



COLORADO WATER CONSERVATION BOARD

ALTERNATIVE AGRICULTURAL WATER TRANSFER METHODS COMPETITIVE GRANT PROGRAM

GRANT APPLICATION FORM



Grand Valley Water Bank Pilot Project
Colorado River Basin

Program/Project Name

River Basin Name

\$200,000

\$800,000

Amount of Funds Requested

Amount of Matching Funds

Instructions: This application form must be submitted in electronic format (Microsoft Word or Original PDF). The application can be emailed or a disc can be mailed to the address at the end of the application form. The Alternative Agricultural Water Transfer Methods Competitive Grant Program, Criteria and Guidelines can be found at <http://cwcb.state.co.us/LoansGrants/alternative-agricultural-water-transfer-methods-grants/Pages/main.aspx>. **The criteria and guidelines must be reviewed and followed when completing this application.** You may attach additional sheets as necessary to fully answer any question, or to provide additional information that you feel would be helpful in evaluating this application. Include with your application a cover letter summarizing your request for a grant. If you have difficulty with any part of the application, contact Craig Godbout of the Water Supply Planning Section (Colorado Water Conservation Board) for assistance, at (303) 866-3441 x3210 or email at craig.godbout@state.co.us. Generally, the applicant is also the prospective owner and sponsor of the proposed program/project. If this is not the case, contact Craig before completing this application.

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Part A. - Description of the Applicant(s) (Program/Project Sponsor);

1.	Applicant Name(s):	Grand Valley Water Users Association Mark Harris, General Manager		
	Mailing address:	1147 24 Road Grand Junction, CO 81505		
	Taxpayer ID#:	84-0402700	Email address:	mharris@gvwua.com
	Phone Numbers: Business:	(970) 242-5065		
	Home:			
	Fax:			

2. Person to contact regarding this application if different from above:

Name:	Aaron Derwingson; aderwingson@tnc.org ; (719) 850-0320
Position/Title	Colorado River Program Ag Coordinator

3. If the Contracting Entity is different then the Applicant, please describe the Contracting Entity here.

N/A

4. Provide a brief description of your organization. The applicant may be a public or private entity. Given the diverse range of potential applicants, not all of the following information may be relevant. Where applicable and relevant the description should include the following:

- a) Type of organization, official name, the year formed, and the statutes under which the entity was formed, a contact person and that person's position or title, address and phone number. For private entities, a copy of the Articles of Incorporation and By-laws should be appended to the application.**

The Grand Valley Water Users' Association (GVWUA) is a non-profit corporation formed in 1905 as part of the Bureau of Reclamation's Grand Valley Project. The GVWUA operates the Grand Valley Diversion Dam and the 55-mile long Government Highline Canal and 150 miles of piped and open laterals, providing irrigation water to approximately 23,340 acres of irrigated land.

Contact:

Mark Harris, General Manager
1147 24 Road Grand Junction, CO 81505
(970) 242-5065

The GVWUA's Articles of Incorporation and By-laws are included with this application in **Appendix A**.

- b) For waters suppliers, information regarding the number of customers, taps, service area, and current water usage, and future growth plans, water related facilities owned or used, funding/revenue sources (existing service charges, tap fees, share assessments, etc.), the number of members or shareholders and shares of stock outstanding or a description of other means of ownership.**

GVWUA currently delivers a full supply of water to 20,000-25,000 acres of agricultural and residential lands on the north side of the Colorado River, serving approximately 1,750 shareholders. GVWUA is responsible for the flow of water in its canal, in its laterals and through its headgates. All parts of the shareholder's delivery system (ditches, laterals, pipelines, pumps) beyond the GVWUA delivery point are the responsibility of the shareholder.

From 1970 to 2013, GVWUA diverted an average of 260,000 acre-feet/year from the Colorado River for use within its project boundaries. The Bureau of Reclamation's (USBR) land classifications determine the water allotments associated with individual parcels within GVWUA's boundaries. The water rights for the Project are tied to lands assessed as arable (Class 1). Water rights in the GVWUA have been allocated through "Subscription for Stock" agreements. The base allotment to Class 1 Association lands is 4 acre-feet/acre, measured at the GVWUA delivery point. Should additional water be available it can be delivered to Class 1 lands and paid for at the "Excess Rate". Water is provided to Project's lands from approximately April 1 through October 31 of each year.

The primary crops irrigated within GVWUA's boundary include alfalfa, corn grain, grass pasture and small grains. Other secondary crops with smaller acreages include dry beans, orchards, vegetables, grapes, and grass and sod farms.

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- c) **For other entities, background, organizational size, staffing and budget, and funding related to water that is relevant in determining whether the applicant has the ability to accomplish the program/project for which funding is sought.**

Not applicable.

- d) **A brief history of the Applicant(s).**

From the USBR's website on the Grand Valley Project:

(http://www.usbr.gov/projects/Project.jsp?proj_Name=Grand+Valley+Project)

“Soon after their arrival in the Grand Valley in 1881, settlers began work on ditches to irrigate lowlands adjacent to the north side of the Colorado River. By 1886, the Grand Valley Canal (not part of the Grand Valley Project) was completed and the canal system expanded to serve approximately 45,000 acres of land. From 1886 to 1902, several attempts were made by private interests to construct a canal to higher lands in the valley, but because of initial technical difficulties private investors were unwilling to back the project.

After passage of the Reclamation Act in 1902, an evaluation of the proposed Government Highline Canal, now a part of the Grand Valley Project, was requested by the local citizens. In 1905, the Grand Valley Water Users Association was organized to cooperate with the Reclamation Service in developing a project. After investigation, the Reclamation Service proposed a project consisting of a diversion dam and distribution canal to irrigate lands at higher valley levels than those being operated by private interests. A board of engineers approved feasibility of the project on December 15, 1908.

The Grand Valley Project was one of the projects examined and reported upon favorably by a board of Army Engineers in accordance with the act of June 25, 1910 (36 Stat. 835) and approved by the President on January 5, 1911. The project was constructed primarily for agricultural and power generation purposes.

The Reclamation Service was authorized by the Secretary of the Interior on September 23, 1912, to begin construction on one of the smaller tunnels. Irrigation was first provided June 29, 1915, at which time the entire project was less than 60 percent completed. Cooperative drainage work in the Grand Valley Drainage District was begun in March 1918.”

The Grand Valley Project includes two divisions: The Gravity Division and the Orchard Mesa Division. GVVUA operates the Gravity Division of the Project, which first delivered a full supply of irrigation water in 1917.

- e) **Please include any relevant Tabor issues relating to the funding request that may affect the Contracting Entity.**

Not applicable.

Part B. - Description of the Alternative Water Transfer Program/Project –

1. Purpose of the Program/Project

Please provide a summary of the proposed program/project, including a statement of what the program/project is intended to accomplish, the need for the program/project, the problems and opportunities to be addressed, the expectations of the applicant(s), and why the program/project is important to the applicant(s). The summary must include a description of the technical, institutional (i.e., how the program/project will be organized and operated), and legal elements that will and/or have been addressed by the applicant and proposed program/project. The summary should also discuss relevant project history, if applicable, and any other relevant issues.

Previous Studies

To the maximum extent possible, the results of any previous studies and investigation should be utilized and incorporated into the proposed program/project. The application for funding should include a brief summary of the results of previous studies and how they will be utilized.

Overview:

The Water Bank Work Group (WBWG) is a representative group of stakeholders that is exploring the use of a voluntary and compensated market approach to temporarily reduce consumptive uses in the Colorado River Basin in Colorado. The group, which was formed in 2009, consists of the Colorado River District, Southwestern Water Conservation District, The Nature Conservancy, the Front Range Council, and the State of Colorado. The WBWG regularly consult with agricultural representatives, Native American tribes, and the Bureau of Reclamation. The WBWG's effort is aimed at avoiding long-term agricultural dry up and water supply disruption on the West Slope while minimizing risk for all water Colorado River users. Since forming, the WBWG completed a number of feasibility assessments, field studies, and small scale pilot projects, which are described in more detail below.

This proposed project involves a large scale water bank pilot with GVVUA. This will involve GVVUA contracting with willing shareholder participants to reduce their water use through one of three approved methods outlined below. GVVUA will monitor contract compliance, account for and manage the conserved consumptive use water within their system, and deliver this water to the top of the 15-mile reach where it will then make its way to the state line.

The Grand Valley Water Bank Pilot Project builds upon the past work of the WBWG to provide a larger scale test of how a voluntary and compensated program to reduce water use can work on the ground for water users, water managers, and other stakeholders. This project moves beyond studies and small scale pilots to implement a program that will generate a significant amount of water to help address issues associated with the Colorado River Compact and declining reservoir levels. The project is a direct result of past efforts of the WBWG and its partners, including the CWCB, and will significantly advance the conversation in Colorado around alternative transfer methods and their role in providing increased water security for all water users in the State.

What this project will accomplish:

The Grand Valley Water Bank Pilot Project will significantly advance the goals of the WBWG and the State in pursuing water banking as an important component of addressing the risks and uncertainties associated with increasing demand on Colorado River Basin water resources. More specifically, this project will accomplish the following:

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- Test the nuts and bolts of how a demand management program can work with an irrigation association and their shareholders. This includes testing mechanisms for estimating conserved consumptive use from reduced irrigation practices, monitoring and verifying that those practices take place on the ground, tracking and managing that water within an irrigation system, and assessing the associated economic outcomes.
- Direct involvement of a diverse group of water users, water managers, State entities, and environmental interests in creating solutions that reduce the risk of water shortages to all sectors.
- Transition from short-term, small scale pilot projects, to longer term, larger scale programs that will significantly advance programs aimed at addressing issues at Lake Powell and Colorado River Compact risks.
- Connecting water banking as a tool that irrigation associations and ditch companies can use to help finance long term infrastructure improvements that improve water management and enable ongoing benefits to multiple parties.

Need for this project:

The Colorado River Basin supplies water to seven western states and the Republic of Mexico. The Basin provides domestic water supplies to more than 36 million people and irrigates more than five million acres of agricultural lands. It also supports diverse wildlife and fish found nowhere else in the world and fuels a multi-billion-dollar recreational economy. However, the Basin has experienced a severe drought since the late 1990s. While the region has had some “wet” years, the trend has been one of declining water supplies.

Lakes Powell and Mead are the region’s principal bank accounts, and both reservoirs have witnessed dramatic declines since 1999. In August 2014, Lake Powell hovered just above 50% full and Lake Mead was at 38%. According to the 2007 Interim Operating Guidelines, the two reservoirs are operated in a coordinated fashion in an effort to balance water supplies and drought risk between the Upper and Lower basins. Over the last decade, water leaders in the Basin have been assessing the risks to the region’s water supplies based on current and future use, seeking solutions to the reduction in lake levels. The risks of continuing drought to the Upper Basin include the following:

- The loss of critically important hydropower production.
- The reduction in revenues derived from the sale of this power and an associated loss of funding for Recovery Programs in the Upper Basin, which provides compliance for existing and future water use in the Upper Basin with the Endangered Species Act.
- The reduction in funds for Salinity Control programs that provide significant investment in upgrading irrigation infrastructure through the NRCS and Basin States program. These programs also help us meet our Treaty obligations with Mexico.
- The reduction in revenues to repay the federal government for construction of federal projects in the Colorado River Basin.
- The potential for unilateral federal actions to ensure Lakes Powell and Mead do not fall below critical levels, which could cause uncertainty for all water users.
- Increased risk of curtailment to post-compact water rights due to possible Compact administration.

If the drought continues, and if no collaborative action is taken to mitigate the effects of the drought, every sector is at risk. There are no easy answers and we will need a range of options to reduce water use in the region on a temporary basis to help get through these dry times.

The WBWG envisions an insurance-like program in the event of extreme shortages that significantly affect Lake Powell’s operations or our ability to meet the Colorado River Compact obligations. Over the past several years,

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the WBWG has conducted a number of feasibility studies and small-scale field trials to help address the many technical, social and economic questions that must be answered in order to design an approach that works for all sectors.

The proposed Grand Valley Water Bank Pilot Project is an essential next step to move beyond feasibility studies to implementing a larger project that will help test the concept at scale, answer remaining questions, and provide information that is essential to designing a water bank program for Colorado and the Upper Basin.

Problems & opportunities to be addressed:

Since 2009, the WBWG has steadily built a foundation of technical knowledge on how a water bank could operate. This knowledge, combined with strong relationships with water users has led to an emerging opportunity to work with one of the largest irrigation associations on the West Slope to examine how a water bank would work in practice at a significant scale. The primary opportunity to address right now is to work with GVVUA as a willing and engaged partner to test the various project elements of a water bank on the ground.

Applicant expectations:

As the applicant, GVVUA expects to work closely with the WBWG and the CWCB to implement this project. Due to the often sensitive nature of water banking on the West Slope, GVVUA also expects to have the final say in what their participation looks like and to be actively consulted for any communication related to the project.

Why this project is important to the applicants:

This project is important to GVVUA for two primary reasons. The first is protection. GVVUA recognizes the increasing strain on Colorado River resources and wants to be involved in discussions around how to address that in order to protect GVVUA's water rights and help create solutions that work for GVVUA over the long term. The second reason this project is important is the potential benefit it could provide to GVVUA in terms of providing funding for infrastructure improvements that provide long term benefit to GVVUA, shareholders, and other stakeholders in Colorado and the Colorado Basin.

Project Elements (Technical, Institutional, Legal) that will be or have been addressed:

TECHNICAL

Many of the technical project elements are currently being completed in consultation with Olsson Associates with funding from the CWCB. This includes:

- Developing options for producer participation in the Grand Valley Water Bank Pilot.
- Providing estimates of conserved consumptive use for each of these options.
- Determining how to monitor and verify that these options are carried out in the field.
- Determining how GVVUA will account for and manage this water.
- Calculating the price per acre for the pilot project that will go to participating producers and the GVVUA.
- Determining a method for estimating actual reductions in consumptive use at the end of the growing season.

The actual pilot project will involve testing and evaluating these technical components.

INSTITUTIONAL

This pilot project will directly test an institutional method for implementing water banking on the West Slope by

working with GVVUA to establish a program and having GVVUA then act as an intermediary to contract with their shareholders. GVVUA would track and manage the conserved consumptive use water, working in close partnership with the Bureau of Reclamation and the State of Colorado. The WBWG would then work with GVVUA to evaluate the pilot program and the institutional framework with the goal of creating a longer term program with GVVUA and expanding to other water users on the West Slope.

The main institutional questions that this project will help address are:

- How would a water bank contract with enough participants to create a significant amount of water in a timely and cost effective way?
- What are the critical components of a successful contract that is simple to execute but robust enough to provide security to both parties?
- What is the most effective way to monitor contract compliance?
- How can GVVUA account for and manage the conserved consumptive use within their system in a way that works for their operation, protects their water rights, and provides assurances to other water bank parties that the water is available for other purposes?
- What are the respective roles of the Bureau of Reclamation, the State of Colorado, and the WBWG in implementing this pilot project? For a longer term program?

LEGAL

A separate legal group with representatives from GVVUA, the Colorado River District, and the Nature Conservancy have prepared a memo outlining a number of potential mechanisms to legally protect GVVUA's water rights during participation in a water bank program and to enable the delivery of conserved consumptive use water downstream. These protective mechanisms have been reviewed by the Bureau of Reclamation and the legal group is currently in discussions with the State of Colorado. Depending on the outcome of that discussion, GVVUA and the WBWG will pursue the recommended combination of legal tools to protect the underlying water rights, account for the conserved consumptive use within the GVVUA system, and allow for the delivery of that water downstream.

Relevant project history & Summary of previous studies:

In 2009, the WBWG formed to assess the feasibility of a water bank as a mechanism to address the risks associated with the Colorado River Compact. Initially, the focus was on the obligation under the Compact for the Upper Division States not to deplete flows at Lee Ferry, Arizona below 75 million acre-feet on a ten-year average and the uncertainty about what would happen if this obligation was not met. The initial water bank concept explored how a voluntary, temporary, and compensated reduction in water use could be used to avoid or survive a situation where the Upper Division's Compact obligation was not met. To understand how a water bank could work to accomplish this, the WBWG completed a series of studies with support from the CWCBC. This included:

A. Colorado Water Bank Feasibility Study, Phase I, June 2012:

This first study explored the amount pre-compact water used in Colorado that would potentially be at risk from Compact issues and the amount of post-compact water that could potentially be available to a water bank to address this risk. The study found approximately 350,000 acre-feet of annual municipal and industrial post-compact water use. The majority of this is used on the East Slope, but this also includes about 32,000 acre-feet of annual use for power production on the West Slope. Annual pre-compact use is on the order of 1.3 million acre-feet, with the majority of this use occurring in agriculture, primarily to support grass and alfalfa production. In addition to these estimates of potential supply and demand for a water bank, the Phase I study also completed a white paper on the "*Agronomic Feasibility of Fallowing and Deficit Irrigation in Colorado's Colorado River Basin*" that provided a summary of the relevant literature on how reduced irrigation impacts different crops.

B. Colorado Water Bank Feasibility Study, Phase II, March 2013:

After completing the initial assessment of potential supply and demand for a water bank and determining that reduced irrigation is agronomically feasible for the bulk of the crops grown on the West Slope, the WBWG determined that the next most important question to address was if and how a water bank could work with the number of different irrigation systems on the West Slope. For Phase II of the Feasibility Study, the WBWG partnered with eight different irrigation systems to better understand the range of how water is used and managed. This included irrigation systems of different sizes, in different river basins, and at different elevations. It also included a range of management and ownership structures, from simple systems owned and operated by a small number of individuals, to more complex private ditch companies, to large Federal and Tribal projects. The study concluded generally that each system saw different opportunities and challenges to participating in a water bank. The study was extremely helpful in uncovering the large number of technical, legal, economic, and social questions that would need to be addressed in order for a water bank to become operational. In order to begin addressing some of these questions, the WBWG decided to take a closer look at three of the eight systems.

C. Water Bank Phase IIB: Qualitative Assessment of Water Banking, October 2015:

For this report, the WBWG chose to do an in-depth analysis of three irrigation systems from Phase II: GVVUA, the Uncompahgre Valley Water Users Association, and the Doc Morrison Ditch as part of the Pine River Indian Irrigation Project. The Phase IIB analysis included a quantitative assessment of how a water bank could work within these systems by selecting a series of representative parcels within their service area and examining how each system would deal with reduced water use from these parcels. This included an analysis of conserved consumptive use, return flow obligations, and options to track and manage that water. The analysis also included a qualitative assessment of the issues and opportunities for water banking within each of the three systems.

D. Agronomic Responses of Grass and Alfalfa Hayfields to No and Partial Season Irrigation, Update March 2016.

At the same time the WBWG was investigating how a water bank could work with the various irrigation systems on the West Slope, additional questions and concerns were raised about impacts to individual farm and ranch operations. For producers interested in participating, the water bank needed to provide information on how reduced irrigation would impact crops and how long it would take those crops to recover once full irrigation was restored. To address this, the WBWG partnered with Colorado State University (CSU) on a three-year study to evaluate the agronomic impacts of fallowing and split season irrigation. The study took place on seven different sites on the West Slope that included both grass and alfalfa fields. The study compared reduced irrigation and normal irrigation side by side and took measurements of yield and forage quality, as well as basic estimates of water use. The study helped quantify the reductions in yield expected with reduced irrigation and provided critical info on how well and how long it takes fields to recover. Like the Phase II report, it also raised a number of additional questions and the WBWG chose to continue working with CSU on a longer-term, larger scale field study that is described below.

E. Water Bank Phase IIC: Agronomic Impacts and Measurements of Water Savings, Underway

Similar to the previous study, this expanded 5-year study also involves a side by side comparison of a number of different reduced irrigation practices with normal irrigation. It also involves a number of the same agronomic variables, including yield and forage quality. The study will also assess issues associated with recovery and address other management factors such as weed pressure and impacts to soil moisture. This study is also conducting an in depth measurement of water savings using a number of different methods. Each field is instrumented to measure a full water budget: water delivered and applied, surface runoff, soil moisture at three different depths, and influence from groundwater, if any. Each study site also has, or is in close proximity to, a full weather station allowing for robust calculations of water use. This is a highly accurate, but costly way to measure water savings. In order to address the question of how to scale up, CSU is also using satellites and remote sensing to measure water use and water savings.

All of this information will help inform various elements of a water bank program including the potential amount of water available, best management practices for participating producers, and methods to account for water savings that do not require each individual field to be heavily instrumented. Preliminary results from the first year are available to review and the second year is currently underway.

F. System Conservation Pilot Program projects

While the WBWG has focused on many of the longer term questions about how a water bank could operate in Colorado and the Upper Basin to address Compact risks, concerns were growing among water managers about declining reservoir levels in Lakes Powell and Mead. To address this, the four major municipal water providers in the Colorado River Basin partnered with the Bureau of Reclamation to implement a two-year pilot program to test emergency measures to reduce water use. The WBWG was able to take advantage of this program to implement a number of small scale pilots. These pilots were valuable for confirming that producers can find ways to reduce water use temporarily in ways that work for their operation. The pilots also highlighted a number of challenges, including: How do you determine a fair price for both parties? How do you have a simple and transparent method for estimating and confirming water savings? How do we build a program that is large enough to address the scale of the problem? How do we administer and shepherd conserved consumptive use water within State law? The WBWG continues to build off the System Conservation pilots to address these and other questions in close coordination with the CWCB and the State Engineer's Office.

Currently, the WBWG is focused on building off of this strong foundation of work to begin implementing larger scale pilots on the ground. The group recognizes that many questions cannot be answered until a water bank is put into operation, and the group is committed to working with closely partners to advance these projects.

2. Study Area/Service Area Description

The study area/service area is generally the geographic area that is the subject of the proposed program/project (include both the source of supply and location and type of new use). The description should include the following items:

- a) A narrative description of the study area/service area including: the county, the location of towns or cities, topography, and locations of major surface and ground water features.**

The proposed project will take place within the Grand Valley Project and the Grand Valley Water Users Association service area, which is located in and around the towns of Grand Junction, Fruita, Loma, and Mack in Mesa County, Colorado. Water for agricultural use is diverted upstream from the Colorado River at the Grand Valley Diversion Dam and delivered through the Government Highline Canal to irrigate approximately 23,000 acres.

- b) An area map showing each of the items above, as well as the locations of existing facilities, proposed project facilities and boundaries of lands involved in the proposed program/project.**

An overview map of the Grand Valley Project and the GVVUA service area is included in **Appendix B**. Conversations with potential project participants is currently underway. Because of the sensitive nature of these negotiations, we prefer not to map these locations until contracts are final.

- c) Information regarding the irrigated lands that are involved in the program/project. This must include a tabulation of total irrigated acreage, description of cropping types, crop yields, and total average annual water diversions for existing agricultural lands.**

In October 2015, with CWCB funding, the Water Bank Work Group completed a “Qualitative Assessment of Water Banking” for three irrigation systems, including the GVVUA. This technical report includes all relevant information for the GVVUA related to irrigated acres, crop types, crop yields, and diversions. It also includes an assessment of return flow issues, the influence of groundwater, and control and measurement tools as they relate potential opportunities and challenges for participation in a water bank. The full report has been provided to the CWCB and is available again on request. Appendix A of the report, which covers the Grand Valley, is included again in this application as **Appendix C**.

- d) Information regarding the location of the new water use(s) that will be served by transferred water including the estimated number of users/taps and/or uses served.**

Water from this project will not be directly transferred to another user but left in stream for the purpose of testing a water bank as a mechanism to address Colorado River Compact and system conservation issues.

- e) Socio-economic characteristics of the area such as population, employment and land use.**

Mesa County has a population of 146,723 people from the 2010 census. Grand Junction is the county seat and has a population of 41,986 from the 2010 census. The area has a diverse economy, with major employment in agriculture and related industry, education, including Colorado Mesa University, recreation, including Colorado National Monument, healthcare, sales and service. Mesa County includes substantial tracks of public land, both National Forest and Bureau of Land Management. Private lands on the valley floor are dominated by agricultural

parcels interspersed with towns and the City of Grand Junction.

3. Description of the Alternative Water Transfer Method

Please describe the type(s) of water transfers that will be examined/utilized (i.e., conceived transfer methods include, but are not limited to: 1) interruptible water supply agreements; 2) long-term agricultural land fallowing; 3) water banks; 4) reduced consumptive use through efficiency or cropping changes while maintaining historic return flows; and 5) purchase by end users with leaseback under defined conditions). In addition, please describe how the transferable consumptive use will be calculated and quantified, and how return flow patterns will be addressed/maintained.

Consumptive use in the GVVUA service area will be reduced by working with willing participants using one of three options. These options for producer participation have been outlined in a series of technical memos from Olsson Associates and include: full fallow, fallow until September 1st, and receive a reduced delivery of water. The amount of conserved consumptive use generated from each of these options has been calculated using NASS crop data for the three primary crops in the area (alfalfa, corn, and winter wheat) as well as consumptive irrigation requirement data from Phase IIB of the Water Bank Feasibility Study. Olsson associates used this data and combined with the relative number of acres planted in each crop in 2014 to obtain a weighted average for conserved consumptive use of 2.8 acre feet/acre for full fallow, 2.3 AF/acre for fallow until September 1st, and 1.3 AF/acre for reduced delivery. These draft technical memos are available for review on request.

As the program manager for this pilot project, GVVUA will track and monitor water deliveries to all participating fields, account and track for the total amount of conserved consumptive use within the system, and ensure the delivery of that water downstream. A separate legal group is currently investigating a series of mechanisms that would protect GVVUA's water rights and allow for the delivery of the conserved water to the top of the 15-mile reach near the town of Palisade, CO.

According to the Phase IIB technical assessment, return flows from GVVUA project lands are collected by a series of drainage canals and natural washes that bring that water back to the Colorado River. Although other water users have filed water rights to use this water in some cases, according to GVVUA they are under no obligation to assure a continued supply of water to these rights.

4. Program/Project Eligibility

Please describe how the proposed program/project meets each of the following eligibility requirements (please see Criteria and Guidelines for additional information regarding the alternative water transfer methods/strategies that qualify for funding). Note: If these requirements are addressed in other parts of the application you may simply reference the applicable section(s).

- a) A description of how, if implemented, the proposed program/project will protect property and water rights.**

As mentioned above, a separate legal group, including representatives from GVVUA and the Colorado River Water Conservation District, is completing an analysis of the legal mechanisms available to protect GVVUA's water rights while participating in this pilot project or future programs. We are currently reviewing this analysis with the State before finalizing a plan.

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Individual property rights will be protected by working only with willing participants.

- b) Identified group(s) of agricultural users that are or may be willing to transfer a portion of their water and identified entity(s), group(s) or area(s) where the transferred water could or would be put to the new use and a description of the new use.**

Many producers have expressed interest in the pilot program that meet the eligibility requirements we have outlined. Conversations are ongoing with these and other producers about participation and we anticipate signing contracts this fall.

- c) The program/project must at a minimum conceptually describe the technical, institutional, and legal elements of the water transfer. Grant monies may be used to address one or more of these elements. If grant monies are not requested for all three elements, the grant applicant must describe how the applicant has or intends to address the elements, which are not included in the grant request, through other efforts.**

Current and past CWCB grants, leveraged with funding from the Water Bank Work Group members and other sources, has provided the foundational knowledge for this pilot project. Current work with Olsson Associates and GVVUA is defining the technical and institutional framework for this project, while a separate legal group is finalizing an outline of mechanisms to protect GVVUA's water rights. Now that this work is complete or nearing completion, we are shifting focus to this on the ground pilot project and requesting funds that will be directly used for implementation.

- d) If grant monies are proposed for use for legal assistance then the use of those funds shall be oriented toward advancing the knowledge of alternative agricultural water transfer methods and techniques; not for preparation of a specific water court case. The total requested funds for legal assistance shall not exceed 40 percent of the total grant request. In addition, grant monies proposed for use for legal assistance must be used to collaboratively address issues and concerns related to agricultural water transfer. Funds shall not be used to solely advance the cause of the project proponents.**

Not applicable.

- e) A minimum of a 10 percent cash match of total project cost (past expenditures and "in kind" can not be counted toward the 10 percent match).**

We are requesting approximately 20% of the project funds from the CWCB and bringing approximately 80% cash match, well above the minimum requirement.

5. Program/Project Evaluation Criteria

The following grant evaluation criteria will be used by the CWCB to evaluate and make recommendations to fund, partially fund or not fund a grant application. The criteria are aimed at advancing alternative transfer methods from the literature and studies to actual on the ground projects/programs that provide reliable water supply and sustain key elements of the agricultural area from which the water is transferred. The applicant should fully address and explain in detail in the application how, and the extent to which, the proposed project/program meets each of the criteria. However, it should be noted that the

project does not have to meet all of the criteria to be eligible to receive funding and the criteria below are not listed in any order of important or priority.

- a. The proposed project/program builds upon the work of former alternative water transfer methods efforts and addresses key areas that have been identified. For more detailed information on this work, please refer to the draft report: *Alternative Agricultural Water Transfer Methods Grant Program Summary and Status Update*, November 2012.**

Yes, the proposed Grand Bank Pilot Project builds on previous work completed by the Water Bank Work Group to assess the feasibility of a Colorado Water Bank. This includes the Phase 1 and Phase 2 Colorado River Water Bank Feasibility Studies, the Phase 2B Qualitative Assessment of Water Banking, the Agronomic Responses to Partial and Full Season Fallowing of Alfalfa and Grass Hayfields field study completed by Colorado State University, and the Colorado Water Bank: Agricultural Field Studies and Estimates of Saved Consumptive Use field study that is currently underway. All of these efforts have been led by the Water Bank Work Group with support and funding from the CWCBC.

- b. The proposed project addresses one or more key recommendation(s) in the report: *Alternative Agricultural Water Transfer Methods Grant Program Summary and Status Update*, November 2012.**

Yes, the proposed project directly advances the recommendation from the report to advance the Colorado River Water Bank project and to incorporate lessons learned Yampa ATM study and the Aspinall Water Bank study. This project builds off of that work to test the actual mechanism of an ATM on the West Slope for the purposes of addressing the risks associated with the Colorado River Compact, and to do so in a way that works for agricultural producers and water managers.

- c. Preference will be given to projects that provide additional matching resources in the form of cash, past expenditures and in-kind contributions that are in addition to the required 10% cash match.**

This project provides an estimated 80% cash match, plus additional in-kind contributions in staff time from the members of the Water Bank Work Group.

- d. The proposed project/program has the ability/potential to produce a reliable water supply that can be administered by the State of Colorado, Division of Water Resources.**

Yes, this proposed project has the potential to produce a reliable water supply to address Colorado River Compact issues that can be administered by the State.

- e. The proposed project/program produces information that is transferable and transparent to other users and other areas of the state (i.e., would provide an example “template” or roadmap to others wishing to explore alternate transfer methods).**

Yes, and one of the goals of the project is to test the water bank concept at a larger scale in order to provide a transferrable program to other areas of the West Slope.

- f. The proposed project/program addresses key water needs identified in SWSI 2010 or as identified in a basin's needs assessment.**

Yes, compact compliance is a goal of the Colorado Water Plan, with specific references in the Critical Action Plan section to providing continued support for the water banking effort and prioritizing development of a programmatic approach.

- g. The proposed project/program advances the preservation of high value agricultural lands. Value can be viewed as: the value of crops produced, the value the agriculture provides to the local community, and the value the agricultural area provides for open space and wildlife habitat.**

The Grand Valley is one of the primary centers of agriculture on the West Slope. Mesa County has over 386,000 acres of farm and ranch land with over \$84 million dollars in market value of products sold in 2012. This is a 38% increase in market value from 2007 according to the 2012 Census of Agriculture.

- h. The proposed project/program addresses water quality, or provides other environmental benefits to rivers, streams and wetlands.**

Reduced irrigation on agricultural lands in the Grand Valley will reduce salinity loading to the river, improving water quality. Reduced consumptive use will be delivered to the 15-mile reach, providing important flows to support recovery of the endangered fish species.

- i. The proposed project/program increases our understanding of and quantifies program/project costs. This could include: institutional, legal, technical costs, and third party impacts.**

Yes, this project will advance our understanding of the costs necessary to implement a water bank program at scale. These costs include compensation to participants and GVVUA, as well as the expense of administering the program itself. The focus is on addressing institutional and technical costs, as well as evaluating success of the program and assessing any third party or community impacts. Legal issues are currently being addressed and legal costs will be covered using separate funding.

- j. The proposed project/program does not adversely affect access to other sources of water (not subject to/participating in the program) where owners of these water rights may wish to pursue traditional transfer of their rights to other users.**

The proposed project does not negatively affect any other sources of water or preclude any other water right holder from fully exercising their rights under Colorado law.

- k. The proposed project/program provides a perpetual water supply for the new and/or alternate use and preserves agricultural production and/or helps sustain the area's economy from which the transfer is occurring.**

The objective of the proposed project is to demonstrate the feasibility of the water bank concept, which includes preserving agricultural production and supporting associated economies. As a demonstration project however it will only provide a temporary water supply, but will answer the necessary questions for building a longer term program.

- l. The quantity of water produced by the proposed project/program. Preference will be given to programs that can address larger water supply needs.**

We estimate that the propose project could provide between 2,000-4,000 AF of water annually with the potential for larger amounts in the future.

- m. Applicants are encouraged to develop projects demonstrating participation and/or support from a diverse set of stakeholders and interests.**

GVWUA has intentionally involved a diverse set of stakeholders and interests in the discussion of a Water Bank Pilot Project. This has included engagement with all of the WBWG members as well as outreach to multiple producer shareholders who represent a diversity of agricultural operations and opinions. GVWUA has also approached the concept of water banking as a tool to support ongoing improvements to the GVWUA system that can benefit multiple stakeholders.

6. Statement of Work

Provide the proposed statement of work. On the following page there is an example format for the statement of work. You can use the example format or your own format, provided that comparable information is included. The statement of work should outline by task how the proposed program/project will be accomplished. It is important that the statement of work detail the specific steps, activities/procedures that will be followed to accomplish each individual task and the overall program/project and the specific products/deliverables that will be accomplished. The statement of work must include but not be limited to: task description, key personnel, budget, schedule and deliverables and the final report/project documentation upon completion of the water activity.

The statement of work will form the basis for the contract between the Applicant and the State of Colorado. In short, the Applicant is agreeing to undertake the work for the compensation outlined in the statement of work and budget, and in return, the State of Colorado is receiving the deliverables/products specified. Please note that costs incurred prior to execution of a contract or purchase order are not subject to reimbursement.

Please provide a detailed statement of work using the following template. Additional sections or modifications may be included as necessary. Please define all acronyms. If a grant is awarded an independent statement of work document will be required with correct page numbers.

Statement of Work

INTRODUCTION AND BACKGROUND

The Grand Valley Water Bank Pilot Project builds upon the past work of the Water Bank Work Group (WBWG) to provide a larger scale test of how a voluntary and compensated program to reduce water use can work on the ground. This project moves beyond studies and small scale pilots to implement a program on the ground that will generate a significant amount of water to help address issues associated with the Colorado River Compact and declining reservoir levels. The project is a direct result of past efforts of the WBWG and its partners, including the CWCB, and will significantly advance the conversation in Colorado around alternative transfer methods and their role in providing increased water security for all water users in the State.

GVWUA will manage the Grand Valley Water Bank Pilot Project. This will involve GVWUA contracting with willing shareholder participants to reduce their water use through one of three approved methods outlined below. GVWUA will monitor contract compliance, track and account for the conserved consumptive use water within their system, and deliver this water to the top of the 15-mile reach where it will then make its way to the state line.

OBJECTIVES

1. Demonstrate that a water bank program can work at a larger scale with the Grand Valley Water Users Association and their participating shareholders.
2. Test concepts for how agricultural water users can reduce consumptive use, how that reduction can be verified, and how the conserved consumptive use can be estimated, and how that water can be accounted for and managed within an irrigation system.
3. Demonstrate legal concepts for protecting water rights participating in a water bank program and delivering conserved consumptive use associated with those water rights downstream.
4. Demonstrate how a water bank can add financial value for both shareholders and GVWUA.

TASK 1: CONTRACTING

Description of Task:

1. Assemble information from interested participants.
2. Verify that participants meet program requirements.
3. Establish contracts with willing and eligible GVWUA shareholders to reduce their consumptive use through one of three approved methods: (1) full fallow; (2) fallow until September 1st; (3) reduced delivery.

Deliverables:

1. Signed contracts with at least five participants.

TASK 2 – MONITORING & VERIFICATION

Description of Task:

1. Develop individual monitoring plans for each participating project to verify compliance and include this plan in the signed contracts.

2. Complete monitoring site visits throughout the growing season and document with monitoring form and photos.

Deliverables:

1. Monitoring Plans for each contract.
2. Monitoring site visit documentation for each participating project in 2017.

TASK 3 – STATUS REPORT

1. Prepare a summary report of confirmed participants for 2017.

TASK 4 – GVVUA ACCOUNTING & WATER MANAGEMENT

Tasks:

1. Account for the conserved consumptive use from contracted fields within GVVUA's system.
2. Physically deliver this water to the top of the 15-mile reach outside of Palisade, CO.

Deliverables:

1. Summary report of GVVUA operations and accounting for 2017.

TASK 5 – SUMMARY REPORT

Tasks:

1. Verify actual reductions in consumptive use after the pilot project using a mass balance approach.
2. Prepare a summary report documenting outcomes of 2017 projects.

TASK 6 – EVALUATION

Tasks:

1. Evaluate pilot program success and document lessons learned from the perspective of both individual participants, GVVUA staff and board, and the WBWG.
2. Develop recommendations for a longer term water bank program with GVVUA.
3. Identify other potential opportunities for water bank pilots with other water users on the West Slope.

Deliverables:

1. Final summary report with evaluation and recommendations.
2. Draft operations manual for GVVUA Water Bank Program.

REPORTING AND FINAL DELIVERABLE

Reporting: The applicant shall provide the CWCB a progress report every 6 months, beginning from the date of the executed contract. The progress report shall describe the completion or partial completion of the tasks identified in the statement of work including a description of any major issues that have occurred and any corrective action taken to address these issues.

Final Deliverable: At completion of the project, the applicant shall provide the CWCB a final report that summarizes the project and documents how the project was completed. This report may contain photographs, summaries of meetings and engineering reports/designs.

Alternative Agricultural Water Transfer Methods – Grant Application Form
October 2010

BUDGET

<u>Task</u>	<u>Expense</u>	<u>Funding</u>	
		WBWG	CWCB
1. CONTRACTING	\$ 800,000	\$ 650,000	\$ 150,000
2. MONITORING & VERIFICATION	\$ 15,000	\$ 15,000	\$ -
3. STATUS REPORT	\$ 15,000	\$ 15,000	\$ -
4. GVVUA ACCOUNTING & MANAGEMENT	\$ 20,000	\$ 20,000	\$ -
5. SUMMARY REPORT	\$ 15,000	\$ 15,000	\$ -
6. EVALUATION	\$ 15,000	\$ 15,000	\$ -
7. GVVUA PROJECT MANAGEMENT	\$ 120,000	\$ 70,000	\$ 50,000
	\$ 1,000,000	\$ 800,000	\$ 200,000

SCHEDULE

TASKS	<u>2016</u>		<u>2017</u>			
	FALL	WINTER	SPRING	SUMMER	FALL	WINTER
1. CONTRACTING						
2. MONITORING & VERIFICATION						
3. STATUS REPORT						
4. GVVUA ACCOUNTING & MANAGEMENT						
5. SUMMARY REPORT						
6. EVALUATION						
7. GVVUA PROJECT MANAGEMENT						

Appendix A
Grand Valley Water Users Association Articles of Incorporation and Bylaws

**ARTICLES OF INCORPORATION
OF THE
GRAND VALLEY WATER USERS ASSOCIATION**
(As Amended Through 2007)

Know all men by these articles of incorporation that we, the undersigned, have associated ourselves together under the laws of the State of Colorado, as a body corporate.

ARTICLE I.

The name of this corporation shall be and is The Grand Valley Water Users Association.

ARTICLE II.

The names of the incorporators are Lawrence M. Miller, S. P. Green, H. H. Beach, Daniel Lynch, John T. Beaman, James B. Hunter, George Smith, Marion O. Delaplain, William S. Wallace, James H. Smith and Merrill W. Blakeslee, but other may become members of this association by subscribing for the stock of the Association or by the transfer of stock to them in the regular course of the administration of the affairs of the Association.

ARTICLE III.

The principal place of transacting the business of the Association shall be at Grand Junction, in the County of Mesa, in the State of Colorado.

ARTICLE IV.

SECTION 1. The purposes for which this Association is organized and the general nature of the business to be transacted are: To acquire, furnish, provide for, and distribute to the lands of the shareholders of the Association as herein provided, an adequate supply of water for the irrigation thereof; to divert, store, develop, pump, carry and distribute water for irrigation and all other beneficial uses, deriving the same from all available sources of supply; to construct, install, operate, and maintain pumps, ditches, conduits and other drainage works for draining any or all of the lands receiving water through the irrigation works of the Association; to construct, purchase, lease, condemn, or acquire in any manner whatsoever, and to own, use, sell, transfer, convey, control, maintain, and operate any irrigation works, structures, telephone systems, electric or other power plants, and transmission lines, and property both real and personal of every kind whatsoever, necessary or appropriate for the accomplishment of any of the purposes of this organization; to generate, create, transmit, use and sell power and electrical energy; to act as trustee, agent or attorney for the sale, disposal, and transfer of lands, in order to facilitate the disposal of such lands, or any part thereof, to persons qualified to perfect rights to the use of water under the laws of the United States applicable thereto, and the rules and regulations established thereunder; to incur indebtedness, floating or bonded, and to secure the same by mortgage, deed of trust, pledge or otherwise, to acquire, hold, and dispose of stock in other corporations, domestic or foreign; to

purchase or acquire land by foreclosure or otherwise and to hold, own, sell, transfer or convey such land, any such sale, transfer or conveyance to be upon such terms and conditions as may be fixed by the Board of Directors of this Association; to have and exercise all the powers and to perform any and all acts necessary or appropriate for the accomplishment of any one or more of the said purposes or anything incident thereto.

SECTION 2. This Association shall have the power to enter into any contract or other arrangement with the proper representative of the United States, individual, association of individuals or corporation, for the accomplishment of any of the aforesaid purposes, by means of the construction, acquisition or control of appropriate works or structures, or in any other manner whatsoever.

SECTION 3. It shall have the power to enter into any agreement with the proper representative of the United States with reference to the collection and payment of any and all charges made under the federal statutes for the works providing water for the lands of its shareholders.

SECTION 4. It shall have the power to comply with the provisions of any federal statutes applicable to the work done by the United States in connection with such system of water supply, and any rules and regulations established thereunder.

SECTION 5. The territory within which the lands to be irrigated as aforesaid are situated, to be known as the Grand Valley Irrigation district, includes all lands within the boundaries described as follows, to-wit:

That portion of Grand Valley lying between the east boundary line of Range Ninety-eight (98) west 6th Principal Meridian, and the west boundary line of Range One Hundred and Four (104) west 6th Principal Meridian irrigable by diversion of water from the Grand River in Colorado.

ARTICLE V.

SECTION 1. The capital stock of the Association shall be Seventy-five Thousand Dollars (\$75,000), divided into seventy-five thousand (75,000) shares, of the par value of One Dollar (\$1.00) each. Said stock shall be assessable and assessments thereon for all purposes shall be made by the Board of Directors of this Association.

SECTION 2. Only those who are owners of lands, or occupants of public lands having initiated a right to acquire the same, within the area described in Article IV or within such extensions thereof as may be duly made, shall be qualified to own the shares of this Association. Not more than one share shall be allotted for each acre of land, but fractional shares may be issued on fractions of acres.

SECTIONS 3, 4, and 5, Article V, are omitted. (See attached.)

SECTION 6. The ownership of each share of stock of this Association shall carry, as incident hereto, a right to have water delivered to the owner thereof by the Association for the irrigation of the lands to which such share is appurtenant.

SECTION 7. The amount of water to be delivered to such owner shall be that proportionate part to all the water available for distribution by the Association during any irrigation season, as the number of shares owned by him shall bear to the whole number of valid and subsisting shares then outstanding, such water to be delivered to and upon said lands at such times during such season as he may need for the proper irrigation thereof.

SECTION 8. By subscribing to the shares of this Association each signer agrees that the right to any water theretofore appropriated by him, or by his predecessor in interest, for the irrigation of the lands described in said subscription, or customarily used thereon, shall become appurtenant to such lands and be and remain incident to the ownership of such shares appurtenant to such lands. There shall be further incident to the ownership of such shares the right to have such water delivered to the owner thereof by the Association for the irrigation of said lands, as the Association shall from time to time acquire or control means for that purpose: Provided, that the whole amount of water actually delivered to such lands from all sources shall not exceed the amount necessary for the proper cultivation thereof.

SECTION 9. The records of the Association and each and every certificate or other evidence of ownership of shares of stock in the Association, when issued, shall contain a description of the lands to be irrigated, and to which the aforesaid rights and shares shall be perpetually appurtenant; and, thereafter all rights whatever their source or whatever their manner of acquisition to the use of water for the irrigation of said lands shall forever be inseparably appurtenant thereto, together with the said shares of stock, and all rights and interests represented thereby or existing or accruing by reason thereof, unless such rights shall become forfeited under the provisions of these Articles of Incorporation, or of by-laws adopted in pursuance thereof, or by operation of law, or by the voluntary abandonment thereof by deed, grant or other instrument, or by non-user for the term prescribed by law; but no such abandonment shall be for the benefit of any person designated by such shareholder, directly or indirectly, or to his use, nor confer any right whatsoever upon the holder of any grant, release, waiver, or declaration of abandonment of any kind: Provided, however, that if for any reason it should at any time become impracticable to beneficially use water for the irrigation of the land to which the right to the use of the water is appurtenant, the said right may be severed from said land and simultaneously transferred and attached to other lands to which shares of stock in this Association are or shall thereby be made appurtenant, if a request for leave to transfer, showing the necessity therefor, shall have first been allowed by a two-thirds vote of the Board of Directors at a regular meeting and approved by the Secretary of the Interior. All the provisions and agreements of this section shall be set forth in the aforesaid certificate or other evidence of the ownership of shares of stock in the Association, together with any other provisions and agreements made necessary by these articles, and such certificate or other instrument shall be signed, executed and acknowledged by the President and Secretary of the Association, and by the person to whom it is issued, in the manner required by law for the execution and acknowledgment of deeds for the conveyance of real property, and the Board of Directors shall pass by-laws prescribing the form of such certificate or other instrument, not inconsistent with these articles.

SECTION 10. Every transfer of the title to any lands to which the said rights and shares are appurtenant, whether by grant or by operation of law (except where the land may be subjected by grant, or involuntary under any law, to an easement, the exercise of which does not interfere with the cultivation of the soil by the servient owner) shall operate, whether it be so expressed therein or not, as a transfer to the grantee or successor in title, of all rights to the use of water for the irrigation of said lands, also all rights arising from, or incident to, the ownership of such shares, as well as the shares themselves; and upon presentation to this Association of proof of any such transfer of land, the proper officer shall transfer such share of stock upon its books to the successor in title to said lands.

SECTION 11. Any transfer or attempted transfer, of any of the shares of this Association, made or suffered by the owner thereof, unless simultaneously a transfer of the land to which it is appurtenant is made or suffered to or in favor of the same party, shall be of no force or effect for any purpose and shall confer no rights of any kind whatsoever on the person or persons to whom such transfer may have been attempted to be made.

SECTION 12 is omitted. (See attached.)

SECTION 13. If it should be determined by the United States that the amount of water available from the entire irrigation system as owned or controlled by it and by the Association shall be insufficient to properly irrigate one acre of land for each share of the capital stock, then no shares in excess thereof shall be issued, and the number of shares shall be so reduced by appropriate amendment of these articles, as not to exceed the number of acres determined by the United States as irrigable from the entire available supply of water.

SECTION 14. If, when such determination is made, the number of shares subscribed shall be in excess of the number of acres so determined, an allotment of shares shall be made to the subscribers, equal to the number of acres irrigable, giving preference to the cultivated land. The surplus of shares so subscribed shall thereupon be cancelled and shall not be re-issued. By-laws shall be adopted to govern such allotment.

SECTION 15. If the number of acres of irrigable land or the cost of the works, or both, as determined by the United States, shall exceed the number of shares of the capital stock authorized herein, appropriate amendment of these articles as to the number of shares, the par value thereof and the capital stock shall be made in compliance with the laws applicable thereto.

ARTICLE VI.

SECTION 1. The revenues for the accomplishment of the purposes of this Association shall be raised:

(a) From income arising from the carriage, rental, or delivery of water for irrigation or other purposes, or from the sale, rental, lease, or furnishing otherwise of electric or other power or power privileges, or from any other lawful operations of the Association.

(b) From assessments against the shares of stock of the Association so far as they may be from time to time necessary to meet:

(1) The cost of construction, improvement, enlargement, betterment, repairs, operation and maintenance of the irrigation works of the Association or of those managed, controlled, operated or maintained by it.

(2) Payments due the United States under any contract or contracts between the United States and the Association, or payments under any contract between the United States and other parties which are assumed or guaranteed by the Association.

(3) Deficiencies caused by the failure of some of the shareholders of the Association to pay assessments upon their shares of stock.

(4) Any and all lawful obligations of the Association.

SECTION 2. The directors shall have power to make and enforce necessary by-laws for making, levying, collecting and enforcing the payment of such assessments and charges for water and other services.

SECTION 3. Assessments for the ordinary cost of operation, maintenance and repair, of the works of the Association, or of those the maintenance and control of which are, or may be hereafter, lodge in the Association, shall be equally assessed against all shareholders in proportion to the number of shares held by them respectively, unless existing or future contract or contracts with the United States or the laws or regulations of the United States now or hereafter require unequal assessments. Assessments other than for such ordinary cost of operation, maintenance and repair and other than for the purposes covered by Sections 4 and 5 of this Article shall be equally assessed against all shareholders in proportion to the number of shares held by them respectively, unless existing or future contract or contracts with the United States or the laws or regulations of the United States now or hereafter require unequal assessments.

SECTION 4. Assessments for the purpose of constructing or acquiring, or for the betterment, improvement, renewal, replacement or preservation of any works, property, or rights of the Association, or for the purpose of preserving or increasing or more efficiently or economically distributing the water supplies available for distribution by the Association, or for the fulfillment of any obligation undertaken by the Association, or in any contract, agreement or other arrangement with the United States government, or necessary for the accomplishment or carrying out of the purposes of the Association, may be equally assessed against all shareholders in proportion to the number of shares owned by them respectively. This section, however, is not to prevent unequal assessments when required under existing or future contract or contracts with the United States or under present or future laws or regulations of the United States.

SECTION 5. Assessments for expenditures for purposes that are of benefit to a part of the shareholders may be specially assessed in proportion to such benefits against such shareholders, but no expenditure to be provided for, or covered by, such special assessment shall be made, or obligation to expend the same incurred, except upon the petition of the holders of two-thirds of the shares to be so specially benefitted: Providing, that the terms of this section shall not be construed

as applying to any variation in the charges to be made on account of the building, operation and maintenance of the project, as assessed by the Secretary of the Interior.

SECTION 6. Assessments shall, from time to time, as they are made and levied and until they are paid or otherwise discharged, become, be and remain a lien upon the shares of stock against which they are levied and upon the lands to which such shares are appurtenant, and upon all rights and interests represented by such shares. The manner of fixing the lien and enforcing the same shall be as prescribed in these articles or in the by-laws of the Association, or in any contract to which a stockholder of the Association is a party. The Association may enforce the payment of assessments by foreclosure and sale of said lands and shares of stock in the manner provided by law for the foreclosure of real estate mortgages or by suit thereof in a court of competent jurisdiction, and levy in satisfaction of such judgment to be confined, however, to the land of the judgment debtor described in such suit and subscribed to the Association and/or which is under any contract or water right application with the United States.

SECTION 7. ~~Except for operation, maintenance and repair, no work shall be undertaken, purchase made or indebtedness incurred or be authorized during any one year, whereof the cost shall exceed Fifty Thousand Dollars (\$50,000) until it shall have first been ratified by at least two-thirds of the shares represented by the votes cast at an election to be called for that purpose. Special elections may be called and held for such purpose under such by-laws as the Board of Directors may prescribe, not inconsistent with these Articles. (See attached 2007 amendments).~~

ARTICLE VII.

SECTION 1. The exercise of the corporate powers of this Association and the management of its affairs shall be vested in 11 directors, from whom the President and Vice-President shall be chosen. The officers shall consist of the President, Vice-President, Treasurer and Secretary and shall be elected by the Board of Directors, but the Treasurer and Secretary need not be members of the Board of Directors or Stockholders of the Association. Any and all other officers, agents and employees as shall or may be from time to time created and established by the by-laws, shall be elected by the Board of Directors.

SECTION 2. ~~The annual election of the Board of Directors and of the other officers for whose elections these Articles provide, shall be held on the second Tuesday in January, 1906, and of each year, thereafter in such manner as the by-laws shall provide. (See attached 2007 amendments).~~

SECTION 3. ~~Each director shall at the time of his election be the owner of land situated within the district for which he is elected, to which shares of stock of this Association are appurtenant, and shall also be a resident of the district, and if he shall during his term of office cease to be such owner or resident of said district, his office shall thereupon and by reason thereof become vacant. (See attached 2007 amendments).~~

SECTION 4. Until the election of the Board of Directors at the annual election in 1906, and until their qualification the directors shall consist of the following named persons: Lawrence M. Miller, S. P. Green, H. H. Beach, Daniel Lynch, John T. Beaman, James B. Hunter, George Smith, Marion O. Delaplain, William S. Wallace, James H. Smith and Merrill W. Blakeslee.

SECTION 5. The Board of Directors shall have power to make such prudential by-laws as shall be necessary to the government of this Association, not inconsistent with these Articles, and for the management of its business and the conduct of its affairs, and to repeal, modify and amend the same from time to time. The Board shall not have power to adopt or enforce any by-laws that in anywise conflicts with any rules or regulations established by the Secretary of the Interior or other Agency of the Government, in connection with the Reclamation Act.

SECTION 6. In the event of a vacancy in the Board of Directors by reason of death, resignation or otherwise, the vacancy shall be filled by the Board of Directors.

SECTION 7. Regular and special meetings of the Board of Directors shall be called and held in such manner and at such times and places as may be prescribed by the by-laws.

SECTION 8. Special meetings of the Board of Directors may be called by the President, or by any six of the members of the Board. Such call shall be in writing and signed by either the President, or any six of the members and shall state the time of such proposed meetings, and the nature of the business to be transacted thereat. Such written call shall be filed with the Secretary, who shall thereupon immediately, and at least five days before the time fixed for such meeting mailed postcard to the President, and each member of the Board, a copy of such call, and shall publish the same in some newspaper published and of general circulation in the territory, described in Article IV, of these Articles, on three consecutive days before, and exclusive of, the day fixed for such special meeting. If the Secretary fail or refuse to publish such call or mail copies thereof, as above provided, then either the President, if he issued the call, or any one of the members who issued the same, may make publication and mail copies of the call, with like effect as if done by the Secretary. Special meetings of the Board of Directors shall be held at the office of the Association.

SECTION 9. The Directors shall have the power, in the name of the corporation, to prosecute, defend, and compromise all law suits; to make all contracts, in the name of the Association, necessary and proper for the conduct of affairs and the carrying on of the business of the Association, subject to all limitations and regulations prescribed by these Articles or the by-laws.

SECTION 10. The Board shall have the power to estimate, make and levy all assessments against the shares of stock of this Association to the extent and in the manner authorized by these Articles and the by-laws, and shall also have the power to enforce collection of assessments in such manner as may be prescribed in these Articles or in the by-laws of this Association, and shall also have power to prescribe the terms and conditions under which shares of stock may be subscribed for land to be supplied with water from the irrigation system of this Association, and shall also have power to

prescribe terms and conditions for supplying water upon land from the irrigation system of this Association.

SECTION 11. The Board shall have the power to make, publish, and enforce rules and regulations concerning the distribution, use and application of the water under its control, subject at all times to, and not inconsistent with, these Articles, or with the by-laws, or with the federal statutes applicable thereto and the rules and regulations established thereunder.

SECTION 12. The Board shall keep, or cause to be kept, a record of its transactions, which shall at all time remain in the office of the Association and shall, during office hours, be open to the inspection of the shareholders, or their properly authorized agents.

SECTION 13. The Board shall hear and determine complaints of shareholders of non-service, or of improper service or distribution of water, or of improper performance of duty by any employee of the Association relative to the distribution of water.

SECTION 14. The members of the Board of Directors shall receive such compensation as may be prescribed by the by-laws.

SECTION 15. (See attached.)

SECTION 16. (See attached 2007 amendments).

ARTICLE VIII.

SECTION 1. ~~At all elections the electors shall possess the following qualifications:~~

~~— (a) — Shall be at the time of the election the owner of at least one share of capital stock of this Association, and shall have been the owner thereof, as shown by the books of the Association, for at least twenty days before such election.~~

~~— (b) — Shall be of the age of twenty-one years or more and of sound mind.~~
(See attached 2007 amendments).

SECTION 2. ~~At all elections each shareholder shall be entitled to one vote for each share of stock owned by him, not however to exceed in the aggregate one hundred and sixty votes.~~ (See attached.)

SECTION 3. The votes shall be by written or printed ballot, and be voted only by the electors at the polls in person or by written proxy.

SECTION 4. The Board of Directors may make reasonable by-laws for the registration of voters and the method of holding elections.

SECTION 5. At all elections the person receiving the highest number of votes for any office shall be deemed elected to such office.

ARTICLE IX.

SECTION 1. The President, Vice-President, Treasurer and Secretary shall perform such duties as are prescribed by these Articles and by the by-laws, wherein such by-laws shall not be inconsistent with the law or with these Articles and shall receive such compensation as may be fixed by the by-laws, which compensation shall neither be increased nor diminished during their respective terms of office.

SECTION 2. In case of the absence, illness, or inability of the President to act from any cause, or in case of a vacancy in that office, the Vice-President shall act in the place and stead of the President.

SECTION 3. The President shall be the chief executive officer of the Association, and shall have general supervision over all other officers of the Association in the performance of their duties as such, and of the conduct of the business and affairs of the Association. He shall preside at all meetings of the Board of Directors and shall perform such other duties as may be devolved upon him by the by-laws.

SECTION 4. All certificates or other evidence of the ownership of shares of stock in the Association issued by the Association shall be signed by the President and Secretary of the Association and shall have the seal of the Association affixed.

SECTION 5. All of the contracts and instruments in writing executed for, or in behalf of the Association, shall be executed in the name of the Association by the President and Secretary and shall have the seal of the Association affixed.

SECTION 6. The Treasurer shall receive and be the custodian of all moneys and other funds of the Association. No moneys shall be paid out by the Treasurer unless upon warrants drawn on him by the President and Secretary, except as provided in Article XI, Section 8. No warrants shall be drawn on the Treasurer by the President and Secretary except upon the order of the Board of Directors, recorded in the minutes of the Board, and in a warrant record to be kept by the Secretary.

SECTION 7. The Treasurer shall keep a full, complete and accurate account of all moneys of the Association received and disbursed by him, in books belonging to the Association, and shall present a report and account thereof at every regular meeting of the Board, and shall, at the expiration of each quarter, prepare and publish, in such manner as the by-laws may prescribe, a quarterly statement to shareholders showing all such receipts and disbursements during the last preceding quarters; and the Treasurer shall perform such other duties as may be devolved upon him by the by-laws.

SECTION 8. The Secretary shall act as the clerk of the Board of Directors and keep a record of all their proceedings. He shall immediately upon their adoption, record in a book of by-laws to be kept by him in his office, all by-laws adopted, and shall keep such book open to the inspection of any member of the Association, or his properly authorized agent, at all times during business hours. And the Secretary shall perform such other duties as may be devolved upon him by the by-laws.

SECTION 9. The Treasurer and Secretary shall give such bond as may be prescribed by the by-laws; Provided, that neither the President, Vice-President, or any member of the Board of Directors or the Secretary, shall be accepted as a surety on a bond of the Treasurer.

ARTICLE X.

SECTION 1. The Board of Directors may create such other offices as may be necessary for the carrying on of the business and affairs of this Association, and prescribe the manner of appointment, powers, duties, terms of office, eligibility and compensation thereof by by-laws not inconsistent with these Articles.

SECTION 2. The Board of Directors may remove from office, the Treasurer, Secretary, or the incumbent of any office created by the Board for incompetence, neglect of duty, misappropriation of funds of the Association, or for violation of any of the provisions of these Articles or of any by-law. The Board shall adopt by-laws to govern the procedure for such removal.

ARTICLE XI.

SECTION 1. The irrigation system which it is the purpose of this Association to acquire, or secure control of, is to consist of a canal to be constructed by the United States Government to furnish water for irrigation and domestic purposes to unwatered lands lying within the boundaries of said Grand Valley Irrigation District, as defined in Section 5, Article IV, hereof, and such diversion works, ditches, laterals, distribution works, power plant, electric transmission lines, pumping plants, telephone system, and other works or structures as are necessary or proper in connection with the construction and maintenance of said irrigation system. The headgate of said canal is to tap the water of the Grand River at a point near the south line of the Northwest quarter of Section thirteen, Township ten South, Range ninety-eight West of the 6th Principal Meridian, whence the canal will extend in a southwesterly direction through the Canyon of the Grand River for a distance of about six miles, thence in a general westerly and northwesterly course between sixty and sixty-five miles to a point near the Excelsior Divide, so called, discharging its waste water into the Grand River or tributaries thereof.

ARTICLE XII.

The corporate indebtedness other than that incurred for construction, purchase, or securing control of the irrigation system shall not exceed two-thirds of the capital stock.

ARTICLE XIII.

~~The term of existence of this corporation shall be twenty years.~~ (See attached.)

ARTICLE XIV.

SECTION 1. These articles may be amended in accordance with the provisions of the statutes of the State of Colorado in such case made and provided.

SECTION 2. These articles shall not be so amended as to in anywise conflict with any federal statutes, or the rules and regulations established thereunder relating to the supply of water to the land of shareholders of this Association.

ARTICLE XV.

SECTION 1. This Association may accept and avail itself of or subject itself to the provision of any law or laws enacted or that may be enacted by Congress, or the Legislative body of the state, which may be applicable to corporations organized for like purposes as this Association. Such acceptance or subjection shall be valid when ratified by at least two-thirds of the shares represented by the votes cast at any annual election or any special election called for the ratification thereof. Notice of such election shall be given in the method prescribed by these Articles and the by-laws of the Association, stating the purpose thereof.

SECTION 2. The undersigned furthermore grants to the United States, over the lands described herein, as may be required in connection with the works constructed or controlled by the United States, for the use and benefit of the stockholders, necessary right-of-way for the construction, operation and maintenance of canals, tunnels, and other water conduits, telephone and electric transmission lines, drains, dikes, and other works for irrigation, drainage and reclamation.

SECTION 3. The undersigned furthermore releases and discharges the United States from damage or claim for damage on account of the construction, operation and maintenance of the canals or other irrigation works built or operated in connection with this project, including consequential damages, except that reasonable compensation will be made for all improvements actually damaged or destroyed by such construction. The undersigned also releases and hereby grants to the United States the right to take, appropriate and use all seepage, waste and spring waters arising on the land herein described and not heretofore appropriated.

ARTICLE XVI.

The seal of this Association shall be a figure of two concentric circles, the outer being two inches, and the inner one and one-half inches in diameter. In the space between the two shall be the words "Grand Valley Water Users Association," and bearing within the center space an unrolled scroll with the words and figures therein "Incorporated 1905," "Colorado."

END OF ARTICLES OF INCORPORATION

AMENDMENTS TO ARTICLES OF INCORPORATION

AMENDMENTS PRIOR TO 2007:

- 1. Article V amended by omission of Sections 3, 4, 5 & 12.**
- 2. Article VII amended by addition of Section 15 as follows:**

SECTION 15. The Directors shall have no personal liability to the corporation or to its members or stockholders for monetary damages for breach of fiduciary duty as a director; except that this provision does not eliminate or limit the liability of a director for any breach of the director's duty of loyalty to the association or its members or stockholders; acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law; or any transaction from which the director derives an improper personal benefit. This provision shall not effect the liability of a director for any act or omission occurring prior to the effective date of this provision.

- 3. Article VIII amended by changing Section 2 to read:**

SECTION 2. At all times each shareholder shall be entitled to one vote for each acre of land owned by him that is entitled to stock, not however to exceed in the aggregate an amount equal to the number of acres on which a qualified recipient/individual landowner is entitled to receive irrigation water under Section 426.6 of the Reclamation Reform Act of 1982, as the Section now exists or may hereafter be amended.

- 4. Article XIII amended to read:**

The corporation shall have perpetual existence.

2007 AMENDMENTS:

- 1. Article VI, Section 7 is amended to read as follows:**

Except for operation, maintenance and repair, no work shall be undertaken, purchase made or indebtedness incurred or be authorized during any one year, whereof the cost shall exceed One Million Dollars (\$1,000,000) until it shall have first been ratified by at least two-thirds of the shares represented by the votes cast at an election to be called for that purpose. Special elections may be called and held for such purpose under such by-laws as the Board of Directors may prescribe, not inconsistent with these Articles.

2. Article VII, Section 2 of the Articles of Incorporation of the Grand Valley Water Users Association is amended to read as follows:

Members of the Board of Directors of the Association shall be elected as follows:

- (a) The annual election of members of the Board of Directors shall be held on the second Tuesday of February, 2008, and on the second Tuesday of February of each year thereafter, in such manner as the by-laws shall provide. At the annual election there shall be one vote per share of capital stock of the Association, regardless of the number of directors being elected. An elector who owns one share of capital stock shall be entitled to cast his vote for one of the candidates for director at the annual election. An elector who owns more than one share of capital stock shall be entitled to cast his votes for any one or more of the candidates for director in any manner desired by the elector. Any tie votes for members of the Board of Directors shall be resolved by lot in the manner set forth in the by-laws.
- (b) At the election of the Board of Directors held in 2007, the following procedures shall apply: All eleven members of the Board of Directors shall be elected at the 2007 election. The eleven candidates receiving the most votes shall be elected to the Board of Directors. The four persons receiving the most votes shall be elected for a term of three years. Of the remaining seven persons, the four persons receiving the most votes shall be elected for a term of two years. The remaining three persons shall be elected for a term of one year.
- (c) Upon the expiration of the initial staggered terms provided for in Subsection (b), above, all directors shall thereafter be elected for three year terms. For purposes of determining the terms of office of directors, a “year” shall be deemed to be the period from the date of one annual election to the date of the next annual election.

3. Article VII, Section 3 of the Articles of Incorporation of the Grand Valley Water Users Association is amended to read as follows:

Each director shall possess the following qualifications at the time of his election or at the time of his appointment to fill a vacancy on the Board of Directors:

- (a) The director shall be a natural person who is a resident of the Grand Valley Irrigation district (defined in Article IV, Section 5, above); and
- (b) The director shall be the owner of at least two and one-half (2 ½) acres of land to which shares of stock of the Association are appurtenant (“qualifying

land”). As used in this Section, a person shall be considered to be an owner of qualifying land if the person meets one of the following requirements:

- (1) The person is an owner of record, either solely, as a joint tenant or as a co-tenant, of the qualifying land;
 - (2) The qualifying land is owned of record by a corporation, limited liability company, partnership or other organization, association or entity, either solely, as a joint tenant or as a co-tenant, and the person owns a voting interest in the organization, association or entity; or
 - (3) The land is owned of record by a trust or by trustees of a trust, either solely, as a joint tenant or as a co-tenant, and the person is a trustee of the trust.
- (c) If a director ceases meet the qualifications set forth in Subsections (a) or (b), above, during his term of office, he shall no longer be qualified to be a director and his office shall be deemed vacant.

4. Article VIII, Section 1 of the Articles of Incorporation of the Grand Valley Water Users Association is amended to read as follows:

The following provisions shall govern the qualifications of electors and the voting of shares:

- (a) At all elections each elector shall possess the following qualifications at the time of the election, except as otherwise provided in Subsection (d), below:
- (1) The elector shall be the owner of at least one share of capital stock of the Association and shall have been the owner thereof, as shown by the books of the Association, for at least twenty days before such election; and
 - (2) The elector shall be at least eighteen years of age.
- (b) For purposes of Subsection (a)(1), above, an elector shall be considered to be the owner of capital stock of the Association if the elector is a natural person who meets one of the following requirements:
- (1) The person is an owner, either solely, as a joint tenant or as a co-tenant, of the capital stock;
 - (2) The capital stock is owned by a corporation, limited liability company, partnership or other organization, association or entity, either solely, as a joint tenant or as a co-tenant, and the person owns a voting interest in the organization, association or entity; or

- (3) The capital stock is owned by a trust or by trustees of a trust, either solely, as a joint tenant or as a co-tenant, and the person is a trustee of the trust.
- (c) There shall be only one vote per share of capital stock of the Association. If a share of stock is owned by more than one person, organization, association or entity, the owners of the share of stock shall decide the person who shall be the elector for that share, which person shall be qualified as set forth in Subsections (a) and (b), above, and shall declare the identity of such person to the Association at or prior to the election. If the owners of a share of stock fail to make such declaration and multiple votes are attempted to be cast by or on behalf of the share of stock, all of the votes cast by or on behalf of that share of stock shall be invalidated and disregarded.
- (d) If capital stock of the Association is appurtenant to lands that are subdivided into lots or smaller parcels, the Association may require the formation of a homeowners association or similar organization to represent all such lands on matters relating to the Association. The Association's annual assessment for all of the capital stock appurtenant to subdivided lands that are represented by a homeowners association will be billed to that homeowners association, and the homeowners association shall provide to the Association the name and address of the natural person to whom the billing for the annual assessment shall be sent. Such person shall be at least eighteen years of age. Notwithstanding anything to the contrary stated above, the elector for all of the capital stock appurtenant to subdivided lands represented by a homeowners association shall be the natural person designated in the Association's records as the person at the homeowners association to whom the billing for the annual assessment shall be sent.
- (e) Any qualified elector shall be entitled to appoint a proxy to vote the elector's shares, in the manner provided by applicable Colorado law.

5. **Article VII, Section 16 of the Articles of Incorporation of the Grand Valley Water Users Association is amended to read as follows:**

The Association shall indemnify, to the fullest extent permitted by applicable law in effect from time to time, any person, and the estate and personal representative of any such person, against all liability and expense (including attorneys' fees) incurred by reason of the fact that he is or was a director or officer of the Association or, while serving as a director or officer of the Association, he is or was serving at the request of the Association as a director, officer, partner, trustee, employee, fiduciary, or agent of, or in any similar managerial or fiduciary position of, another domestic or foreign corporation or other individual or entity or of an employee benefit plan. The Association shall also indemnify any person who is serving or has served the Association as director, officer, employee, fiduciary, or agent, and that person's estate

and personal representative, to the extent and in the manner provided in any bylaw, resolution of the directors, contract, or otherwise, so long as such provision is legally permissible.

BY LAWS OF THE
GRAND VALLEY WATER USERS' ASSOCIATION

ARTICLE I

Articles of Incorporation.

The object of this Association, territory covered, the qualifications, duties, rights and liabilities of the members of this Association, the number and election of, and the qualifications, duties, rights and liabilities of the Directors of this Association, shall be as provided for and as required and stated in the Articles of Incorporation, and these by-laws.

ARTICLE II

Stockholders.

Section 1. Annual meetings.

The regular annual meeting of the stockholders of this Association shall be held at Grand Junction, Mesa County, Colorado, on the date established in the Articles of Incorporation and at the time set by the Board of Directors.

Section 2. Special meetings.

Special meetings of the stockholders of this Association may be held at any time pursuant to a resolution of the Board of Directors or as otherwise may be provided or required by the laws of the State of Colorado.

Section 3. Notice of meetings.

Notice of all regular and special meetings of the stockholders shall be given as required by the laws of the State of Colorado.

Section 4. Voting.

Only stockholders of record shall be entitled to vote at the regular and special meetings of stockholders. At such meetings each shareholder shall be entitled to one vote for each share of stock held in his name, and only such number of shares as are appurtenant to what is classed as Class 1 acres on the records of the Association. Directors shall be elected in the manner set forth in the Articles of Incorporation.

Section 5. Definition of terms relating to stock and stockholders.

(a) When the words "share," "shares," or "stock" are used in the Articles of Incorporation or these by-laws, they shall be taken to mean, until shares are actually issued, the shares of the capital stock of the

Association agreed to be taken by subscribers (or their successors in interest) for the capital stock of the Association, as shown by the records of the Association, whose subscriptions have not for any reason been canceled or the land for which the subscriptions were made have not been excluded by the United States government from the Grand Valley Project, Colorado.

(b) When the words “shareholder,” “shareholders,” “stockholder,” or “stockholders” are used in the Articles of Incorporation or these by-laws, they shall be taken to mean, until shares are actually issued, subscribers (or their successors in interest) for the stock of the Association, whose subscriptions have not for any reason been canceled or the land for which the subscriptions were made have not been excluded by the United States government from the Grand Valley Project, Colorado.

Section 6. Quorum.

For the purpose of determining a quorum only shares of outstanding stock which are appurtenant to land classed as Class 1 acres as specified in Section 4 of this article shall be considered. A majority of such shares of outstanding stock unless otherwise provided in the Articles of Incorporation or by the laws of the State of Colorado shall be necessary to constitute a quorum at all meetings of stockholders. When a quorum is present at any meeting a majority of the stock represented there at unless otherwise provided in the Articles of Incorporation or by the laws of the State of Colorado, shall decide any question brought before such meeting.

Section 7. Failure of quorum.

In the event no quorum is present at any meeting the Directors may call another meeting of stockholders as soon as reasonably possible, provided, however, nothing herein contained shall prevent any meeting when a quorum is not present from being adjourned from time to time for the purpose of securing a quorum.

Section 8. Proxies.

Any stockholder entitled to vote may be represented at any regular or special meeting of stockholders by a duly appointed proxy. The Association shall prepare a standard proxy appointment form, which form shall be approved by the Board of Directors and made available to stockholders. The appointment of a proxy shall be made using the association’s approved proxy appointment form. The proxy appointment form shall be signed by the stockholder making the appointment, but shall require no other attestation. No proxies shall be recognized unless the proxy appointment form is executed within eleven months of the date of the meeting at which the form is presented. Any individual appointed as a proxy must be a stockholder in the Association and must be present at the meeting to vote the shares under such proxy. If an individual appointed as

a proxy is not present at a meeting to vote the shares under the proxy, the members of the board of Directors who are present at the meeting at which the proxy is to be voted shall be deemed to have been appointed as the proxies to vote the shares of the stockholder who signed the proxy appointment form. Such shares shall be split evenly between the members of the Board of Directors who are present at the meeting.

Section 9. Registration Committee.

To facilitate stockholders elections, whether general or special, there shall be hereafter a standing committee of three known as the Registration Committee, consisting of the Secretary and two other persons to be selected by the Board of Directors. The Registration Committee shall register and tabulate proxies and voters before the time of holding any stockholders' election and shall collect, tabulate and announce the votes cast at any stockholder' election.

Section 10. Time of filing of proxies.

All proxy appointment forms signed by any shareholder shall be delivered to the Registration Committee at least 1 hour prior to the start of the stockholder's meeting at which the proxy is to vote.

Section 11. Tabulation of proxies.

The Registration Committee shall register all proxies and persons entitled to vote and to what extent, either in person or by proxy and shall in a systematic way register and tabulate said voters and votes so the same may be readily cast at such meeting and shall report the result at the opening of the stockholders' meeting, and if said report is not unanimous, majority and minority reports or a report from each member may be reported to the stockholders' meeting and in such an event, the stockholders at the meeting shall decide the legal voters and proxies reported.

Section 12. Judges of election.

The presiding officer at a stockholders meeting shall appoint a committee of three members to act as the judges of election. They shall not be candidates for election as Directors. They shall provide a ballot box to be used at the meeting. Each ballot shall state the names of candidates voted for, and the number of votes for each, and shall be signed by the elector. The committee shall furnish the blank ballot, and count and report the result of the vote.

Section 13. Order of business.

The order of business at the regular annual meeting and so far as possible at all other meetings of stockholders shall be as set by the board of Directors.

Section 14. Officers of meetings.

The President, if present, shall preside at all meetings of the stockholders. In his absence the Vice-President shall preside. If both President and Vice-President are absent a presiding officer shall be elected by the members present. The Secretary shall keep or cause to be kept a faithful record of the proceedings of all stockholders meetings.

ARTICLE III

Directors

Section 1. Number and authority

There shall be eleven members of the Board of Directors. The Board of Directors shall be elected in accordance with the Articles of Incorporation of the Association and shall be elected to serve for their ensuing term and until the election of their respective successors. The Board of Directors shall have entire charge of the property, interests, business and transactions of the Association, with full power and authority to manage and conduct the same.

Section 2. Classes of Directors.

(a) There shall be three classes of directors, as follows:

(i) Class A: Class A shall consist of the three directors elected for one year terms at the election of the Board of Directors held in 2007 and their successors. After the expiration of the initial one year term for Class A directors, all future terms for Class A directors shall be for a period of three years as set forth in the Articles of Incorporation. Thus, the initial term for Class A directors expired in 2008, the next term for Class A directors will expire in 2011, and subsequent terms shall expire every three years thereafter.

(ii) Class B: Class B shall consist of the four directors elected for two year terms at the election of the Board of Directors held in 2007 and their successors. After the expiration of the initial two year term for Class B directors, all future terms for Class B directors shall be for a period of three years as set forth in the Articles of Incorporation. Thus, the initial term for Class B directors will expire in 2009, the next term for Class B directors will expire in 2012, and subsequent terms shall expire every three years thereafter.

(iii) Class C: Class C shall consist of the four directors elected for three year terms at the election of the Board of Directors held in 2007 and their successors. All future terms for Class C directors shall also be for a period of three years as set forth in the Articles of Incorporation. Thus, the initial term for Class C directors will expire in

2010, the next term for Class C directors will expire in 2013, and subsequent terms shall expire every three years thereafter.

(b) The sole purpose of having three classes of directors is to maintain the staggered terms for directors as mandated by the amendments to the Articles of Incorporation adopted in 2007. The directors of all classes of directors shall otherwise have equal rights, duties and responsibilities.

(c) If no quorum is present for the annual meeting of stockholders at which members of the Board of Directors are elected, incumbent members of the Board of Directors whose terms have expired shall continue to serve until the election of their successors or until their re-election at an annual meeting where a quorum is present. When such an election occurs, the persons elected to the Board of Directors shall serve the remaining term of the class of directors to which they were elected. For example, no quorum was present for the annual meeting scheduled for 2008. Thus, the Class A directors whose terms expired in 2008 shall continue to serve until their successors are elected or until they are re-elected at an annual meeting where a quorum is present. If this occurs at the annual meeting in 2009, the Class A directors elected at the 2009 annual meeting will serve until 2011, which is the expiration date of the next Class A term.

(d) If no quorum is present for two or more consecutive annual meetings, two or more classes of directors will be up for election at the next annual meeting at which a quorum is present. In such case, the directors shall fill the open positions in the various classes up for election based on the number of votes received by each director. The directors receiving the fewest number of votes at the annual meeting will be elected to the class of directors with the shortest remaining term, the directors receiving the next fewest number of votes at the annual meeting will be elected to the class of directors with the next shortest remaining term, and so forth.

Section 3. Resolving tie votes.

Any tie votes in the election for members of the Board of Directors shall be resolved by lot with the judges of election committee conducting a random drawing.

Section 4. Qualifications.

No person shall be elected, nor shall be competent to act as a Director of the Association unless possessing the qualifications prescribed in the Articles of Incorporation of the Association.

Section 5. Vacancies.

Any vacancy occurring in the Board of Directors shall be filled for the unexpired term by a majority of the remaining members. In the event of the membership of the Board falling below the number necessary for a quorum, a special meeting of the stockholders shall be called and such number of Directors shall be elected thereat to restore the membership of the Board to its full number.

Section 6. Regular meetings.

The regular meetings of the Board of Directors shall be held in the office of the Association in the City of Grand Junction, Colorado, monthly at the date and time set by the Board of Directors. If deemed expedient however the Board may meet any time or place, provided the place is designated in the notice of the meeting.

Section 7. Special meetings.

Special meetings of the Board of Directors may be held at any time on the call of the President, providing each member of the Board be given notice of the time, place and purpose of meeting at least 24 hours prior thereto. Special meetings may be held at any time and place and without notice by unanimous consent of the Board.

Section 8. Quorum.

A majority of the Board of Directors shall constitute a quorum and a majority vote of the members in attendance at any Board meeting shall in the presence of a quorum, decide its action. A minority of the Board present at any regular or special meeting may, in the absence of a quorum, adjourn to a later date, but may not transact any business until a quorum has been secured.

Section 9. Election of officers.

At the first meeting of the Board of Directors after the election of directors each year a President, Vice-President, Secretary, Treasurer or other officers shall be elected to serve for the ensuing year and until the election of their respective successors. Election shall be by ballot and a majority of the votes cast shall be necessary to elect. The Secretary and the Treasurer need not be stockholders.

Section 10. Compensation of Directors, officers and employees.

The Board of Directors shall fix the compensation of Directors, officers and employees.

Section 11. Order of business.

The regular order of business at meetings of the Board of Directors shall be as set by the Board of Directors.

Section 12. Auditing

An independent auditor shall be retained to examine the books of the Association, and shall report their findings at the annual meeting of the stockholders.

Section 13. Bonds of officers and employees.

The Board shall have the power to require any officer or employee to give any and all bonds for the protection of the Association as it may deem necessary or desirable.

ARTICLE IV
Revenues.

Section 1. Raising of revenues.

The Board of Directors for the purpose of raising revenues to meet any and all obligations of the Association are empowered to and shall make all necessary levies or assessments against shares of stock of the Association and / or establish charges for water and other services all to the end that there may be sufficient funds available to promptly meet when due any and all obligations of the Association as aforesaid, to be done as provided by the laws of Colorado or by any contract between the United States and the Association.

Section 2. Payment of assessments and service charges.

Any order or resolution levying any such assessments or establishing charges for water or other services shall specify the time or times when the same shall be payable and shall be levied or established sufficiently in advance of the date of payment so as to permit of collection thereof in an orderly and business-like manner on or before the time when due.

Section 3. Amount of Assessments and service charges.

In determining the amount of any such assessments and / or water or other service charges reasonable allowance for estimated deficits caused by the failure of some stockholders to pay the same shall be made.

Section 4. Notice of assessment.

The Secretary on or before fifteen days in advance of the date of payment shall notify each shareholder of any and all such assessments and of the amount thereof and the time payable either personally or by depositing the same in the postoffice, postage paid, addressed to the stockholder at his last known address as shown by the records of the Association.

Section 5. Interest on delinquent assessments.

All assessments shall bear interest at a rate to be fixed when the assessment is made from the date due until paid.

ARTICLE V

Section 1. Remedies in General.

The Association shall have all remedies provided by its Articles of Incorporation, in contracts between the Association and the United States, and by law against its stockholders for non-payment of levies, assessments, charges for water service and other services, and any other amounts due to the Association (referred to herein as "Amounts Due"). The delinquent stockholder shall also pay all costs and expenses, including without limitation court costs and attorneys' fees, incurred by the Association in enforcing and collecting the Amounts Due and in exercising the remedies available to it (referred to herein as "Collection Costs"), and interest as specified in Section 2, below. All remedies shall be exercised in accordance with and in compliance with the Association's Articles of Incorporation, the contracts between the Association and the United States, and applicable law. All remedies available to the Association shall be cumulative, and the exercise of one remedy does not preclude the exercise of other available remedies.

Section 2. Interest.

All Amounts Due shall bear interest at the rate of twelve percent (12%) per annum from the due date until paid in full by or on behalf of the delinquent stockholder. All Collection Costs shall bear interest at the rate of twelve percent (12%) per annum from the date such costs were paid by the Association until paid in full by or on behalf of the delinquent stockholder. All interest accruing on Amounts Due and on Collection Costs shall be referred to herein as the "Interest." The amount of Interest to be charged on Amounts Due and on Collection Costs may be revised from time to time by resolution of the Board of Directors of the Association.

Section 3. Specific Remedies.

Remedies available to the Association for collection of Amounts Due, Collection Costs and Interest include the following:

(a) All Amounts Due, together with Collection Costs and Interest, shall be a lien on the delinquent stockholder's stock in the Association and on the land of the of the delinquent stockholder to which such stock is appurtenant (collectively referred to herein as the "Liened Property"), until the Amounts Due, Collection Costs and Interest are paid in full. This lien may be foreclosed and the Liened Property may be sold in the manner provided by applicable Colorado law for the foreclosure of mortgages.

Every published notice in such foreclosure proceedings shall include a statement to the effect that any purchaser at the foreclosure sale shall purchase the Liened Property subject to the lien of the Association for any Amounts Due that are not included in the foreclosure proceeding and subject to the lien of any future levies, assessments, charges for water service and other services, and any other amounts due to the Association. Every purchaser under the foreclosure proceedings shall take title to the Liened Property subject to the continuing lien of the Association and/or the United States as provided in the Association's Articles of Incorporation, the contracts between the Association and the United States, the subscriptions for stock to the Association and/or applicable law.

(b) The Association may refuse to deliver water to the delinquent stockholder until the Amounts Due, together with all Collection Costs and Interest, have been paid in full. If at any time water is being delivered to a delinquent stockholder, the Association may shut off the water to the stockholder and keep the water shut off until the Amounts Due, together with all Collection Costs and Interest, have been paid in full.

(c) The Association may maintain an action against the delinquent stockholder in a court with jurisdiction for collection of the Amounts Due, together with Collection Costs and Interest.

(d) The Association may forfeit all of the delinquent stockholder's stock in the Association. Prior to forfeiting a stockholder's stock in the Association, the Association shall send a written notice to the stockholder demanding payment of all Amounts Due, Collection Costs and Interest and specifying the date the forfeiture is to take effect. This notice shall be sent by first class mail to the address of the stockholder as shown in the records of the Association at least thirty days prior to the date the forfeiture is to take effect. If all Amounts Due, Collection Costs and Interest are paid prior to the date the forfeiture is to take effect as specified in the notice, the stock shall not be forfeited.

(e) The Association shall also be entitled to exercise any other remedy available to it under its Articles of Incorporation, in contracts between the Association and the United States, or by law.

Section 4. Enforcement by the United States.

To the extent provided in the contracts between the Association and the United States, the United States shall be allowed to exercise the rights and remedies of the Association as set forth in this Article V.

ARTICLE VI
Amendments.

Section 1. Amendment of Articles of Incorporation.

Amendment may be made to the Articles of Incorporation in the manner provided by law.

Section 2. Amendment to by-laws.

The Board of Directors may amend, alter, add to or repeal these by-laws subject only to the limitations provided by the Articles of Incorporation or by any contract between the United States and the Association.

ARTICLE VII
Repeal of former by-laws.

Section 1.

Any and all by-laws heretofore adopted and in force are hereby repealed and these by-laws or as they may hereafter be amended, shall constitute the sole and only by-laws of the Association and shall take effect immediately upon their adoption.

Resolution To Adopt These By Laws

Was Made On December 4, 2008

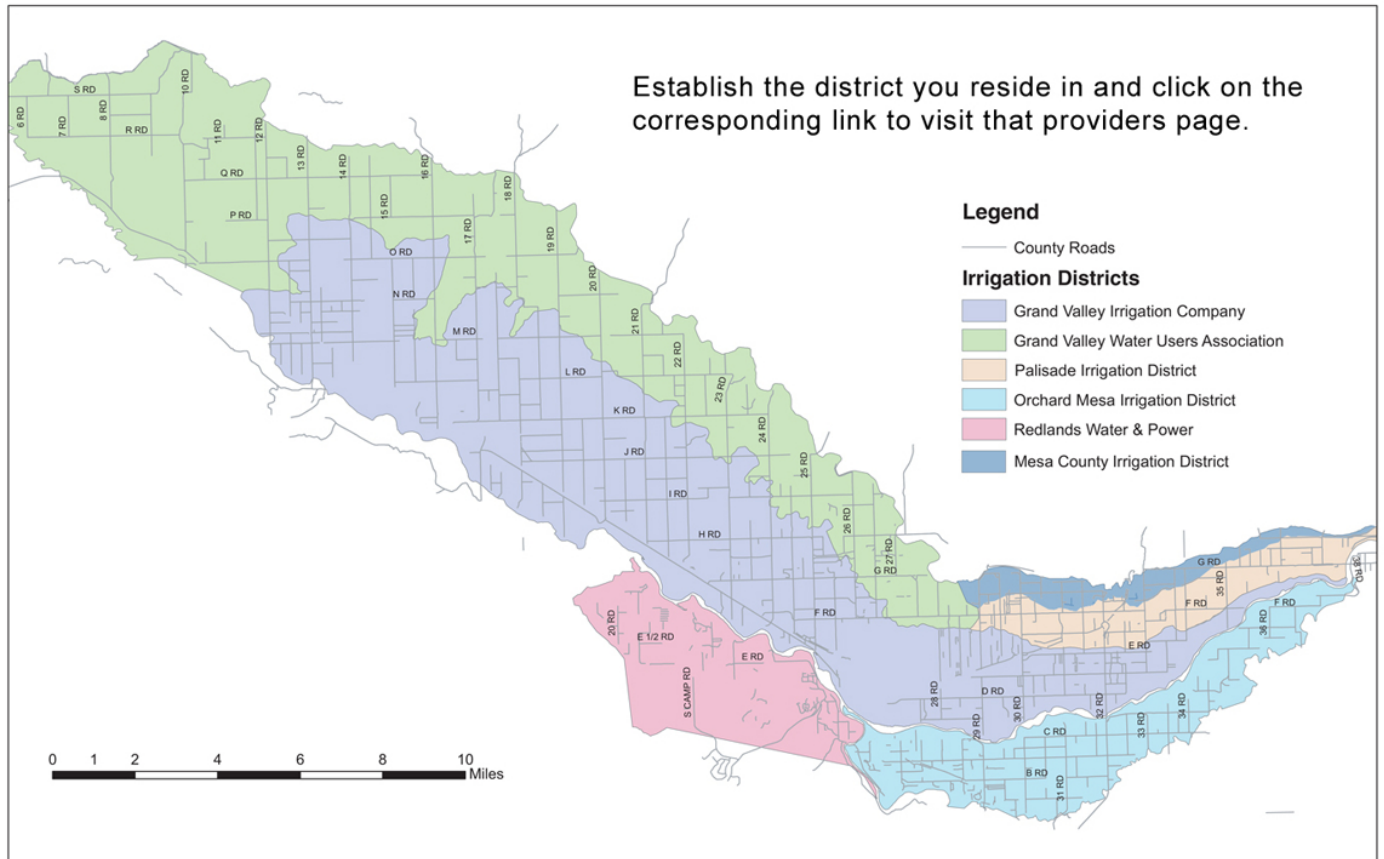
Grand Valley Water Users'
Association

ATTEST:

D. Kim Albertson
President, Board of Directors

Daniel E. Cronk
Secretary

Appendix B
Overview Maps (2 of 2)



Appendix C
Grand Valley Project System Overview Memo



Appendix A: Grand Valley Project System Overview Memo

Memorandum: Water Bank Phase 2B, Task 1, Test Case Irrigation
Systems Grand Valley Project

To: Water Bank Technical Subcommittee
From: Shaden Musleh, John Craven, Hydros Consulting, Inc.
Subject: Water Bank Phase 2B, Task 1, Test Case Irrigation Systems
Grand Valley Project
Date: October 16, 2015

Overview

The Grand Valley Project (Project) is a US Bureau of Reclamation (USBR) project. Its features include the Grand Valley Project Diversion Dam and Government Highline Canal that diverts from the Colorado River approximately eight miles northeast of Palisade, CO. The project includes two divisions: the Gravity Division and the Orchard Mesa Division. The Grand Valley Water Users' Association (GVWUA, or the Association) is responsible for operating the Gravity division of the Project. The Project is served by the Government Highline Canal, which is approximately 55 miles long, with a capacity of 1,675 cfs, and has historically served a full and supplemental supply of irrigation water to approximately 25,000 acres. In addition to the main canal, the system consists of approximately 150 miles of laterals, of which over 90 percent have been piped creating a pressurized delivery system. As part of the USBR Grand Valley Unit 1974 salinity control project, canals and ditches within the Association boundaries began to be lined. Totalizing meters have been installed at each farm turnout; however no records are maintained of how water is distributed among fields below a farm turnout.

Operation and Management

The Association operates the Gravity Division of the Project, which first delivered a full supply of irrigation water in 1917, and currently delivers a full supply of water to approximately 25,000 acres of agricultural and residential lands on the north side of the Colorado River. The value of crops grown with irrigation water from the Project is approximately \$20 million per year. From 1970 to 2013, the Association (Gravity Division) diverted an average of 300,000 acre-feet/year from the Colorado River for use within its boundaries. Water is diverted from the Colorado River at the Grand Valley Project Diversion Dam into the Government Highline Canal, which runs approximately 16 miles to the boundary of the Association lands. The Government Highline Canal provides water to the Palisade and Mesa County Irrigation Districts through turnouts on the Government Highline Canal and direct diversions into their respective systems for further conveyance to individual users, pursuant carriage contracts with these two districts. The Orchard Mesa Power Canal diverts 860 cfs (460 cfs irrigation and pumping, and 400 cfs for power generation at the Grand Valley Plant, owned jointly with GVWUA) into the Orchard Mesa Power Canal for power purposes and irrigation of the lands in the Orchard mesa Division of the Project pursuant contracts with the Association and USBR.

As part of the Grand Valley Unit salinity control project, a significant portion of system canals were lined and most of the delivery laterals have been converted to pressurized

pipe. Totalizing meters have been installed at each farm turnout. As a result of these improvements, GVWUA can maintain excellent control and measurement of water deliveries to its beneficiary lands. In most cases the Association has no records of water distribution among fields below a farm turnout.

In 2002 additional canal checks and a SCADA (supervisory control and data acquisition) system were installed along the main canal, which allow for improved supply/demand management in the canal system. The canal checks enable the water within the canal to be raised, allowing delivery of water during periods of lower demand throughout the system. Installation of the SCADA system, canal checks, and the lining of much of the system is believed to have substantially increased the overall system efficiency.

Growth of urban and suburban areas within its boundaries means that the Association also supplies increasing amounts of water for use in landscape irrigation in high-density residential developments. These deliveries are made through a system of pressurized pipes, and are controlled and delivered at a “development level”, i.e. one turnout and meter for each development, with the Association sending a single bill to the homeowners’ association for the development.

Additionally, the Project uses the Highline Reservoir (located near the end of the system) to temporarily hold and manage water within the system. Based on conversation with GVWUA Manager, Mark Harris, Mr. Harris stated that although the Project does not have storage rights in this reservoir, they do have an agreement to temporarily store water in the reservoir for up to 72 hours per the State Engineer’s regulations.

The Project’s water rights are held by the United States of America and put to beneficial user by the owners of the properties to which the water is appurtenant. The Association is the contracting entity with Reclamation with responsibility for water delivery and operation and maintenance of the system. The Association has managed the maintenance and operation of the system since 1949. In practice, the Association treats the facilities and water as if it owned them; a description of the water rights is presented below.

The Project diverts water for use on Association lands from the Colorado River through the Grand Valley Project Diversion Dam using the following water rights: 730 cfs water right for irrigation use and a 220 cfs water right for domestic uses. In addition, natural runoff from up-gradient Bureau of Land Management (BLM) lands is intercepted by the Project canals.

Table 1: Grand Valley Project Water Rights, Division 5 District 72, Structure 646

Water Right Name	Water Source	Adj. Date	Appr. Date	Rate Amount (CFS)	Absolute	AP/EX³	Use	Project Division⁴
Water Rights used by the Association								
Grand Valley Project	Colorado River	7/22/1912	2/27/1908	730.0	A		Irrigation	GD
Grand Valley Project	Colorado River	7/25/1941	2/27/1908	220.0 ¹	A		Domestic	GD
Other Project Water Rights Diverted at Grand Valley Project Dam Headgate								
Grand Valley Project	Colorado River	7/25/1941	2/27/1908	800.0 ²	A		Commercial	Power Plant
Grand Valley Project	Colorado River	7/22/1912	10/1/1900	10.2	A		Irrigation	OMID
Grand Valley Project	Colorado River	7/22/1912	10/25/1907	450	A		Irrigation	OMID
Grand Valley Project	Colorado River	7/22/1912	10/1/1889	80.0	A		Irrigation	PID
Grand Valley Project	Colorado River	7/25/1941	6/1/1918	23.5	A		Irrigation	PID
Grand Valley Project	Colorado River	7/22/1912	7/6/1903	40.0 ³		40.0	Irrigation	MCID

- 1) Limited to non-irrigation season (for domestic use, including livestock purposes)
- 2) Project power plant non-consumptive right, limited to 400 cfs during irrigation season and 800 cfs during the non-irrigation season.
- 3) Alternate Point/Exchange Point
- 4) **GD**: Gravity Division (i.e. GVWUA water), **MCID**: Mesa County Irrigation District, **OMID**: Orchard Mesa Irrigation District, **PID**: Palisade Irrigation District

Water Allocation and Land Classification

USBR land classifications determine the water allotments associated with individual parcels within the Project's boundaries. Since 1953 arable lands are classified as Class 1 and non-arable lands as Class 6. Only Class 1 lands have an irrigation water allotment, Class 6 do not receive any Project water. The water rights for the Project are tied to lands assessed as arable (Class 1). The base allotment to Class 1 Association lands is 4 acre-feet/acre, measured at the farm headgate. Should additional water be available it can be delivered to Class 1 lands and paid for at the "Excess Rate". Salinity control considerations restrict deliveries to Class 6 lands. It is common, for example, to see the application of 6 acre-feet/acre to corn grown under furrow irrigation and higher rates for alfalfa. The Project's water cannot be applied to lands outside the Project area. Water is provided to Project's lands from approximately April 1 through October 31 of each year.

Historical Diversion Records

River headgate diversions are readily available on CDSS, however during a phone conversation on 5/18/2015 with Division 5 Engineer, Alan Martellaro, he stated that there are known errors associated with diversion records kept for the Grand Valley Project Structure ID 646. Mr. Martellaro stated that the known errors affect records from 2004 – present. He also stated that the Division 5 office was actively working on correcting the errors. Because diversion records through the structure are known to contain errors, they are not included as a part of this memorandum. River headgate diversions, deliveries to major laterals and deliveries to main farm turnouts gaged. Irrigation return flows to the natural washes and drains are currently not measured.

Irrigated Lands and Cropping Records

Irrigated lands in Division 5 served by the Grand Valley Project (Structure ID 646) were assessed by the State of Colorado in 1993, 2005, and most recently in 2010 and are summarized in Table 2. The Project's lands are located at lower elevations and therefore have higher consumptive use and can typical yield multiple cuttings.

Table 2: Grand Valley Project, Structure 646, CDSS Estimated Acreage

Year	Total Acreage	Irrigation Method
1993	25,095	84.2% Furrow/ 7.3% Sprinkler/ 2.2% Flood/ 6.3% Other
2005	21,160	91.0% Furrow/ 5.7% Sprinkler/ 0.9% Flood/2.4% Other
2010	20,229	91.5% Furrow/ 5.5% Sprinkler/ 1.2% Flood/1.8% Other

As can be seen in Table 2 there is a noticeable drop in total acreage served by Structure ID 646 between 1993 and 2010. Reviewing the available CDSS irrigated acreage GIS coverage indicates a majority of the reduction is most likely attributable to urbanization of formerly irrigated lands. