Irrigation Flow Measurement Proposal

Southeast Idaho

January 2016

Funding Opportunity Announcement No. R16-FOA-DO-004

To provide irrigation flow measurement devices to ground water diversion wells within Bonneville-Jefferson Ground Water District in an effort to account for and better manage the water supply

Managing Entity:
Bonneville-Jefferson Ground Water District
PO Box 51121
Idaho Falls, ID 83405

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SPF WATER ENGINEERING

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*Appendix I: Required Federal Forms (Budget Form, Assurances Form, Application/Cover Page Form) are not considered in the total page count limit of 75 pages per instructions described on page 24 of Funding Opportunity Announcement No. R16-FOA-DO-004

1. TECHNICAL PROPOSAL AND EVALUATION CRITERIA

1.1. Executive Summary

Application Date: January 20, 2016

Applicant: Bonneville-Jefferson Ground Water District
PO Box 51121
Idaho Falls, ID 83405

The Bonneville-Jefferson Ground Water District (BJGWD) respectfully submits this request for funding under Funding Group I of the WaterSMART: Water and Energy Efficiency Grants for FY 2016, Funding Opportunity Announcement No. R16-FOA-DO-004.

In 1995, the Idaho Legislature adopted the "Ground Water District Act", enabling water users to organize into Ground Water Districts. Bonneville-Jefferson Ground Water District was established pursuant to the statutes developed as part of this Act in 1998. These statutes can be found in Idaho Code Title 42 "Irrigation and Drainage" Chapter 52 "Ground Water Districts". Title 42 Chapter 52-5224 (which has been included in Appendix A) defines the authorities granted to ground water districts, which includes water delivery authority. As such, BJGWD is an eligible applicant for a WaterSMART Grant as described on page 9 of the funding opportunity announcement. Please note that BJGWD is in the process of obtaining a DUNS number, but has not yet received the number at the time of this application. A DUNS number for BJGWD will be conveyed to Reclamation upon receipt.

Grant proceeds would be used to purchase and install advanced water flow measurement devices for 120 separate ground water wells owned or operated by individuals within the BJGWD at a total project cost of $658,786, of which Reclamation's share would be $296,454, or 45%. BJGWD would bear the cost of the remaining 55%, or $362,332.

The primary objective of this grant is to increase flow measurement accuracy of withdrawals from the Eastern Snake Plain Aquifer (ESPA) by groundwater wells. Goals and benefits include, but are not limited to, the following:

1. Provide protection to minimum stream flow rights established on the Snake River pursuant to the Swan Falls Agreement (SFA) between the State of Idaho (State) and the Idaho Power Company (IPC) (State of Idaho/Idaho Power Company, 1984). This Agreement was developed to resolve the nature and extent of water rights for the use of water for hydropower production at IPC's hydropower projects on the Snake River;

2. Improved surface water supply from increased reach gains to the Snake River will increase the amount of water available to fill Reclamation reservoir storage accounts, in turn providing a more reliable water supply for irrigators, Indian Tribes, recreationalists, and cities among others. Increased reservoir storage will also provide additional opportunity for Reclamation flow augmentation rentals for the benefit of endangered species (e.g. Fall Chinook Salmon);
3. Increased opportunity for water users to implement irrigation efficiencies and techniques through better management of their water supply. Good irrigation management requires knowledge of the total amount of water delivered to the irrigation system. Regular monitoring of diversion rates over time, along with a better understanding of crop demands, provides an opportunity to monitor performance of the irrigation system, resulting in better management of pump and motor maintenance, improvements to irrigation scheduling, and the minimizing of water usage and waste. All of which will help to improve system energy efficiency and provide overall energy and operator cost savings;
4. Increase reliability and enforcement of water use, measurement, and reporting across the ESPA;
5. Minimize economic impact to individual water users and the State economy arising from water supply shortages and potential curtailment based on Prior Appropriation Doctrine and State law;
6. Reduction to overall power usage throughout the ESPA through reductions in pumping and decreases in pumping lift requirements as the aquifer rises; and
7. Help to counteract the effects of drought and climate change in the Upper Snake River basin.

1.2. Background Data

Sitting beneath southeast and south central Idaho lies one of the largest and most productive ground water aquifers in the United States, the Eastern Snake Plain Aquifer (ESPA). The ESPA covers more than 10,000 square miles, extending from Ashton, Idaho to King Hill, Idaho; approximately 13 percent of the State's total land area (see Figure 1 below (Idaho Water Resource Board, 2009)). Located entirely within the drainage of the Snake River Basin, the ESPA covers all or part of 21 of Idaho's 44 counties, a land area estimated to be similar in size to the state of Maryland. Approximately 2.1 million acres of land are irrigated on the Eastern Snake River Plain, 60% of Idaho's total irrigated area. Of those irrigated acres, 880,000 acres rely directly on ground water withdrawals from the ESPA, while another 871,000 rely on surface water which is partially derived from spring flows back to the river from

the ESPA, and another 348,000 acres from mixed sources (Idaho Water Resource Board, 2009).

Figure 1. Map of Eastern Snake Plain Aquifer

The ESPA is critically important to Idaho's economy, the livelihoods of Idaho citizens, and the many users of the Snake River. According to the Idaho Division of Financial Management, 33% of all goods and services in Idaho ($14.9 billion annually) are produced on the ESPA (IDWR, 2015). In addition, the ESPA provides drinking water to nearly 300,000 residents of eastern Idaho (Idaho INL Oversight Program, 2005). The ESPA is also the source of many springs that provide reach gains to the Snake River that are critical to surface water supplies. These surface water supplies are important for a variety of reasons, including irrigation, endangered species, tribal uses, industry,

and recreation, among others. The ESPA is critical for providing water for irrigation, domestic, commercial, municipal, and industrial uses vital to the future growth of the state and local economies.

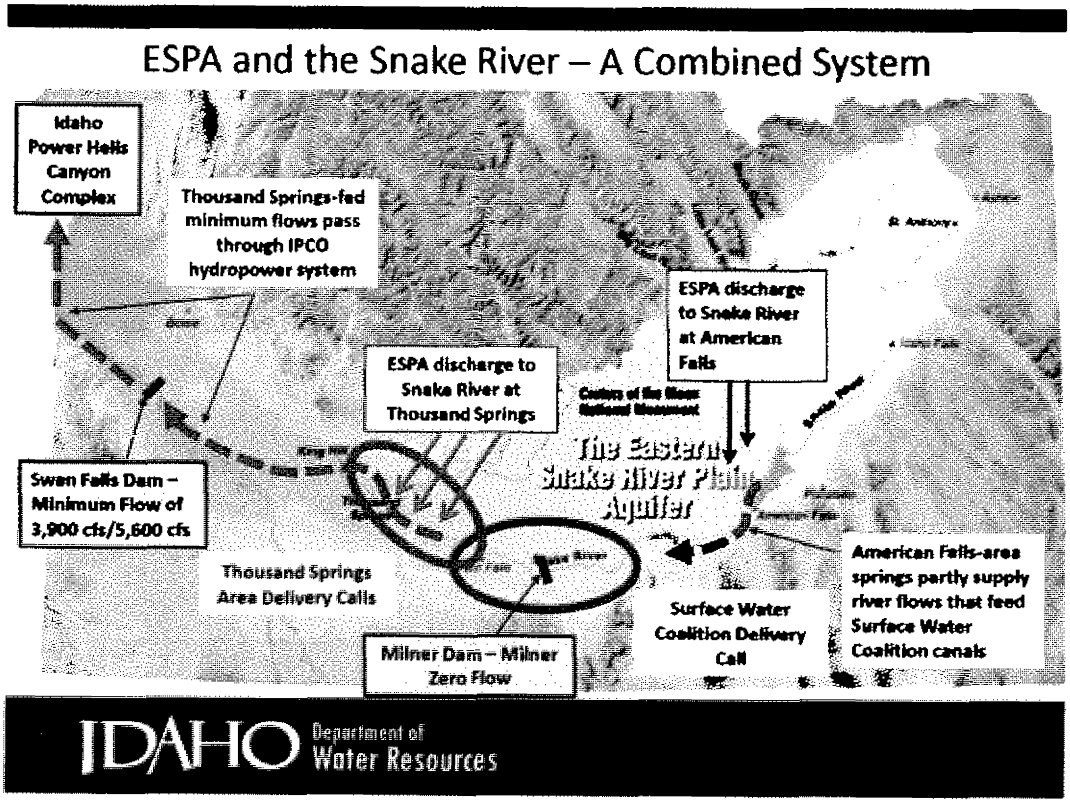

Figure 2. ESPA System

Water levels in the aquifer increased from the late 1800s until the early 1950s due to increases in recharge, primarily due to irrigation diversions from the Snake River. Unfortunately, this critically important resource has been on the decline since the early 1950s, and has lost 3.5 trillion gallons of water, or 11 million acre-feet, of aquifer storage volume during that time period (see Figure 3 (IDWR, 2015)). To give this some perspective, this is enough water to cover the entire state of Rhode Island with more than 11 feet of water.

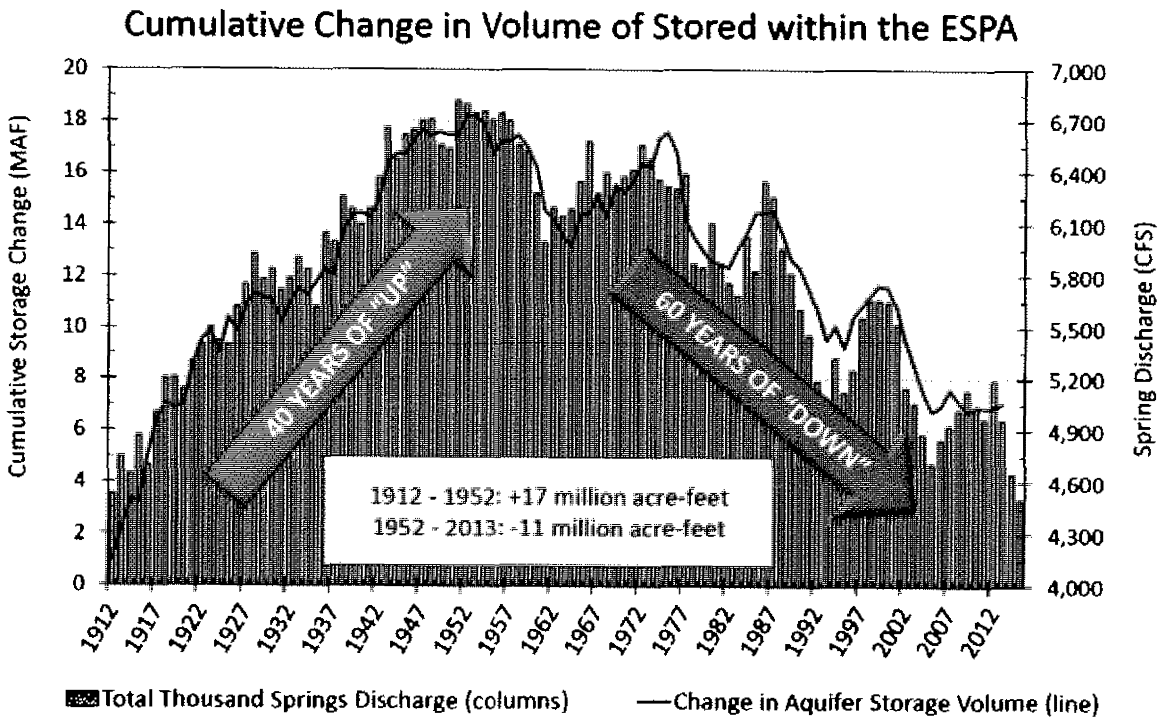

Figure 3. Cumulative Change in Volume Stored within the ESPA

Many factors have contributed to declines in the ESPA, including:

1. Increases in ground water diversions;
2. Changing climate conditions such as drought cycles and declining precipitation;
3. Increases in irrigation efficiencies, resulting in less incidental recharge (changing from flood irrigation to sprinkler irrigation, canal lining, etc.);
4. Flow augmentation releases (salmon recovery); and
5. Bureau of Reclamation Winter Water Savings initiatives to reduce off season diversions in order to increase water storage availability for the Palisades Reservoir.

As a result of the declining aquifer, spring flows to the Snake River have also been reduced, including reduced reach gains in the near Blackfoot to Minidoka (Lake Walcott) reach of the Snake River of approximately 500,000 acre-feet annually (See Figure 4 and Figure 5 (IDWR, 2015)).

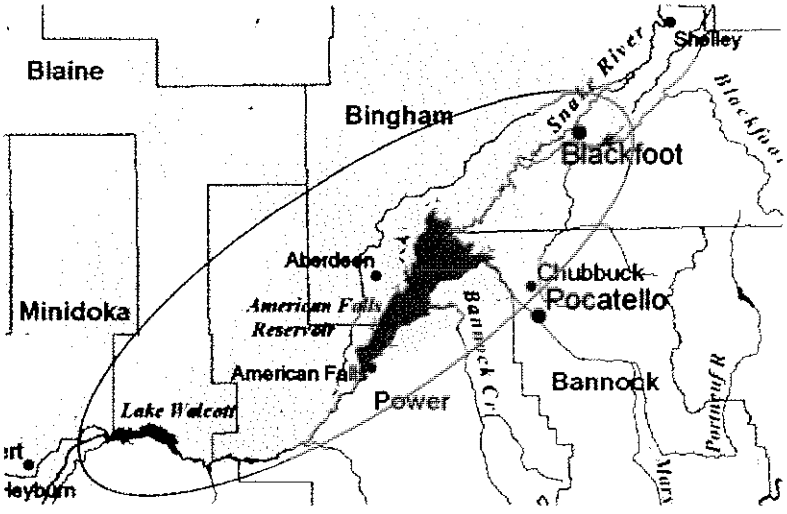

Figure 4. Near Blackfoot to Minidoka (Lake Walcott) Reach

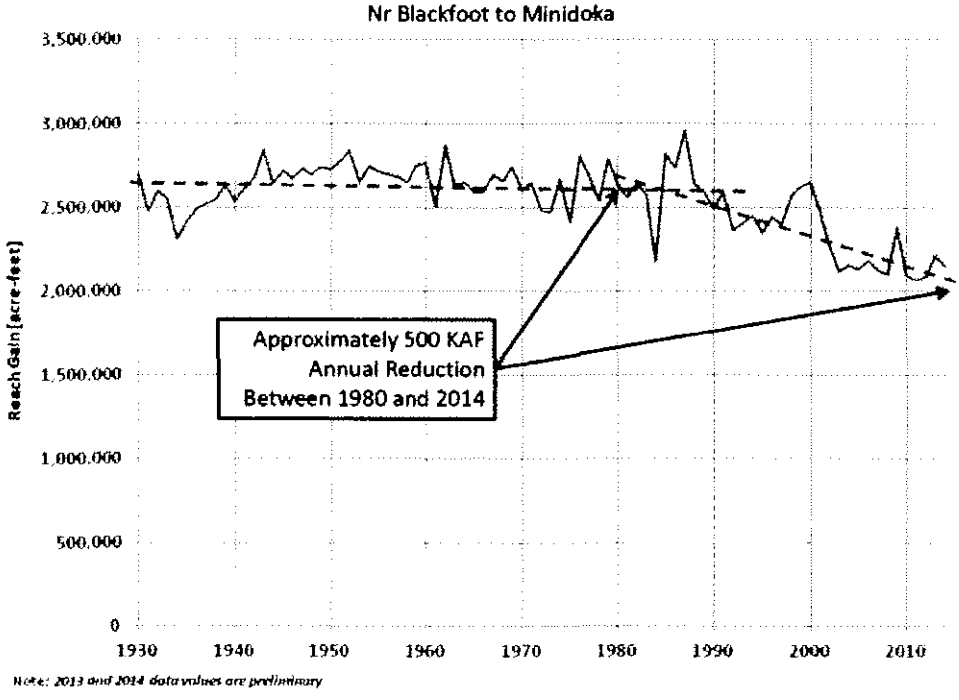

Figure 5. Reduction to Reach Gains in the Snake River: Near Blackfoot to Minidoka Reach

This reduction has in turn created conflict with the many users of the Snake River, ultimately culminating in costly litigation and water calls. In 2005, a water delivery call from surface water users was made on junior ground water users of the ESPA. To address the call, and after much litigation (even culminating at the Supreme Court of Idaho level), the Idaho Department of Water Resources (IDWR) developed a methodology to determine the injury to senior water rights based on the water supply for the current year. Because water supply changes from year to year, so did the injury obligation, resulting in great uncertainty and frustration to both the junior and senior water right holders. With a poor water supply at the start of the 2015 irrigation season, the IDWR methodology determined a shortage of 89,000 acre-feet of water that the junior ground water users would need to supply to the senior surface water users, or be faced with curtailment of 86,000 acres of ground water irrigated lands. The methodology also estimated that if poor water supply conditions continued, the shortage could increase to as much as 571,000 acre-feet, or 594,000 acres of ground water irrigated lands which would be curtailed.

Faced with the prospect of more than 50 percent of the ground water irrigated lands on the ESPA potentially being curtailed, and the economic catastrophe that would ensue, the surface water and ground water parties began settlement discussions. After 10 years of contentious litigation between ground water and surface water users, a historic Settlement Agreement (Agreement) was reached and entered into in October 2015 by the members of the Surface Water Coalition (SWC) (representing 7 surface water entities, see Figure 6 (IDWR, 2015)) and the Idaho Ground Water Appropriators (IGWA). IGWA is an organization that represents agricultural, industrial, and municipal ground water users in the State of Idaho. In this case, IGWA represented 8 ground water districts, 2 irrigation districts, and numerous cities and industries as a party to the Agreement. The Agreement can be found in Appendix B.

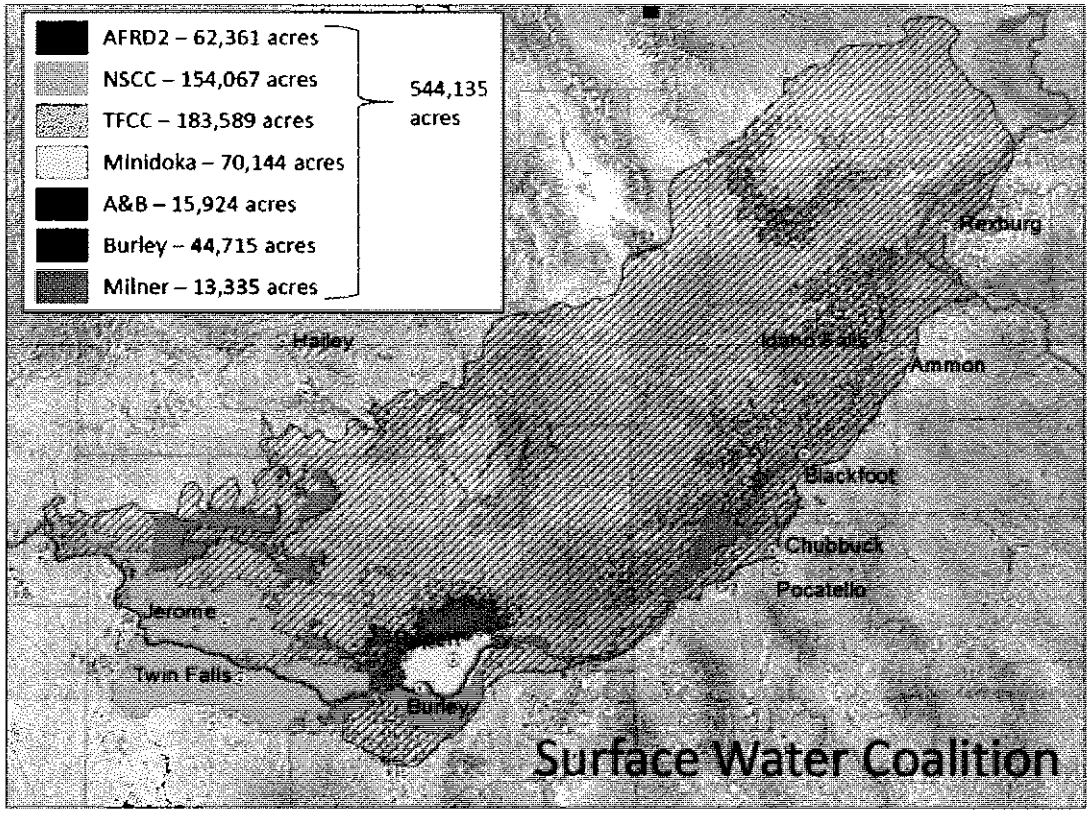

Figure 6. Surface Water Coalition Members

The goal of the Agreement is to stabilize and ultimately reverse the trend of declining ground water levels. Additional objectives of the agreement include:

1. Mitigate for material injury to senior water users
2. Provide safe harbor to participating ground water users
3. Minimize economic impact to water users and the State's economy
4. Increase reliability and enforcement of use, measurement and reporting across the ESPA

The Agreement contemplates near term and long term practices to be implemented as follows:

Near Term Practices (implemented during the 2015 irrigation season)

1. IGWA to provide 110,000 acre-feet of storage water to the SWC
2. $1.1 Million dedicated by IGWA for groundwater to surface water conversions

Long Term Practices

1. Ground water diversion reduction of 240,000 acre-feet annually (note that this reduction is split proportionately between the Agreement's

participating ground water users, see Appendix C for the reduction spreadsheet).

2. Annual storage water delivery of 50,000 acre-feet from IGWA to the SWC
3. Reduction of ground water irrigation season to April 1 to October 31
4. Mandatory flow meter measurement devices on all wells party to the Agreement prior to the 2018 irrigation season
5. Support for the State's 250,000 acre-feet annual recharge effort

The Agreement also contemplates the following Goals and Benchmarks:

1. Stabilize and ultimately reverse the trend of declining ground water levels and return ground water levels to levels equal to the average ground water levels from 1991 to 2001;
2. By 2020, ground water levels will equal ground water levels seen in 2015; By 2023, ground water levels will equal ground water levels halfway between 2015 ground water levels and the 1991-2001 average; By 2026 ground water levels equal or exceed the 1991-2001 average

The metric for success will be the measurement of ground water levels in 19 mutually agreed to "sentinel" observation wells (See Figure 7).

A Steering Committee comprised of representatives from SWC, IGWA, and the State of Idaho is established, and will be responsible to review compliance with the Agreement. In addition, the Steering Committee will have the ability to implement adaptive water management measures if goals are not being met. The Agreement states:

"if any of the benchmarks or the ground water level goal is not met, additional recharge, consumptive use reduction, or other measures as recommended by the Steering Committee shall be implemented by the participating ground water parties to meet the benchmarks or ground water level goal"

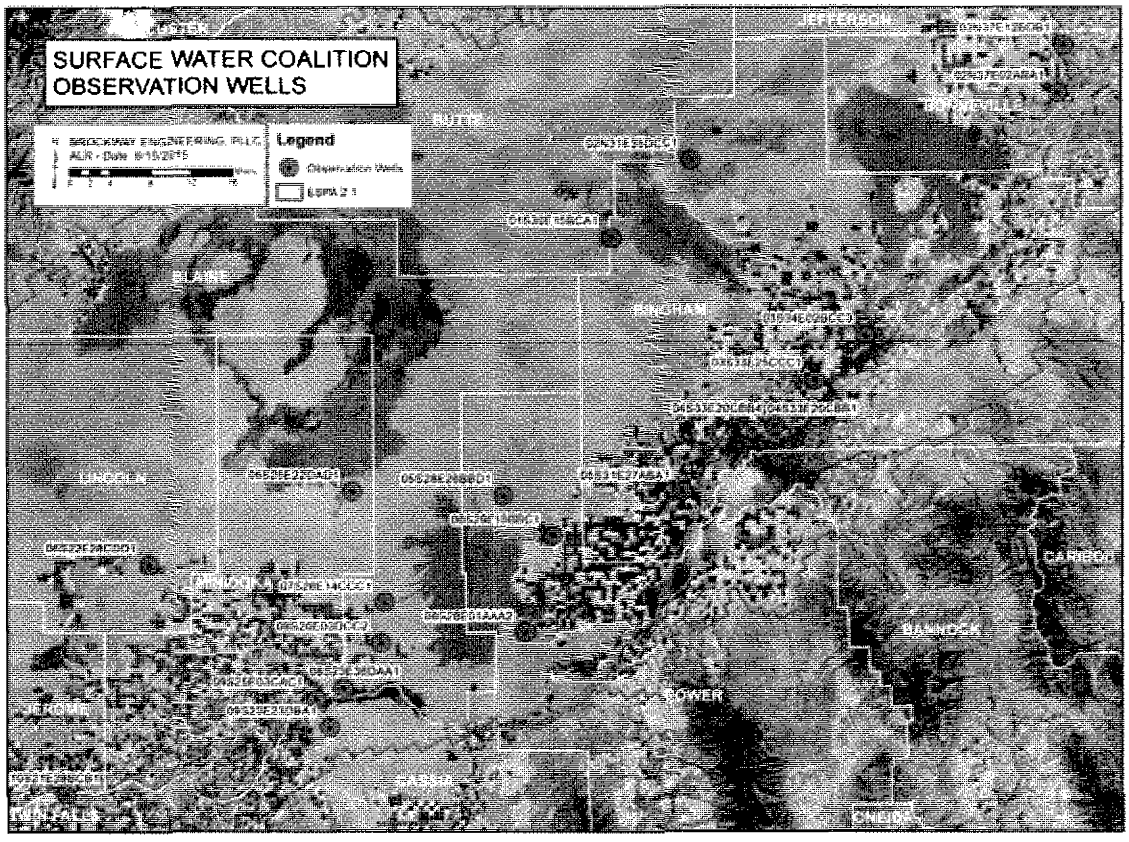

Figure 7. Map of 19 Sentinel Wells

Aquifer modeling completed as part of the Agreement indicates that ground water users will be required to reduce diversions from the aquifer in order to meet the goal of stabilizing and reversing the declining trend in aquifer levels. A 240,000 acre-feet annual reduction, or approximately 12.6% of the nearly 2,000,000 acre-feet currently pumped from the aquifer, was agreed upon by the parties. In order to accomplish this requirement, it is vitally important that accurate measurement of ground water diversions occurs to ensure the objectives are being met, and that individual users are all doing their part. As such, flowmeters will be required to be installed on all ground water diversions that are participants in the Agreement. In total, roughly 4,500 wells are part of the Agreement, 3,700 of which do not currently have flowmeters installed.

The primary objective of this grant request is to increase flow measurement accuracy of withdrawals from the ESPA. Flow measurement has been occurring on the majority of ground water diversions out of the ESPA, however, the means and methods for measurement have not been to the degree of accuracy required for adherence to the Agreement. The majority of ground water diversions have relied on the Power Consumption Coefficient (PCC) method for determination of ground water withdrawals. This method is used to relate the amount of power used by a pump to the amount of water being pumped. The PCC method can be relatively accurate for

simple (one pump, one pivot) systems and constant conditions which tend to have consistent power usage for the amount of water pumped. However, few systems meet this "simple" classification. Instead, most systems are described as "complex", with multiple system configurations and operating conditions used daily throughout the irrigation season (multiple pumps, multiple pivots). The PCC method becomes very inaccurate, prone to error, and dependent on human subjectivity for complex systems. A far superior method of water measurement of ground water withdrawals, is the use of flow meters installed on ground water well pump systems. Flow meters are highly accurate, remove nearly all error from the equation and provide a much more complete record of ground water withdrawals. In addition, the flow meters provide the water user with a critical tool to help guide water use, management, and operations throughout the season. Accurate flow measurement will be a critical component if the users are to meet the pumping reductions required of them.

Bonneville-Jefferson Ground Water District (BJGWD) is a participant in the Agreement. This ground water district was created under Idaho Code 42-5224 (which was developed in the mid-1990s as a result of water calls to junior ground water users). The statute allows individual ground water users to organize into ground water districts, and grants these districts the authority to deliver water, measure and report water usage as required by law, levy assessments, develop mitigation plans to address water delivery calls, and represent the individual members of the district in various water issues and related legal matters, among other duties that can be seen in the statute included as Appendix A. Figure 8 below (IDWR, 2015) is a map depicting the general location of the BJGWD along with other ground water districts in the area. BJGWD was formed in 1998.

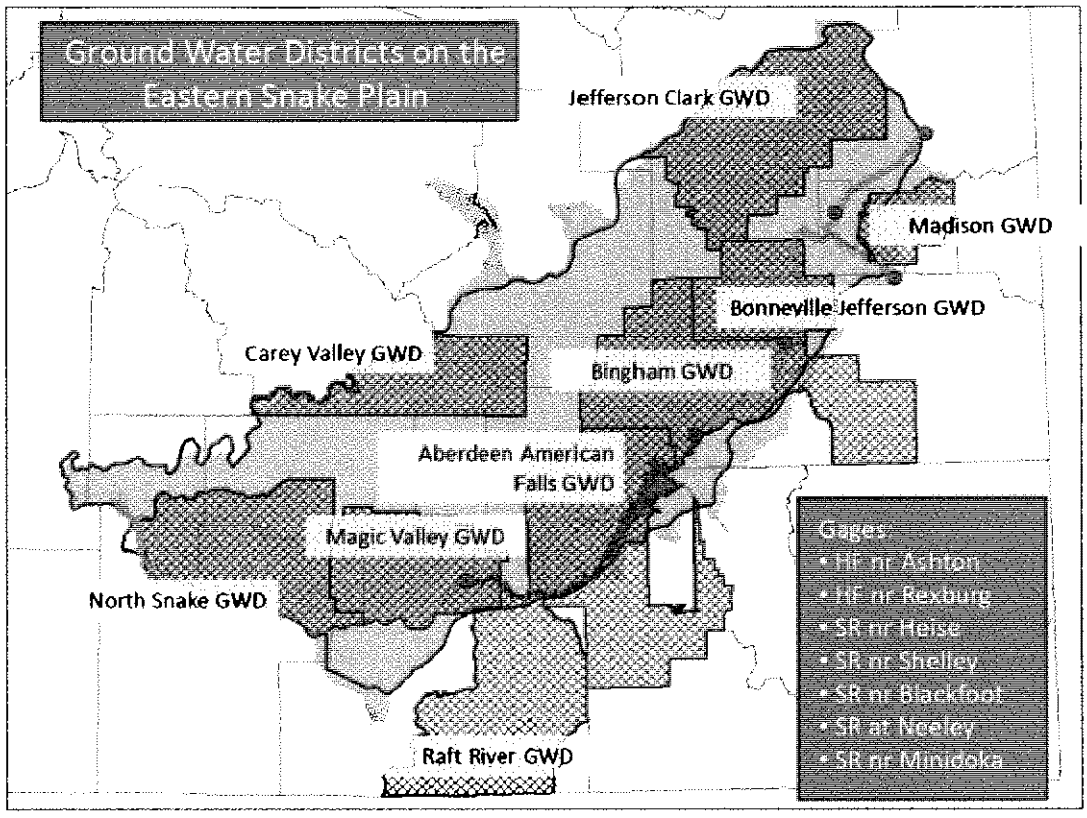

Figure 8. Ground Water Districts on the Eastern Snake Plain

BJGWD will be required to reduce ground water diversions by its proportionate share of the 240,000 acre-feet reduction requirement based on their 2010 to 2014 historical usage. BJGWD is faced with a reduction of approximately 18,000 acre-feet. Based on IDWR records, BJGWD consists of approximately 236 wells, irrigating approximately 90,000 acres. Only 4 of the wells currently have a flow meter installed. This grant is being requested to purchase and install advanced water flow measurement devices for 120 separate ground water wells owned or operated by individuals within the BJGWD. The number of wells requiring flow meters within BJGWD greatly outnumbers the funding available for this grant. In fairness to all users within the district, individual wells have not been selected for flow meter installations as part of this grant. Instead, grant funding will be made available through the ground water district on a first-come first-serve basis. Appendix D includes a map for the BJGWD showing the location of the wells requiring flow meters to give perspective on the number of flow meters that are needed.

The benefits of accurate measurements of ground water withdrawals to better manage, stabilize and reverse the downward trend of the ESPA are far more than simply satisfying the requirements outlined in the Agreement between the surface

water users and the ground water users. Goals and benefits include, but are not limited to, the following:

1. Provide protection to minimum stream flow rights established on the Snake River pursuant to the Swan Falls Agreement (SFA) between the State of Idaho (State) and the Idaho Power Company (IPC) (State of Idaho/Idaho Power Company, 1984). This Agreement was developed to resolve the nature and extent of water rights for the use of water for hydropower production at IPC's hydropower projects on the Snake River. In 2015, minimum stream flows outlined in the SFA were breached at the Snake River near Murphy gage for the first time since the SFA was developed in 1984. As a result, junior ground water users were once again faced with curtailment. Crisis was averted in 2015 by quick action from the Idaho Water Resource Board to provide storage water to mitigate for the shortfall, however, this is not a long term solution and cannot be counted on in the future. See Figure 9 below for a graphical representation of the minimum stream flow requirements at the Snake River near Murphy gage (IDWR, 2015);

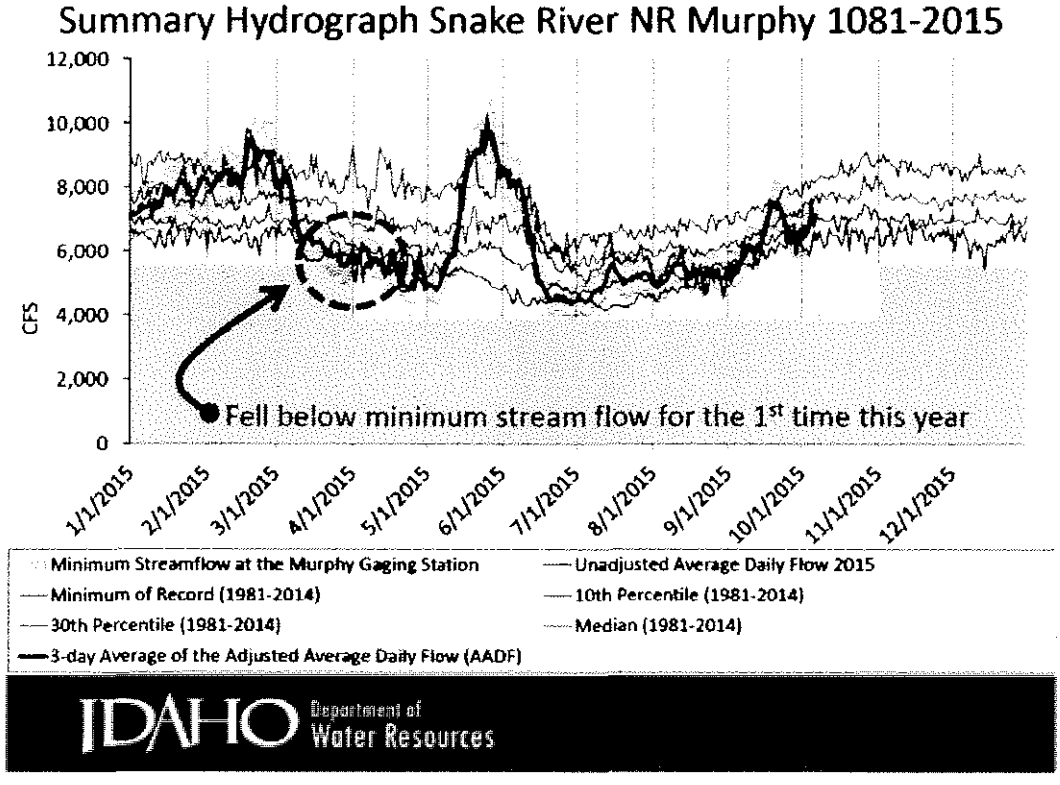

Figure 9. Minimum Stream Flows at Snake River near Murphy Gage

Increased spring flows and reach gains to the Snake River as a result of restoring the aquifer as part of the Agreement will be critical to avoiding a breach of minimum stream flows in the future. Estimates of the increases in reach gains that will be seen as a result of successful implementation of the Agreement were quantified through the use of Idaho's Eastern Snake Plain Aquifer Model version 2.1 (a.k.a. ESPAM2.1) by the Idaho Department of Water Resources. Modeling shows that the successful implementation of the Agreement will result in an increase in reach gains of approximately 65 to 100 cfs at the Murphy Gage (see "Consumptive Use Reduction" line in Figure 10 below).

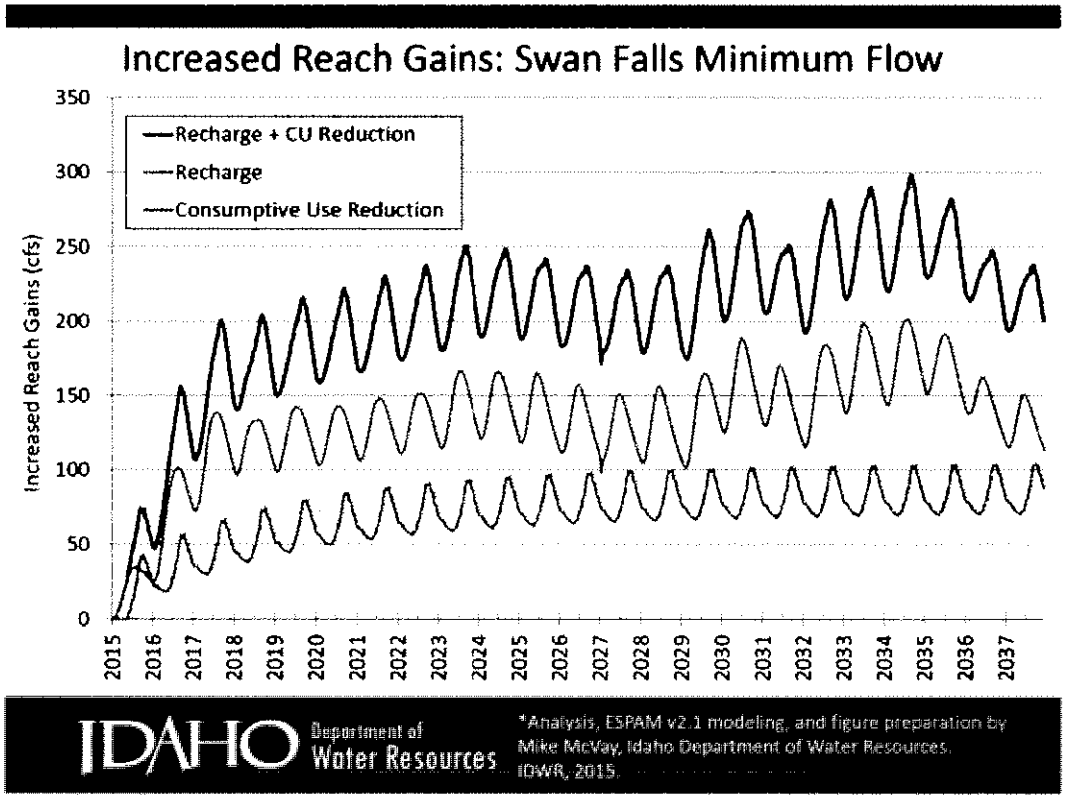

Figure 10. Increased Reach Gains

2. Improved surface water supply from increased reach gains to the Snake River will increase the amount of water available to fill Reclamation reservoir storage accounts, in turn providing a more reliable water supply for irrigators, Indian Tribes, recreationalists, and cities among others. Increased reservoir storage will also provide additional opportunity for Reclamation flow augmentation rentals for the benefit of endangered species. Additional water would also be available for hydropower generation;

3. Increased opportunity for water users to implement irrigation efficiencies and techniques through better management of their water supply. Good irrigation management requires knowledge of the total amount of water delivered to the irrigation system. Regular monitoring of diversion rates over time, along with a better understanding of crop demands, provides an opportunity to monitor performance of the irrigation system, resulting in better management of pump and motor maintenance, improvements to irrigation scheduling, and the minimizing of water usage and waste. All of which will help to improve system energy efficiency and provide overall energy and operator cost savings;
4. Increase reliability and enforcement of water use, measurement, and reporting across the ESPA;
5. Increase compliance with all elements and conditions of all water rights and increase enforcement when there is not compliance, thereby limiting potential for excess diversions or deliveries and providing potential water savings;
6. Assure that authorized water usage in areas on the ESPA are not prematurely curtailed in times of water shortage;
7. Minimize economic impact to individual water users and the state economy arising from water supply shortages and potential curtailment based on Prior Appropriation Doctrine and State law;
8. Part of an adaptive ground water management plan to stabilize and enhance ESPA levels to meet existing water right needs;
9. Help to counteract the effects of drought and climate change in the Upper Snake River basin;
10. Help to reduce potential for future conflicts and costly litigation related to water delivery calls; and
11. Reduction to overall power usage throughout the ESPA through reductions in pumping and decreases in pumping lift requirements as the aquifer rises.

1.3. Technical Project Description

Ground water withdrawals from the ESPA generally occur with the use of a ground water well and pump. Withdrawals from individual wells generally range from a few acre-feet to thousands of acre-feet per irrigation season. Depths to ground water can range from very shallow (tens of feet) to very deep (more than 500 feet). As such, horsepower required to extract the ground water can vary widely depending on flow rate and depth to water. Flow meter sizing and installations are independent of required horsepower and lifts. Instead, flow rate and well discharge piping configuration are the controlling factors.

In order to determine meter sizing and installation complexity, historical well measurement records were analyzed on a 139 well sample within the ESPA in order to determine existing sizing of well discharge piping. From this analysis, it is expected that approximately 26% of the wells will require an 8-inch flowmeter, 45% will require a 10-inch flowmeter, and 24% will require a 12-inch flowmeter. Approximately 5% will require larger or smaller flowmeters. Based on this analysis, this grant request focuses on obtaining 8-inch, 10-inch, and 12-inch flowmeters. In addition, the analysis of the measurement records indicated that three installation complexities are likely to be encountered; simple, moderate, and difficult.

- Easy installations would include an installation on existing well discharge piping that has a straight run of sufficient length to comply with the three diameters upstream and two diameters downstream (3D/2D) spacing for magnetic flowmeters as required by the Idaho Department of Water Resources (IDWR). In this case, the flowmeter could simply be cut into the straight run of pipe and attached to the existing pipe with new flanges.
- Moderate installations would require moderate modification to existing well discharge piping to achieve the 3D/2D spacing required by IDWR. An example of this installation would be lengthening the above ground discharge piping upstream of a 45 degree dive into the ground. This installation would require more time and materials, and therefore would be more costly than a simple installation.
- Difficult installations will require major modification to existing well discharge piping in order to achieve the 3D/2D spacing required by IDWR. This type of installation would require the most time and materials, and therefore would be the most expensive installation type.

The well sample analysis indicates the following installation complexity distribution for each meter size:

Meter Size	Simple	Moderate	Difficult
8-Inch	**31%**	**50%**	**19%**
10-Inch	**27%**	**59%**	**14%**
12-Inch	**18%**	**53%**	**29%**

Table 1. Installation Complexity Distribution

The IDWR requires flow meters to meet certain standards, and as such developed a list of flow meters that are approved for use within the State of Idaho. These approved flow meters are subjected to testing at Utah State University's National Institute of Standards and Technology traceable lab in Logan, Utah. Each meter on

the list performed at or above IDWR minimum acceptable standard for accuracy. Flow meters chosen for installation as part of this grant will ultimately be chosen from the approved IDWR list which can be found in Appendix E. For purposes of budgeting, Siemens Sitrans FM Magflo Mag 5100W/5000 have been used. The Magflo is approved for diameters ranging from 1-inch to 78-inches, and is capable of measuring the flow rates necessary while exceeding IDWR's +/- 2% adopted accuracy standard. Stated manufacturer accuracy for the Magflo is 0.20%. A remote mounted set of electronics will be installed and housed in a waterproof rated enclosure to ensure longevity of the meter. Flow meters generally have the option to be battery powered or use AC power. To ensure continuous operation into the future, all meters will be fitted with a hardwire option to provide AC power to the units. Due to the fact that the vast majority of well pumping systems in Idaho are electrically powered, it is anticipated that AC power is readily available at all proposed flow meter installation locations.

Upon completion of the project and the measurement of all diversions, water managers will be able to:

1. Regulate ground water diversions within the BJGWD based on authorized water right rate of flow and authorized volume determined as part of the Agreement;
2. Conserve water diversions (12.6%), and keep water savings in the ESPA as part of the effort to stabilize and reverse the downward trend of aquifer storage;
3. Curtail excessive diversions of water; and
4. Better manage limited water supplies.

1.4. Evaluation Criteria

1.4.1. Evaluation Criterion A: Water Conservation (28 points)

1.4.1.1. Subcriterion No. A.1: Quantifiable Water Savings

Ground water users party to the Agreement will be required to reduce historical ground water usage by 12.6% in order to reach the goals of the Agreement. Historical ground water usage for each district has been based on historical water measurement data collected by each ground water district, which consists of mostly PCC measurement data with flow meter data in the few instances that it is available. This data is compiled on an annual basis in the Idaho Department of Water Resources "Water Measurement Information System", otherwise known as WMIS. For purposes of the Agreement, the historical usage has been based on the average usage history for the 2010 to 2014 irrigation seasons. This time period represents the most recent, complete set of records available. In addition, the 2010 to 2014 time period

represents a great variance in water supply conditions, ranging from very wet in 2011 to very dry in 2013.

Table 2 shows the average historical water supply and the total estimated water savings for BJGWD. Total average historical water supply was determined to be 143,880 acre-feet based on the 2010 to 2014 record. With a required 12.6% reduction, it is estimated that a total water savings of 18,060 acre-feet will be seen. As part of this grant application, BJGWD proposed to install flowmeters on 51% of the wells within their district (120 of the 236 total wells within BJGWD). To calculate the water savings attributed to the flowmeters proposed as part of this grant application, the total water savings for each District was multiplied by the percentage of flowmeters being installed within each District. The results can be seen in Table 2.

Non-Federal Irrigation Entities	2010-2014 Average Historical Usage (Acre-Ft)	Reduction Requirement (%)	Total Water Savings (Acre-Ft)	% of Water Savings Attributed to the Grant (%)	Water Savings Attributed to the Grant (Acre-Ft)
1. Bonneville Jefferson GWD	**143,880**	**12.6%**	**18,060**	**51%**	**9,211**
TOTALS	**143,880**		**18,060**		**9,211**

Table 2. Estimated Water Savings Attributed to Grant

Table 3 describes the allowable future water supply for BJGWD after the required reduction is implemented. Similar to the water savings attributed to the flow meters requested as part of this grant, the allowable future water supply attributed to the grant has been calculated as 51% of the allowable future water supply for BJGWD.

Non-Federal Irrigation Entities	2010-2014 Average Historical Usage (Acre-Ft)	Total Water Savings (Acre-Ft)	Allowable Future Water Supply (Acre-Ft)	% of Future Water Supply Attributed to the Grant (%)	Future Water Supply Attributed to the Grant (Acre-Ft)
1. Bonneville Jefferson GWD	**143,880**	**18,060**	**125,820**	**51%**	**64,168**
TOTALS	**143,880**	**18,060**	**125,820**		**64,168**

Table 3. Estimated Future Water Supply Attributed to Grant

1.4.1.2. Subcriterion No. A.2: Percentage of Total Supply

As explained in the Quantifiable Water Savings section and as shown in Table 2, the estimated water savings attributed to the flowmeters proposed as part of this grant is 9,211 acre-feet. The estimated percentage of total annual water supply conserved therefore is as follows:

$$\frac{Estimated\ Amount\ of\ Water\ Conserved}{Average\ Annual\ Water\ Supply} = \frac{9{,}211\ AF}{143{,}880\ AF} = 6.4\%$$

1.4.2. Evaluation Criterion B: Energy-Water Nexus (16 points)

The reduction of ground water pumping coupled with the goal of increasing water levels in the aquifer will both work to decrease energy usage of ground water users throughout the ESPA.

Reduction of ground water pumping

To determine the energy savings associated with the reduction in ground water pumping, three factors need to be known:

1. Pumping reduction amount attributed to the flowmeters proposed as part of this grant: From Table 2, 9,211 acre-feet of BJGWD's pumping reduction is attributed to the flowmeters proposed as part of this grant;
2. Pump efficiency: New pump installations are typically designed to be 75% or more efficient, however, normal wear and tear causes pump efficiency to erode over time. For purposes of this grant, an average pump efficiency of 60% has been assumed; and
3. Total Dynamic Head (TDH): For purposes of this grant, the average TDH for pumping systems across the ESPA has been calculated by determining the average of the mean depth to water of the 19 sentinel wells (approximately 250 feet) and assuming this to be the average pumping water level across the ESPA. The mean depth to water for each of the 19 sentinel wells is based on data collected at the wells from 1981 to 2014 by the Idaho Department of Water Resources and the United States Geological Survey (see Appendix F for the data table)

   An assumed average discharge pressure of 65 psi (150 feet), which is typical for a pressurized irrigation system, has been added to the assumed pumping water level to estimate an average TDH of 400 feet for pumping systems on the ESPA.

The energy savings in kilowatt-hours (kWh) can then be calculated using the following equation:

$$Energy\ Savings = \frac{1.02\ kWh\ per\ AF\ per\ foot\ of\ lift\ x\ Puming\ Reduction\ Amount\ x\ TDH}{Pump\ Efficiency}$$

Table 4 shows that the flowmeters proposed as part of this grant will contribute to more than 6 million kWh saved annually within the BJGWD as a result of reductions of ground water pumping.

Non-Federal Irrigation Entities	Water Savings Attributed to the grant (AF)	Assumed Pump Efficiency (%)	Assumed Average TDH (ft)	Energy Savings (kWh)
1. **Bonneville-Jefferson GWD**	**9,211**	**60%**	**400**	**6,263,208**
Totals	**9,211**			**6,263,208**

Assumed Average TDH Calculated as: 250 feet average pumping depth + 65 psi (150 ft) assumed discharge pressure

Energy Savings calculated as: (1.02 kWh/AF/ft of TDH x Water Savings x TDH) / Pump Efficiency

Table 4. Estimated Energy Savings from Pumping Reductions

Increasing water levels

To determine the energy savings associated with the increase in aquifer levels, three factors need to be known:

1. Future Usage attributed to the flowmeters proposed as part of this grant: From Table 3, 64,168 acre-feet of the BJGWD future water supply is attributed to the flowmeters proposed as part of this grant;
2. Pump efficiency: A pump efficiency of 60% has once again been assumed; and
3. Pumping water level change: For purposes of this grant, the pumping water level change has been assumed to be equivalent to the modeled average increase in aquifer depth at the 19 sentinel wells attributed to the implementation of the 240,000 acre-feet annual pumping reduction as required by the Agreement. The ESPAM2.1 model was used for this analysis. The 240,000 acre-feet per year reduction in groundwater withdrawal was evenly distributed across the ESPAM2.1 groundwater irrigated lands for all the groundwater districts within the model boundary. The reduction in groundwater withdrawals was calculated by applying a percent reduction to the monthly ESPAM2.1 groundwater crop irrigation requirement (CIR) assigned to each irrigated land parcel such that a reduced volume of 240,000 acre-feet was achieved throughout the model. When the model is run in superposition, this monthly reduction for each groundwater irrigated land is simulated as recharge to the model cell. The consumptive use reduction is modeled using the same data sets and methods used by IDWR for modeling aquifer benefits from ground water withdrawal reductions as a result of programs such as the USDA's Conservation Reserve Enhancement Program (CREP).

   Results of this model analysis shows that the required reductions will increase the water level in the 19 wells by approximately 4.8 feet on average by the year 2026, which is shown as the red dashed line in Figure 11.

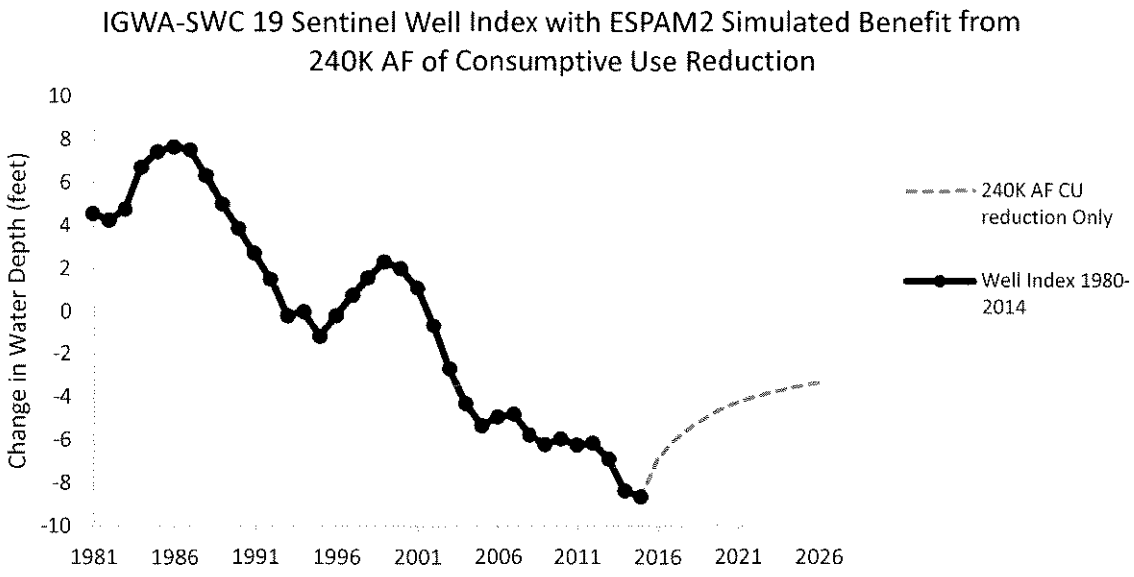

Figure 11. Change in Water Levels at 19 Sentinel Wells

The energy savings in kilowatt-hours (kWh) can then be calculated using the following equation:

$$Energy\ Savings = \frac{1.02\ kWh\ per\ AF\ per\ foot\ of\ lift\ x\ Future\ Usage\ x\ water\ level\ change}{Pump\ Efficiency}$$

Table 5 shows that the flowmeters proposed as part of this grant will contribute to more than 500,000 kWh saved annually within the BJGWD as a result of the higher ground water levels in the ESPA.

Non-Federal Irrigation Entities	Future Water Supply Attibutable to the Grant (AF)	Assumed Pump Efficiency (%)	Assumed Average increase in Aquifer Depth (ft)	Energy Savings (kWh)
1. Bonneville-Jefferson GWD	**64,168**	**60%**	**4.8**	**523,613**
Totals	**64,168**			**523,613**

Assumed Average increase in aquifer depth based on average rise in 19 sentinel wells
Energy Savings calculated as:
(1.02 kWh/AF/ft of TDH x Future District Usage Limit x Average Increase in Aquifer Depth) / Pump Efficiency

Table 5. Estimated Energy Savings from Increases in Aquifer Levels

1.4.3. Evaluation Criterion C: Benefits to Endangered Species (12 points)

With the installation of flow meters to help with implementation of the IGWA-SWC Agreement, the ultimate goal is to stabilize and reverse the declining trend of the ESPA. The anticipated effect of stabilizing the aquifer is to increase spring flows and

reach gains to the Snake River system. An increased surface water supply will increase Reclamation's ability to provide flow augmentation water as part of the Nez Perce Agreement to help the recovery of salmon in the Columbia River basin.

1.4.4. Evaluation Criterion D: Water Marketing (12 points)

No active water market currently exists to address exchange mechanisms related to reduction elements of the Agreement, however, it is likely a water market specific to the Agreement will be developed in the future as part of the Agreement implementation. Conceptually, a water market as it relates to the Agreement has been discussed, though no water market plans have been finalized. The concept is that each ground water district, and in turn, each individual within the district, is responsible for their proportionate share of the 240,000 acre-feet reduction requirement. If the individual, or the district, is able to reduce beyond what was required, that reduction credit could be marketed to either users within the district, or to other districts party to the Agreement. Accurate flow measurements will be critical in implementation of this future water market.

It should be noted that a separate water market, the Idaho Water Supply Bank, already exists in Idaho for water right leasing transactions. The purpose of the Idaho Water Supply Bank is to encourage the highest beneficial use of water, and to provide a source of adequate water supplies to benefit new and supplemental water uses. The Bank is operated by the Idaho Water Resource Board (IWRB). The installation of measurement devices will help with future Idaho Water Supply Bank transactions on the ESPA by ensuring these transactions align with historical water use and authorized water right rates of diversion.

1.4.5. Evaluation Criterion E: Other Contributions to Water Supply Sustainability (14 points)

1.4.5.1. Subcriterion No. E.2: Expediting Future On-Farm Irrigation Improvements

Installation of flow meters provides many opportunities for on-farm irrigation improvements in the future. The flow meter offers the individual user a tool to track water usage on a real-time basis, and to more thoroughly gain an understanding of water requirements. All flow meters installed will be capable of being connected to telemetry in the future, providing the individual user even more opportunity to manage his or her water supply. Technology continues to improve to maximize usage efficiency, such as variable rate irrigation systems, remote pivot controls, and variable frequency drive pumps. By understanding exactly how much water is being used, future improvements will be able to maximize the usage of a limited water supply. In addition, the ability to accurately measure flow rate will allow irrigators to immediately identify pumping inefficiencies. Elimination of pumping inefficiencies

(through pump or motor rebuild/replacements or other actions) will result in significant energy savings.

