irrigation use)
 - Direct use of treated surface water
 - Aquifer recharge
 - Aquifer recharge, storage, and recovery (ASR)
- 9. Develop preliminary cost opinions for direct use and ASR alternatives**
 - Conceptual-level cost estimates for construction, operation, and maintenance
 - Compare cost estimates on a per acre-foot basis
 - Feasibility discussion

Approach (*continued*)

- 10. Consider operational and administrative options for new water-supply sources**
 - Outline potential options for ownership, administration, and operations
 - Describe advantages and disadvantages of each option

Summary

- **Mountain Home Plateau is experiencing areas of water insufficiency**
- **Project purpose: identify and explore options for additional supply**
- **Proposal outlines tasks to assist Elmore County in evaluating water-supply options**
- **Some of the tasks may be refined after project begins based on initial results**