1.4.5.2. Subcriterion No. E.3: Other Water Supply Sustainability Benefits

Many additional benefits to water supply sustainability will be seen through the installation of flow meters and the water savings associated with those installations. Examples include the following:

1. By reducing ground water diversions by 240,000 Acre-Feet annually, the declining trend of the ESPA is expected to stabilize and reverse. Surface water supplies will benefit from increased reach gains to the Snake River. Ground water users will ultimately have a more reliable supply that is secure from curtailment or litigation.
2. Drought has exacerbated the conflict between junior ground water users and senior ground users by contributing to further declines in the ESPA. The ESPA relies on precipitation for replenishment. Historically, flood irrigation practices helped to build up water levels in the aquifer, but with more efficient irrigation practices, this source of inflow to the aquifer has become limited. Instead, the aquifer now relies more on precipitation and managed aquifer recharge for replenishment. During drought, neither of these sources provide enough water to keep up with the aquifer withdrawals, creating a negative aquifer balance. Flow meter measurements will allow the irrigator to more tightly manage available water supply. By meeting the terms of the Settlement Agreement (including the installation of flow meters as proposed herein), ground water users will be protected from curtailment during drought years. Increased aquifer levels will improve spring flows and Snake River reach gains which will improve water supply for senior surface water diverters.

   BJGWD lies mainly within Bonneville County and Jefferson County in Idaho. Since the spring of 2012, all or portions of Bonneville and Jefferson Counties have been under one or more categories of drought as described by the United States Drought Monitor (D0 to D4). Currently, approximately 56% of Bonneville County falls into category D0 (abnormally dry), while 18% of Jefferson County falls into D0, 41% into D1 (Moderate Drought) and 40% into D2 (Severe Drought). See Figure 12.

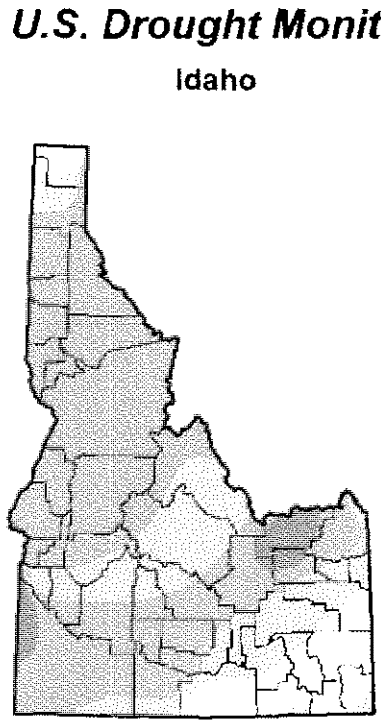

Figure 12. U.S. Drought Monitor Idaho

3. This project will address the specific concern of the ground water users adhering to the IGWA-SWC Agreement which requires 240,000 acre-feet of reduction to ground water withdrawals to ultimately increase the surface water supply to the senior surface water users. To accurately account for these reductions, flow meters are necessary.
4. Ground water supplies have been over allocated to a point that they are not sustainable without detrimental impacts to springs and Snake River water users. In addition to irrigation shortages, the ESPA provides drinking water to nearly 300,000 residents of eastern Idaho. Future population growth depends on a sustainable water supply. With metering and implementation of the required reductions, competition for water supplies can be more tightly managed.
5. If reductions required by the Agreement are not implemented, an interruption to the water supply for hundreds of thousands of acres of irrigated agriculture is in jeopardy through continued water delivery calls. Without the Agreement, water calls will vary from year to year, adding additional uncertainty.
6. Increasing water levels in the ESPA will increase reach gains to the Snake River, increasing year-round base flows which in turn will create additional water availability to fill Shoshone-Bannock Tribal irrigation water rights and storage rights, along with providing Reclamation with a

greater ability to supply flow augmentation as required by the Nez Perce Agreement.

7. The surface water and ground water entities have been parties to water delivery call litigation for many years. This is a historic achievement to have the opposing parties working together to try and reverse the declining trend of the ESPA. Widespread support for this project can be evidenced by the letters of support included with this proposal in Appendix G.
8. Installation of flow meters will help to avoid additional conflict and litigation in the future. Figure 13 below shows the frequency of delivery calls compared to declining storage in the ESPA.

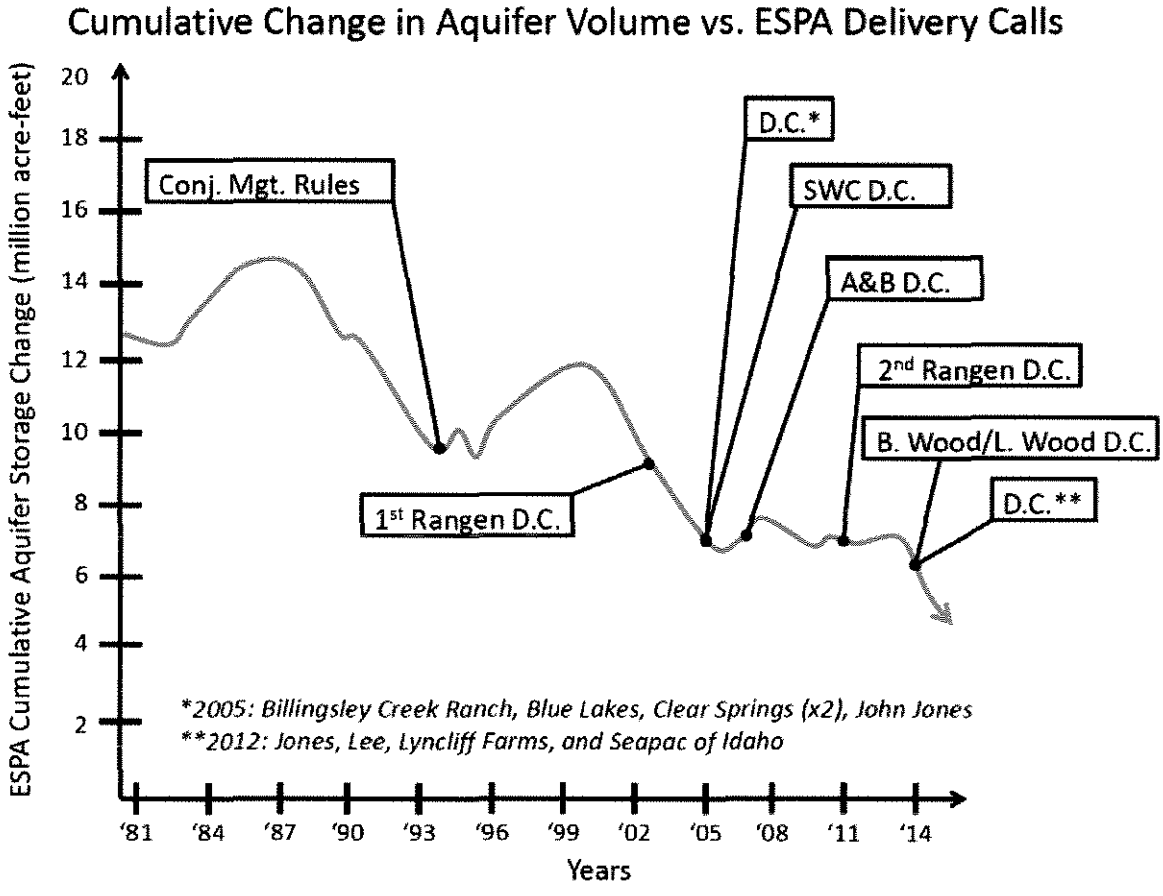

Figure 13. Change in Aquifer vs. ESPA Delivery Calls

9. This project will provide others involved in the Agreement an example of installation of flow meters, and will allow them to see how flow meters can increase management of a water supply.

1.4.6. Evaluation Criterion F: Implementation and Results (10 points)

1.4.6.1. Subcriterion No. F.1: Project Planning

BJGWD will be required to reduce a portion of the 240,000 acre-feet annual reduction amount attributed to the ground water users of the ESPA. BJGWD's share is approximately 18,000 acre-feet. This will be required starting with the 2016 irrigation season. Accurate flow measurement provided by flow meters will be essential during implementation.

1.4.6.2. Subcriterion No. F.2: Readiness to Proceed

BJGWD is committed to providing matching funds as outlined in this proposal. All ground water diversions will be required to install flowmeters prior to the 2018 irrigation season. It is understood that grant awardees will be notified in approximately June 2016, with grant funding occurring Fall of 2016. Typical lead times for flow meters range from 0 (on the shelf) to 6 weeks. It should be noted that flow meter suppliers in the area are aware of the flow meter installation requirements outlined in the Agreement, and as such, have been preparing for the increase in demand by increasing flow meter supplies on hand. Once the grant award is made, individual users within the District will begin the process of ordering flow meters and scheduling installs with local dealers and contractors to be ready for installations beginning shortly after grant funding occurs.

It is not anticipated that any permits will be required for this project. Flowmeter installations are completed by irrigation dealers and contractors regularly.

1.4.6.3. Subcriterion No. F.3: Performance Measures

Performance measures have been described in the Performance Measures section of this proposal.

1.4.6.4. Subcriterion No. F.4: Reasonableness of Costs

As shown in the Budget section of this grant proposal, the total cost of the project is $658,786. As explained in the Quantifiable Water Savings section and as shown in Table 2, the estimated water savings attributed to the flowmeters proposed as part of this grant is 9,211 acre-feet. The flow meters identified in this proposal are estimated to have a life of 15 years. Reasonableness of costs therefore is as follows:

$$\frac{Total\ Project\ Cost}{Acre\text{-}Feet\ Conserved\ x\ Improvement\ Life} = \frac{\$658{,}786}{9{,}211\ AF\ X\ 15\ Years} = \$4.77/AF$$

1.4.7. Evaluation Criterion G: Additional Non-Federal Funding (4 points)

As shown in the Budget section of this grant proposal, the total cost of the project is $658,786. The non-federal share of this cost is $362,332. The non-Federal share is therefore:

$$\frac{Non-Federal\ Funding}{Total\ Project\ Cost} = \frac{\$362{,}332}{\$658{,}786} = 55\%$$

1.4.8. Evaluation Criterion H: Connection to Reclamation Project Activites (4 points)

Reclamation is highly involved with water operations in the Upper Snake River and Eastern Snake River Plain. Reclamation is responsible for three major projects in the Upper Snake River: Minidoka Project, Ririe Project, and Palisades Project.

The SWC, party to the agreement, consists of surface water canals in the Magic Valley area whose canals were constructed by Reclamation as part of the Minidoka Project, or are canals constructed under the Carey Act that became spaceholders in Reclamation's Minidoka Project reservoirs. The Minidoka Project consists of five of the nine Upper Snake River reservoirs (Minidoka Dam, American Falls Dam, Island Park Dam, Grassy Lake Dam, and Jackson Lake Dam) with a total storage capacity of more than 2.7 million acre-feet. The Minidoka project reservoirs store flow of the Snake River system for later irrigation use, electricity production, and flood control. The reservoirs also provide fish and wildlife habitat and recreation opportunities. It is estimated the project contributes to $622 million of irrigated crops, $342 million in livestock, $5.6 million in power generation, and $8.8 million in flood damage presented on average each year (United States Bureau of Reclamation, 2010). The Minidoka Project also consists of many ground water wells.

The Palisades Project consists of the Palisades Reservoir with a storage capacity of 1.2 million acre-feet. The Palisades Project facilities store flow of the Snake River system for later irrigation use during dry years. It also helps to reduce flood damages, produces electricity, and provides fish and wildlife habitat and recreation opportunities. It is estimated the project contributes $575 million to irrigated crops, $314 million to livestock, $27 million in power generation, and $18 million in flood damage prevention on an average year (United States Bureau of Reclamation, 2010).

The Ririe Project consists of Ririe Reservoir with a storage capacity of 80,000 acre-feet. Ririe Reservoir was a critical component to settling the 1990 Fort Hall Indian Water Rights Agreement, and storage water from Ririe continues today to mitigate surface water users of the Upper Snake for the effects of that Agreement.

Reclamation is also responsible for providing flow augmentation water as part of the Nez Perce Agreement. Reclamation has access for up to 205,000 acre-feet of flow augmentation water from the Upper Snake River system.

With the installation of flow meters to help with implementation of the IGWA-SWC Agreement, the ultimate goal is to stabilize and reverse the declining trend of the ESPA. The anticipated effect of stabilizing the aquifer is to increase spring flows and reach gains to the Snake River system, which in turn will help to fill Reclamation reservoirs.

1.5. Performance Measures

1.5.1. Performance Measure No. A: Project with Quantifiable Water Savings

1.5.1.1. Performance Measure No. A.2: Measuring Devices – b. Irrigation Metering

As previously described in this proposal, and as shown in the Budget section, 120 ground water wells will be measured using high-precision magnetic flow meter devices installed on the discharge piping of the wells. The installed measuring devices will be used to provide the following benefits:

1. Water diversion accountability and transparency;
2. Accurate measurement for annual reporting of water usage to the district will provide a basis for fair and accurate determination of individual compliance with Agreement requirements;
3. Reduction to district staff travel time and expenses for historical PCC water measurement methods;
4. Flow meter devices provide an opportunity in which other technologies can be potentially implemented in the future for water management and diversion system enhancements, such as telemetry installation for real time data collection of well usage.

Pre-project estimation of baseline data:

Pre-project diversion data for ground water wells within the BJGWD are based on the average of the 2010 to 2014 historical measurement data, which includes PCC measurement records and flow meter measurements where applicable. This data is identified in the Water Conservation Evaluation Criterion A section of this proposal. Pre-project diversions for the BJGWD are estimated to be 143,880 acre-feet.

Post-project benefits will be measured based on the following methods:

1. Compare pre-project baseline flow measurements and estimates with actual post-project measured data; and
2. Demonstrate, through annual ground water district reporting, that diversions are limited to authorized rates of diversion as described in the Agreement and District reduction plans.

1.5.2. Performance Measure No. B: Project with Quantifiable Energy Savings

1.5.2.1. Performance Measure No. B.2: Increasing Energy Efficiency in Water Management

The reduction of ground water withdrawals coupled with the goal of increasing water levels in the aquifer will both work to decrease energy usage of ground water users throughout the ESPA.

Pre-project estimation of baseline data:

Pre-project baseline data consists of the historical usage amounts shown in Table 2 and the pre-project aquifer levels in the 19 Sentinel wells shown in Figure 11.

Post-project benefits will be measured based on the following methods:

1. Compare pre-project baseline District usage data shown in Table 2 with actual post-project measured data. The energy savings from pumping reductions can be estimated based on the actual pumping reduction amounts; and
2. Compare pre-project aquifer levels shown in Figure 11 with actual post-project measured aquifer levels to estimate the rise in aquifer level attributed to the successful implementation of the Agreement. The energy savings from increases in aquifer levels can be estimated based on the actual increase in aquifer level and actual post-project flow measurement data.

1.5.3. Performance Measure No. C: Projects that Benefit Endangered Species and/or Critical Habitat

With the installation of flow meters to help with implementation of the IGWA-SWC Agreement, the ultimate goal is to stabilize and reverse the declining trend of the ESPA. The anticipated effect of stabilizing the aquifer is to increase spring flows and reach gains to the Snake River system. It is anticipated that the 240,000 acre-feet reduction to ground water pumping required by the Agreement will increase stream flows in the lower Snake River by approximately 65 to 100 cfs (see Figure 10). An increased surface water supply will increase Reclamation's ability to provide flow augmentation water as part of the Nez Perce Agreement to help the recovery of salmon in the Columbia River basin.

Pre-project estimation of baseline data:

Determinations of reach gains and flow rates at different points along the Snake River are currently made by the Idaho Department of Water Resources, utilizing many data sets such as river and streamflow information from the United States Geological Survey (USGS), diversion data from Water Districts along the Snake River, and reservoir data from Reclamation that is collected on a routine basis.

Post-project benefits will be measured based on the following methods:

1. Implementation of the Agreement and measured reductions in groundwater pumping will increase stream flows as shown by ground water modeling (see Figure 10 for one such example of increases to reach gains due to implementation of the Agreement). The ESPAM2.1 model can be used to calculate the reach gain benefit based on implementation of the Agreement elements.

1.5.4. Performance Measure No. D: Projects that Establish a Water Market

No active water market currently exists to address exchange mechanisms related to reduction elements of the Agreement, however, it is likely a water market will be developed in the future as part of the Agreement implementation. Accurate flow measurements will be critical in implementation of the water market.

Pre-project estimation of baseline data:

No active water market exists to address reduction elements of the Agreement.

Post-project benefits will be measured based on the following methods:

1. Development of a water bank which is anticipated to occur in the future. Transactions of the water market can be quantified once the water market is established.

1.5.5. Performance Measure No. E: Other Contributions to Water Sustainability

Installation of flow meters is a critical component of the Agreement and is necessary for continued cooperation and collaboration between the surface water users and ground water users to prevent additional conflicts in the future that have the potential to interrupt water supplies in the ESPA. This can be measured by the number of flow meter installations that occur in BJGWD.

Pre-project estimation of baseline data:

BJGWD currently has 4 flow meters installed.

Post-project benefits will be measured based on the following methods:

1. Confirming the 120 flow meter installations occur as proposed as part of this grant.

2. Environmental and Cultural Resources Compliance

BJGWD does not anticipate any probable environmental or cultural impacts associated with this project. Water measurement devices are frequently installed on well pump systems and there have been no known impacts associated with those tasks. Nevertheless, we have included an environmental compliance item in our

budget proposal that is equal to 5% of anticipated total project costs (approximately $31,370). It is anticipated that if the full amount of this budget item is not necessary, additional flow meters would be purchased and installed with the remaining budget amount.

There are 120 ground water irrigation wells proposed for flow meter installations in this grant proposal. All of the wells are located within BJGWD. This budget proposal anticipates that the installations will occur in close proximity to the well head on the pump discharge piping. The installations will generally occur on 8-inch, 10-inch, and 12-inch discharge piping located on privately-owned lands.

It is not anticipated that construction associated with these projects will affect the air, water, or animal habitat in the project area. The applicant is not aware of any species listed, or proposed to be listed, as a Federal threatened or endangered species, or of designated critical habitat in the individual project areas. There are no known wetlands or other surface waters inside the individual project boundaries that potentially fall under Clean Water Act (CWA) jurisdiction. Installation of measurement devices will involve cutting pipe and inserting flow meter devices into the well pump discharge piping.

The delivery systems for the project area were originally constructed between 1930 and 1990 according to a review of the associated water right priority dates. A small portion of the lands were developed prior to 1950, however, the bulk of these lands were developed for irrigation in the period between 1950 and 1990. The applicant is not aware of any structures or buildings that are listed or eligible for listing on the national register of historic places that would be impacted by these flowmeter installations.

The applicant is not aware of any archaeological sites in the proposed project area. It is not anticipated that this project will have any impact on low income or minority plot populations. This project will not limit access to any known Indian sacred sites, or result in any impacts to tribal lands. This project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species and the project area.

3. Required Permits or Approvals

No permits or approvals are expected to be needed to complete this work.

Idaho Statutes

Printer Friendly Version

TITLE 42
IRRIGATION AND DRAINAGE -- WATER RIGHTS AND RECLAMATION

CHAPTER 52
GROUND WATER DISTRICTS

42-5224. POWERS AND DUTIES OF BOARD OF DIRECTORS. The board shall, in addition to any other powers and duties provided in this chapter, and provided that nothing in this chapter shall abrogate or impair the right of any person to take any action necessary to acquire, protect, challenge or defend any water right, have the following powers and duties:

(1) To acquire, and/or construct, operate, control or use by appropriation, grant, purchase, bequest, devise, contract or lease works or facilities, water rights, water permits or licenses, well-drilling permits, wells, pipelines, ditches and any other real and personal property (including easements and rights-of-way) or contract entitlement within or without the district necessary or convenient to fully exercise its powers;

(2) To sell, lease, encumber, alienate, or otherwise dispose of works or facilities, water, water rights, wells, pipelines, ditches, reservoirs, recharge facilities, and any other real and personal property owned by the district within or without its boundaries, and to incur indebtedness on behalf of the district as specified in this chapter;

(3) To enter into contracts and agreements, cooperative and otherwise, including contracts with the United States of America and any of its agencies or instrumentalities, and tribes, and contracts with corporations, public or private, municipalities, or governmental subdivisions necessary or convenient to fully exercise its powers;

(4) To hire and retain agents, employees, engineers, hydrologists, geologists, and attorneys as shall be necessary and convenient to transact the district's business and to represent the district's interests;

(5) To levy assessments for the operation of the district and its programs;

(6) To represent district members, with respect to their individual water rights, in general water rights adjudications and other legal and administrative proceedings or before political bodies, provided that the board may levy assessments for these matters against only those members who have given written consent for the representation;

(7) To represent district members in proceedings or meetings of a water district established by the director of the department notwithstanding any provision to the contrary in chapter 6, title 42, Idaho Code. Provided however, that the board shall not be authorized to cast a vote in any proceeding or meeting of a water district established pursuant to chapter 6, title 42, Idaho Code, on behalf of any district member who has, prior to such proceeding or meeting, given written notice to the board and to the water district that such district member intends to vote on his own behalf, or on behalf of any district member who attends such meeting or proceeding and intends to vote on his own behalf. The board shall provide a verified list of the water rights that it represents at any water district proceeding or meeting to the chairman of the water district proceeding or meeting;

(8) To appropriate, develop, store, and transport water within the state;

(9) To acquire stock in canal companies, water companies, and water users' associations;

(10) To invest any surplus money in the district treasury pursuant to the public depository law as contained in chapter 1, title 57, Idaho Code;

(11) To develop, maintain, operate and implement mitigation plans designed to mitigate any material injury caused by ground water use within the district upon senior water uses within and/or without the district;

(12) To finance the repair or abandonment of wells in the ground water district which have experienced or are experiencing declines in water level or water pressures because of reasons including, but not limited to, flow, leakage, and waste from improper construction, maintenance, and operation of wells;

(13) To have and exercise the power of eminent domain in the manner provided by law for the condemnation of private property for easements, rights-of-way, and other rights of access to property necessary to the exercise of the mitigation powers herein granted, both within and without the district;

(14) To sue and be sued, and be a party to suits, actions and proceedings;

(15) To enter into joint powers agreements and/or memoranda of understanding with other districts, governmental or quasi-public entities;

(16) To develop and acquire water rights for, and operate, aquifer storage or recharge projects;

(17) To monitor, measure, study, and implement programs in the interests of the district's members regarding the protection of ground water diversions, depth of water in wells, aquifer water levels and characteristics;

(18) To adopt and amend bylaws not in conflict with the constitution and laws of the state for carrying on the business, objects and affairs of the board and of the district and to establish a fiscal year;

(19) To enter upon land to make surveys, locate district property, works, or facilities, and to otherwise conduct the affairs of the district;

(20) To make, record and report annually to the director sufficient measurements of diversions and water levels of district members to allow the district to be excluded from any water measurements district created pursuant to sections 42-705 through 42-715, Idaho Code;

(21) To manage and conduct the affairs of the district and to have and exercise all rights and powers necessary or incidental to or implied from the specific powers granted herein. Such specific powers shall not be considered as a limitation upon any power necessary or appropriate to carry out the purposes and intent of this chapter.

History:

[42-5224, added 1995, ch. 290, sec. 1, p. 993; am. 1996, ch. 298, sec. 8, p. 984; am. 2003, ch. 137, sec. 1, p. 400; am. 2005, ch. 367, sec. 10, p. 1161.]

ORIGINAL

SETTLEMENT AGREEMENT ENTERED INTO JUNE 30, 2015 BETWEEN PARTICIPATING MEMBERS OF THE SURFACE WATER COALITION[1] AND PARTICIPATING MEMBERS OF THE IDAHO GROUND WATER APPROPRIATORS, INC.[2]

IN SETTLEMENT OF LITIGATION INVOLVING THE DISTRIBUTION OF WATER TO THE MEMBERS OF THE SURFACE WATER COALITION, THE PARTIES AGREE AS FOLLOWS:

1. **Objectives.**
   a. Mitigate for material injury to senior surface water rights that rely upon natural flow in the Near Blackfoot to Milner reaches to provide part of the water supply for the senior surface water rights.
   b. Provide "safe harbor" from curtailment to members of ground water districts and irrigation districts that divert ground water from the Eastern Snake Plain Aquifer (ESPA) for the term of the Settlement Agreement and other ground water users that agree to the terms of this Settlement Agreement.
   c. Minimize economic impact on individual water users and the state economy arising from water supply shortages.
   d. Increase reliability and enforcement of water use, measurement, and reporting across the Eastern Snake Plain.
   e. Increase compliance with all elements and conditions of all water rights and increase enforcement when there is not compliance.
   f. Develop an adaptive groundwater management plan to stabilize and enhance ESPA levels to meet existing water right needs.

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[1] The Surface Water Coalition members ("SWC") are A&B Irrigation District (A&B), American Falls Reservoir District No. 2 (AFRD2), Burley Irrigation District (BID), Milner Irrigation District (Milner), Minidoka Irrigation District (MID), North Side Canal Company (NSCC), and Twin Falls Canal Company (TFCC). The acronym "SWC" in the Settlement Agreement is used for convenience to refer to all members of the Surface Water Coalition who are the actual parties to this Settlement Agreement.

[2] The Idaho Ground Water Appropriators, Inc. ("IGWA") are Aberdeen-American Falls Ground Water District, Bingham Ground Water District, Bonneville-Jefferson Ground Water District, Carey Valley Ground Water District, Jefferson Clark Ground Water District, Madison Ground Water District, Magic Valley Ground Water District, North Snake Ground Water District, Southwest Irrigation District, and Fremont-Madison Irrigation District, Anheuser-Busch, United Water, Glambia Cheese, City of Blackfoot, City of American Falls, City of Jerome, City of Rupert, City of Heyburn, City of Paul, City of Chubbuck, and City of Hazelton. The acronym "IGWA" in the Settlement Agreement is used for convenience to refer to all members of the Idaho Ground Water Appropriators, Inc. who are the actual parties to this Settlement Agreement.

2. **Near Term Practices.**
   a. For 2015 IGWA on behalf of its member districts will acquire a minimum of 110,000 ac-ft for assignment as described below:
      i. 75,000 ac-ft of private leased storage water shall be delivered to SWC;
      ii. 15,000 ac-ft of additional private leased storage water shall be delivered to SWC within 21 days following the date of allocation;
      iii. 20,000 ac-ft of common pool water shall be obtained by IGWA through a TFCC application to the common pool and delivered to SWC within 21 days following the date of allocation; and
      iv. Secure as much additional water as possible to be dedicated to on-going conversion projects at a cost not to exceed $1.1 million, the cost of which will be paid for by IGWA and/or the converting members.
   b. The parties stipulate the director rescind the April 16 As-Applied Order and stay the April 16 3rd Amended Methodology Order, and preserve all pending rights and proceedings.
   c. "Part a" above shall satisfy all 2015 "in-season" mitigation obligations to the SWC.
   d. This Settlement Agreement is conditional upon approval and submission by the respective boards of the Idaho Ground Water Appropriators, Inc. ("IGWA") and the Surface Water Coalition ("SWC") to the Director by August 1.
   e. If the Settlement Agreement is not approved and submitted by August 1 the methodology order shall be reinstated and implemented for the remainder of the irrigation season.
   f. Parties will work to identify and pass legislative changes needed to support the objectives of this Settlement Agreement, including, development of legislation memorializing conditions of the ESPA, obligations of the parties, and ground water level goal and benchmarks identified herein.

3. **Long Term Practices, Commencing 2016.**
   a. *Consumptive Use Volume Reduction.*
      i. Total ground water diversion shall be reduced by 240,000 ac-ft annually.
      ii. Each Ground Water and Irrigation District with members pumping from the ESPA shall be responsible for reducing their proportionate share of the total annual ground water reduction or in conducting an equivalent private recharge activity. Private recharge activities cannot rely on the Water District 01 common Rental Pool or credits acquired from third parties, unless otherwise agreed to by the parties.
   b. *Annual storage water delivery.*
      i. IGWA will provide 50,000 ac-ft of storage water through private lease(s) of water from the Upper Snake Reservoir system, delivered to SWC 21 days after the date of allocation, for use to the extent needed to meet irrigation

requirements. Any excess storage water will be used for targeted conversions and recharge as determined by SWC and IGWA.

ii. IGWA shall use its best efforts to continue existing conversions in Water Districts 130 and 140.

c. *Irrigation season reduction.*

Ground water users will not irrigate sooner than April 1 or later than October 31.

d. *Mandatory Measurement Requirement.*

Installation of approved closed conduit flow meter on all remaining unmeasured and power consumption coefficient (PCC) measured ground water diversions will be completed by the beginning of the 2018 irrigation season. Measurement device installation will be phased in over three years, by ground water district, in a sequence determined by the parties. If an adequate measurement device is not installed by the beginning of the 2016 irrigation season, a cropping pattern methodology will be utilized until such measuring device is installed.

e. *Ground Water Level Goal and Benchmarks.*

i. Stabilize and ultimately reverse the trend of declining ground water levels and return ground water levels to a level equal to the average of the aquifer levels from 1991-2001. Utilize groundwater levels in mutually agreed upon wells with mutually agreed to calculation techniques to measure ground water levels. A preliminary list of 19 wells has been agreed to by the parties, recognizing that the list may be modified based on additional technical information.

ii. The following benchmarks shall be established:

- Stabilization of ground water levels at identified wells by April 2020, to 2015 ground water levels;
- Increase in ground water levels by April 2023 to a point half way between 2015 ground water levels and the ground water level goal; and
- Increase of ground water levels at identified wells by April 2026 to the ground water level goal.

iii. Develop a reliable method to measure reach gain trends in the Blackfoot to Milner reach within 10 years.

iv. When the ground water level goal is achieved for a five year rolling average, ground water diversion reductions may be reduced or removed, so long as the ground water level goal is sustained.

v. If any of the benchmarks, or the ground water level goal, is not achieved, adaptive measures will be identified and implemented per section 4 below.

f. *Recharge.*

Parties will support State sponsored managed recharge program of 250 KAF annual-average across the ESPA, consistent with the ESPA CAMP and the direction in HB

547. IGWA's contributions to the State sponsored recharge program will be targeted for infrastructure and operations above American Falls.

g. *NRCS Programs.*
Parties will support NRCS funded permanent water conservation programs.

h. *Conversions.*
IGWA will undertake additional targeted ground water to surface water conversions and/or fallow land projects above American Falls (target near Blackfoot area as preferred sites).

i. *Trust Water Rights.*
The parties will participate and support the State in initiating and conducting discussions regarding long-term disposition of trust water rights and whether trust water rights should be renewed or cancelled, or if certain uses of trust water rights should be renewed or cancelled.

j. *Transfer Processes.*
Parties agree to meet with the State and water users to discuss changes in transfer processes within or into the ESPA.

k. *Moratorium Designations.*
State will review and continue the present moratoriums on new applications within the ESPA, including the non-trust water area.

l. *IDWR Processes.*
Develop guidelines for water right applications, transfers and water supply bank transactions for consideration by the IDWR.

m. *Steering Committee.*
   i. The parties will establish a steering committee comprised of a representative of each signatory party and the State.
   ii. Steering committee will be formed on or before September 10, 2015 and will meet at least once annually.
   iii. The Steering Committee will develop an adaptive management plan for responding to changes in aquifer levels and reach gain trends, review progress on implementation and achieving benchmarks and the ground water goal.
   iv. A technical work group ("TWG") will be created to support the Steering Committee. The TWG will provide technical analysis to the Steering Committee, such as developing a better way to predict and measure reach gains and ground water levels, to assist with the on-going implementation and adaptive management of the Settlement Agreement.

4. **Adaptive Water Management Measures.**
   a. If any of the benchmarks or the ground water level goal is not met, additional recharge, consumptive use reductions, or other measures as recommended by the

Steering Committee shall be implemented by the participating ground water parties to meet the benchmarks or ground water level goal.

b. The SWC, IGWA and State recognize that even with full storage supplies, present (2015) reach gain levels in the Near Blackfoot to Milner reach (natural flows) are not sufficient to provide adequate and sustainable water supplies to the SWC.

5. **Safe Harbor.**
No ground water user participating in this Settlement Agreement will be subject to a delivery call by the SWC members as long as the provisions of the Settlement Agreement are being implemented.

6. **Non-participants.**
Any ground water user not participating in this Settlement Agreement or otherwise have another approved mitigation plan will be subject to administration.

7. **Term.**
This is a perpetual agreement.

8. **Binding Effect.**
This Agreement shall bind and inure to the benefit of the respective successors of the parties.

9. **Entire Agreement.**

This Agreement sets forth all understandings between the parties with respect to SWC delivery call. There are no other understandings, covenants, promises, agreements, conditions, either oral or written between the parties other than those contained herein. The parties expressly reserve all rights not settled by this Agreement.

10. **Effect of Headings.**
Headings appearing in this Agreement are inserted for convenience and reference and shall not be construed as interpretations of the text.

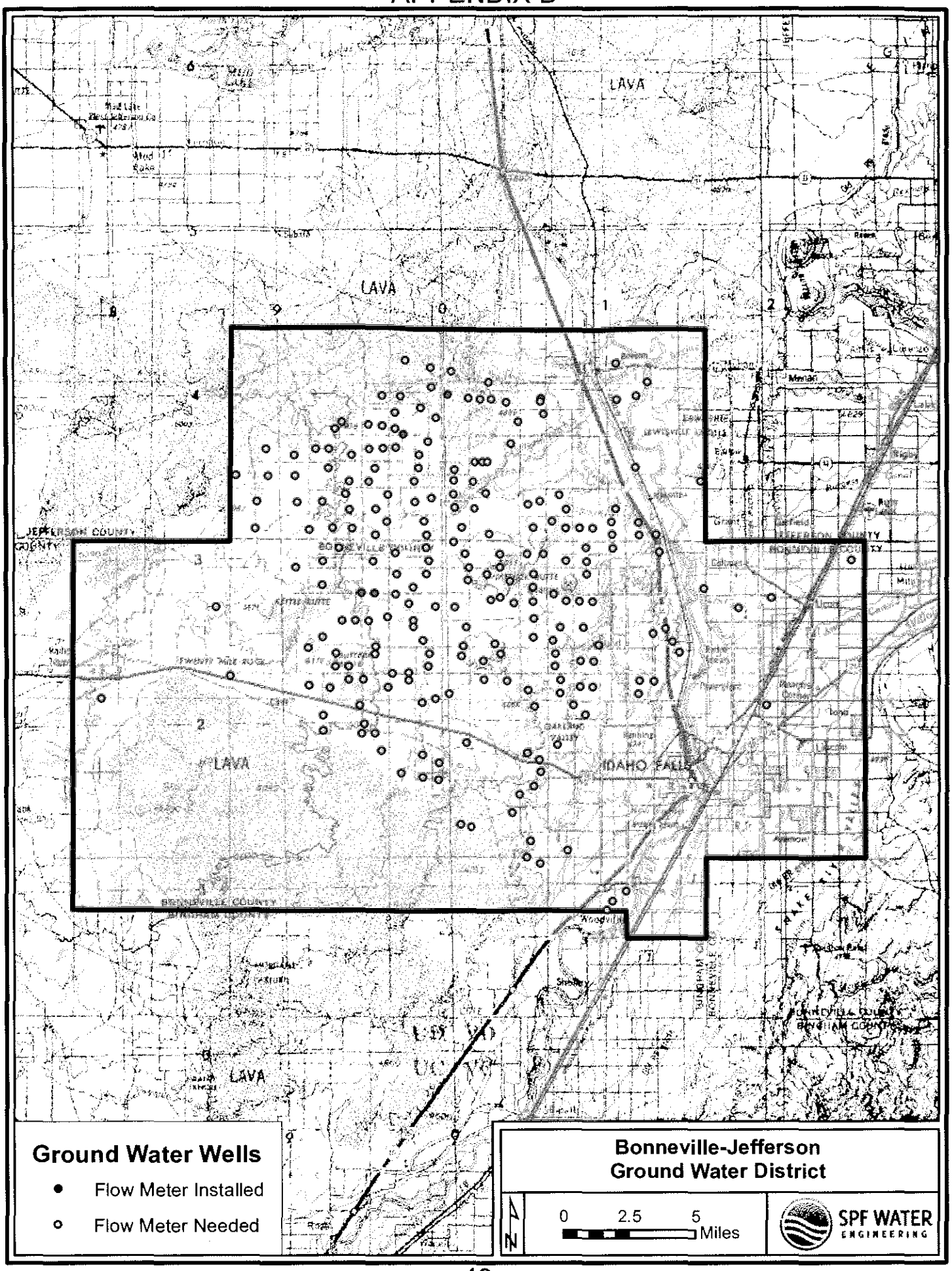
11. **Effective Date.**
This Agreement shall be binding and effective when the following events have occurred:
    a. This Agreement is approved and executed by the participating parties consistent with paragraph 2.e. above; and
    b. IGWA has assigned all of the storage water required by paragraph 2.a.i. , ii., and iii. to the SWC by July 8, 2015.

The parties have executed this Agreement on the date following their respective signatures.

IGWA-SWC Agreement
240,000 Acre-Feet Reduction Allocation

	AF/Yr	District % Total	AF Reduction	% Reduction
Aberdeen - American Falls GWD	262,102	13.7%	32,900	12.6%
Bingham GWD	270,975	14.2%	34,013	12.6%
Bonneville - Jefferson GWD	143,880	7.5%	18,060	12.6%
Carey Valley GWD	5,671	0.3%	712	12.6%
Jefferson - Clark GWD	348,750	18.2%	43,776	12.6%
Fremont-Madison ID	27,196	1.4%	3,414	12.6%
WD100	12,193	0.6%	1,530	12.6%
Madison GWD	4,102	0.2%	515	12.6%
Magic Valley GWD	260,446	13.6%	32,692	12.6%
A&B ID	174,735	9.1%	21,933	12.6%
North Snake GWD	182,249	9.5%	22,876	12.6%
Southwest ID	104,417	5.5%	13,107	12.6%
Non-Participant*	115,295	6.0%	14,472	12.6%
Total:	**1,912,011**	100.0%	**240,000**	12.6%

*Not participating in GWD, some still praticipating individually.


LAVA
LAVA
LAVA
LAVA
IDAHO FALLS
JEFFERSON COUNTY
BONNEVILLE COUNTY
Ground Water Wells
Flow Meter Installed
Flow Meter Needed
Bonneville-Jefferson
Ground Water District
0 2.5 5
Miles
SPF WATER
ENGINEERING

APPENDIX E

Version 2.7 updated 10-8-15

Idaho Department of Water Resources
List of Approved Closed Conduit Flow meters

The table below lists flow meters **that have been tested and approved by IDWR for use in closed conduit measurement applications where the installation configuration and application meet manufacturer's requirements for the selected model.** These approved flow meters were subject to testing requirements outlined by IDWR and conducted by staff from Utah State's NIST[1] traceable lab in Logan Utah and performed at or above IDWR minimum acceptable standards for accuracy when installed in piping distances that met or exceeded minimum straight run piping requirements specified by IDWR. The approved list is current as of this printing, but may change as additional models and manufacturers undergo testing and approval. The current version of these standards, including this list, is posted on the IDWR Internet site at the following URL:

http://idwr.idaho.gov/files/water_measurement/Approved_flow_meter_list.pdf

Note that not all models are appropriate for every application. Pipe size, available straight pipe lengths, water chemistry, pressure, velocity, environmental exposure, and power requirements are among the factors affecting whether a given meter will perform for a given application. Prior to selecting a meter, consult the manufacturer's installation requirements to assure they can be met.

Approved Full Profile Magnetic and Spooled Ultrasonic Flow Meters*

Manufacturer	Model/Specifications	Type	IDWR-accepted Pipe Applications (Nominal Pipe Size)
Siemens	SITRANS F M MAGFLO MAG 5100W w/ 5000 converter	Full profile Electro-Magnetic	1" to 78"
Siemens	SITRANS FM, MAGFLO 8000, model 7ME6880	Full profile Electro-Magnetic	1" to 48"
McCrometer	Ultra Mag w/ M-Series Converter	Full profile Electro-Magnetic	2" to 48"
Badger	M2000 Amplifier w/ M2000 Detector	Full profile Electro-Magnetic	1/4" to 54"
Khrone	Enviromag 2000 w/ Optiflux 2000 F/G	Full profile Electro-Magnetic	3/8" to 80"
Rosemount	8705 w/ 8732E transmitter	Full profile Electro-Magnetic	1/2" to 36"
Seametrics†	AG 2000†	Full profile Electro-Magnetic†	4" to 10"

[1] NIST - National Institute of Standards and Technology.

†Seametrics AG2000 must be installed with AC power supply

Approved Full Profile Magnetic and Spooled Ultrasonic Flow Meters (Cont)*			
Manufacturer	**Model/Specifications**	**Type**	**IDWR-accepted Pipe Applications (Nominal Pipe Size)**
Burkert	8054/8055 w/ Magflow transmitter	Full profile Electro-Magnetic	1" to 80"
Sparling	Tiger Mag W/FM6561051110 Converter	Full profile Electro-Magnetic	3/8" to 48"
Sensus	IPerl	Full profile Electro-Magnetic	5/8"-1"
Master Meter	Octave	Full Profile Ultrasonic	2"-10"
Badger	E-Series	Full Profile Ultrasonic	3/4"-2"
Netafim	Octave	Full Profile Ultrasonic	2"-12"
Growsmart by Lindsay	IM3000	Full Profile Electro-Magnetic	2"-12"
ABB	WaterMaster	Full Profile Electro-Magnetic	3/8" to 96"
***Installations of all approved full profile flow meters require a minimum of 3 diameters upstream and 2 diameters downstream of straight unobstructed pipe.**			

Well I.D.	Lat	Long	Data Start Year	1981-2014 Depth to Water					Agency*	Remarks / Current Monitoring Scheme
				Mean	Median	Max	Min	Std dev		
03N37E12BDB1	-112.056	43.6071	1976	**134.13**	133.86	138	130	2.4	USGS	Manual readings monthly
02N37E02ABA1	-112.069	43.5382	1977	**169.97**	168.08	177.72	163.9	4.27	USGS	Manual readings monthly
03S34E02BCC3	-112.454	43.1902	1980	**25.67**	25.6	30.12	20.53	2.73	USGS	Manual readings, odd months
03S33E25CCC1	-112.553	43.1255	1980	**38.32**	38.21	41.91	34.47	1.86	USBR/IDWR	USBR takes manual readings around the 20th of the odd months; IDWR has datalogger installed and reports daily data. USBR manual readings were used to calculate the well index. There is a disparity between the USBR and IDWR data.
05S31E27ABA1	-112.815	42.9652	1960	**24.21**	23.97	28.25	18.96	2.27	USGS/IDWR	Datalogger installed, daily data reported since 4/29/2010
08S28E01AAA2	-113.121	42.7618	1986	**230.97**	230.9	234.54	226.53	2.52	IDWR	Manual readings, even months
08S25E36DAA1	-113.474	42.6829	1977	**120.9**	120.88	134.39	108.98	7.37	USGS	Manual readings monthly
09S25E03CAC1	-113.526	42.6674	1977	**58.02**	58.11	70.92	45.69	7.25	USGS	Manual readings monthly
02N31E35DCC1	-112.787	43.4499	1960	**589.22**	588.47	594.27	582.56	3.5	USGS	Manual readings, approximately quarterly but recently sporadic
05S28E26BBD1	-113.162	42.9627	1979	**684.64**	684.21	689.79	678.53	3.14	IDWR	Manual readings, approximately quarterly but recently sporadic
06S29E15BBC1	-113.067	42.9027	1986	**415.38**	414.95	419.32	409.78	2.86	IDWR	Manual readings, approximately quarterly but recently sporadic
08S26E03DCC1	-113.401	42.7482	1981	**267.82**	267.66	282.24	253.2	8.72	USGS	Manual readings monthly
06S22E28CDD1	-113.845	42.8652	1986	**210.04**	210.21	222.69	194.65	8.11	IDWR	Manual readings, even months
01S30E15BCA1	-112.943	43.3386	1960	**717.19**	716.58	721.53	710.92	3.07	USGS	Manual readings, quarterly Jan, April, July, October
04S33E20CBB1	-112.634	43.0591	1981	**31.61**	31.61	33.38	29.13	0.92	USBR/IDWR	USBR takes manual readings around the 20th of the odd months; IDWR has datalogger installed and reports daily data. USBR manual readings were used to calculate the well index.
04S33E20CBB4	-112.634	43.0591	1981	**8.41**	8.11	11.89	4.67	1.95	USGS	Manual readings, odd months
07S26E14CCC1	-113.393	42.8071	1981	**322.2**	322.03	336.69	307.43	8.78	USGS	Manual readings monthly
10S21E28BCB1	-114.009	42.5291	1981	**325.12**	321.61	346.23	308.79	11.93	USGS	Manual readings monthly
09S25E23DBA1	-113.5	42.6255	1981	**148.44**	147.61	164.21	135.89	8.7	USGS	Manual readings monthly
05S25E22DAD1	-113.454	42.9699	1981	**507.97**	508.05	520.88	493.78	8.11	USGS	Manual readings, irregular, approximately twice per year

*Sean Vincent Confirmed IDWR monitors the 4 wells noted (in March or April not both) and that there is no intention of discontinued use (e-mail communication 6/30/2015)

[1]Access at Crystal well (05S28E26BBD1) can be limited during the March/April timeframe during high snowpack years when the roads are muddy (Vincent e-mail communication 6/30/2015)

[2]USGS sometimes has difficulty accessing the INL Brockie Lake well 05S25E22DAD1 (Vincent e-mail communication 6/30/2015)

[3]per an MOA with ASCC, all of the ASCC wells are ecuipped with IDWR-supplied transducers but canal company personnel collect the data (Vincent e-mail communication 6/30/2015)

Association of Idaho Cities
3100 South Vista, Suite 310, Boise, Idaho 83705
Telephone (208) 344-8594
Fax (208) 344-8677
www.idahocities.org

Bureau of Reclamation
Financial Assistance Management Branch
Attn: Ms. Janeen Koza
Mail Code 84-27852
P.O. Box 25007
Denver, CO 80225

Dear Ms. Koza,

The Association of Idaho Cities is a member owned nonprofit organization that provides training, technical assistance and advocacy for Idaho's 200 incorporated cities. I am pleased to submit this letter in support of the applications for FY 2016 WaterSMART Water and Energy Efficiency Grants by Aberdeen-American Falls Ground Water District and Bingham Ground Water District, Bonneville-Jefferson Ground Water District, and Jefferson Clark Ground Water District.

The grant funding will be used to purchase flowmeters to be installed in these districts, which will provide well owners a better understanding of their water use so they can more effectively manage their water supply, as well as improve energy efficiency through reduced pumping.

In October 2015, a historic settlement between the Surface Water Coalition and Idaho Ground Water Appropriators was signed that will require ground water users in the Eastern Snake Plain Aquifer (ESPA) to reduce pumping by 12.6% to reverse the decades long trend of declining aquifer levels. It is critically important to have accurate measurement of pumping to ensure that the terms of the agreement are met. Ensuring the long term sustainability of the ESPA is essential for the 44 cities that rely on the aquifer for water to satisfy domestic and industrial users.

I appreciate your consideration of this important project.

Seth Grigg
Executive Director
Association of Idaho Cities

IDAHO WATER RESOURCE BOARD

January 12, 2015

U.S. Bureau of Reclamation
Denver Federal Center
6th & Kipling, Bldg 67
Denver, CO 80225

RE: WaterSmart Grant Application – Letter of Support

Dear Bureau of Reclamation,

This letter is to express support for the WaterSmart Grant proposals from the Aberdeen-American Falls and Bingham Ground Water Districts, the Bonneville-Jefferson Ground Water District and the Jefferson-Clark Ground Water District. The purpose of these grant requests is to install flow meters on the remaining un-metered ground water wells within these districts.

These four ground water districts, together with other ground water districts on Idaho's Snake River Plain, are signatories to a monumental settlement agreement with the Surface Water Coalition. The Surface Water Coalition members are surface water canals in the Magic Valley area that rely, at least in part, on spring flows from the Eastern Snake Plain Aquifer feeding the Snake River for a portion of their water supply. The Surface Water Coalition members are canals constructed by Reclamation as part of the Minidoka Project, or are canals constructed under the Carey Act that became spaceholders in Reclamation's Minidoka Project reservoirs.

One of the provisions of the settlement agreement requires all remaining un-metered ground water wells from the Eastern Snake Plain Aquifer to have meters installed by 2018. Diversions from these un-metered wells have been estimated using power consumption; however, the accuracy of the power consumption method varies widely depending on a number of factors. The installation of flow meters should significantly increase the accuracy of ground water diversion measurement. This is important as the ground water districts collectively agreed to reduce their consumptive use of ground water by 240,000 acre-feet annually and accurate measurement is needed to ensure compliance with the settlement agreement.

The settlement agreement provides numerous benefits including achieving stabilization and recovery of the declining aquifer, as well as spring flows from the aquifer that feed the Snake River and provide numerous downstream benefits.

Please feel free to contact me with any questions.

Brian Patton, P.E.
Executive Officer

322 East Front Street, Boise, Idaho 83720 Tel: (208) 287-4800 Fax: (208) 287-6700

Surface Water Coalition

January 14, 2016

Via email only: lynn_tominaga@hotmail.com

Mr. Lynn Tominaga, Executive Director
Idaho Ground Water Appropriators, Inc.
P.O. Box 2624
Boise, Idaho 83701

U.S. Bureau of Reclamation
WaterSMART Program

Re: Letter of Support U.S.B.R. 2016 WaterSMART Grant Application

Dear Lynn & U.S. Bureau of Reclamation:

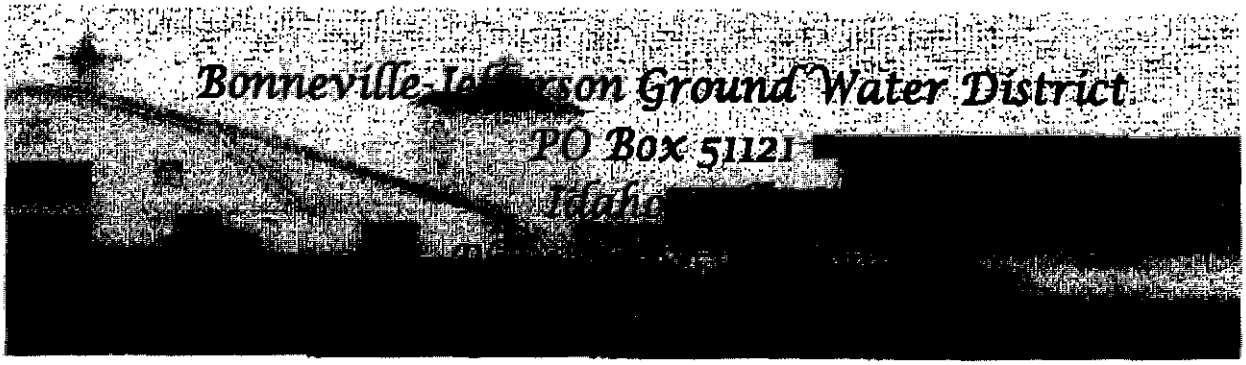
The Surface Water Coalition (SWC) is pleased to submit this letter in support of the Idaho Groundwater Appropriators, Inc.'s (IGWA) 2016 WaterSMART Grant application. The SWC and IGWA recently signed a long-term settlement agreement that seeks to sustain and enhance groundwater resources in the Eastern Snake Plain Aquifer (ESPA) through targeted water conservation efforts and voluntary groundwater use reductions. Specifically, IGWA's participating members have agreed to initially reduce groundwater pumping by 240,000 acre feet/year. It is our understanding that many IGWA members have not installed flow meters that may make verifying targeted reductions difficult. Although IGWA's participating members have agreed to install flow meters over the next 3 years, this vital water conservation effort can be more quickly and efficiently implemented with funding from the WaterSMART program.

The SWC strongly supports IGWA's efforts to reduce groundwater consumption. Our joint efforts will result in long-term stabilization and enhancement of water levels in the ESPA and a sustainable water source for over 2 million acres of surface and ground water irrigated farmland in southern and eastern Idaho for decades to come. To that end the SWC supports IGWA's 2016 WaterSMART application.

Yours Truly,

A&B Irrigation District
American Falls Reservoir District #2
Burley Irrigation District
Milner Irrigation District
Minidoka Irrigation District
North Side Canal Company
Twin Falls Canal Company

APPENDIX H



Appendix A: Ground Water District Draft Resolution
Before Bonneville Jefferson GWD (BJGWD)

IN THE MATTER OF THE PROPOSED WATERSMART APPLICATION TO USBOR FOR MEASUREMENT DEVICES IN BONNEVILLE JEFFERSON GWD

Whereas, the District 6th Court created Bonneville-Jefferson GWD on 1998 pursuant to Idaho Code 42-5202; and

Whereas, Bonneville Jefferson GWD is administrated within WD 120 created in 2006 under Idaho Code 42-604; and

Whereas, Bonneville Jefferson GWD signed a Negotiated Settlement Agreement Between GWDs and Surface Water Coalition October 1, 2015 which requires installation of water measuring devices; and

Whereas, BJGWD supports the installation of measurement devices in AAFGWD as evidenced by Policy 1H of the Idaho State Water Plan as adopted by the Idaho Water Resource Board in 2012 which states, "Quantification and measurement of Idaho's water supply and use is essential for sound water resource planning, management and administration," and

Whereas, BJGWD has an opportunity to assist land owners in WD 120 and apply for federal WaterSMART grants to offset costs to users; and

Whereas, the BJGWD expects the district to provide the remainder of the costs.

NOW, THEREFORE, BE IT RESOLVED that BJGWD authorizes application to the United States Bureau of Reclamation for a Water SMART grant for measurement devices and authorizes the Chairman to enter into an agreement with Bureau of Reclamation for the WaterSMART grant.

Dane Watkins (Chairman) 523-0800 Ralph Isom (Secretary) 522-0789 Wayne Jensen (Treasurer) 521-4001

APPENDIX H

NOW, THEREFORE, BE IT RESOLVED that the affected water users within BJGWD shall provide the remainder of the project costs, and there shall be no additional financial obligation other than the cost of staff time.

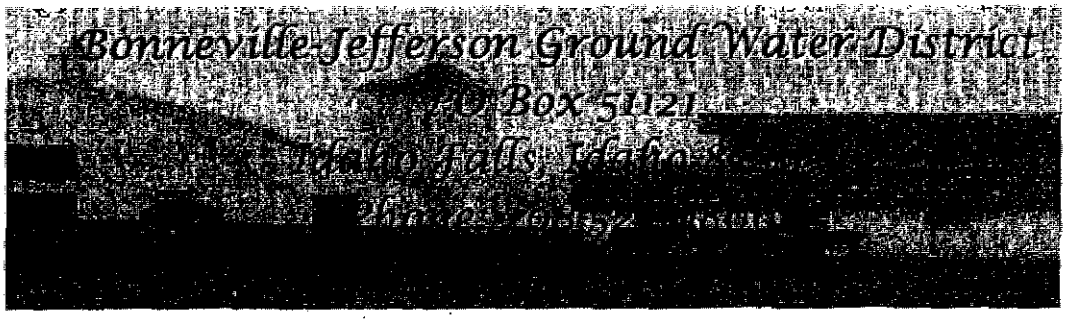
NOW, THEREFORE BE IT FURTHER RESOLVED that the WaterSMART grant fund will be deposited in Bonneville Jefferson GWD account until expended for the measurement devices in the district.

Dated this 15th day of January 2016

Dane Watkins, Chairman

Ralph Isom, Secretary

APPENDIX H



Bureau of Reclamation
Financial Assistance Management Branch

Attn. Ms. Jansen Koza

P.O. Box 2507

Denver, Colorado 80225

Re: Letter of Commitment -Bureau of Reclamation ("USBOR") WaterSMART Water and Energy Efficiency Grant, Funding A Water Diversion Measurement Devices

Dear Ms. Koza:

The Bonneville Jefferson Ground Water District (BJGWD) represents 465 number of water rigtht holders_XXXX 445) authorizing the diversion of water from the Eastern Snake River Aquifer within Water District 120, Shelley to Neeley Reach of the River, BJGWD understands that in making application to the U.S. Bureau of Reclamation (BOR) for a WaterSMART Grant on behalf of interested water entities and water right holders located within BJGWD. The grant application seeks assistance with acquisition and installation of Magnetic flow meters water diversion measuring devices and potential telemetry equipment.

BJGWD understands that the BOR WaterSMART grant requires at least a 50 percent cost share commitment from third party funding sources. BGWD is an interested party funding source and water user that will benefit from this grant. BGWD is committed to providing 55% of all costs associated with the acquisition and installation of measuring devices and potential telemetry equipment for those complex irrigations systems that are used to irrigate the 90,000 acres. BJGWD will fund its cost share requirement with in-kind contributions and cash as needed to complete the project.

BGWD estimates that the total cost for acquisition and installation of measuring and potential telemetry equipment for the diversions involved is approximately $657,000. With this letter, BJGWD is committing to providing approximately $361,625 of the total cost (55 percent) and will provide the necessary funds prior to or during the installation of each individual flow meter system within the approved grant period, which is anticipated to extend to approximately December 31, 2018. BJGWD will pay all of the costs up front for each individual metering

system installed on BJGWD diversions (both BOR's cost share and BJGWD cost share) provided that the USBOR approves the WaterSMART grant to the BJGWD (ii) BJGWD is reimbursed for the remaining 45 percent of the total cost of installing the metering systems (approximately $295,241)

BJGWD appreciates the opportunity to work with the Bureau of Reclamation as a party funding source for the Water District 120 WaterSMART grant.

Sincerely yours,

Chairman, BJGWD

Sec't.
Ralph Isom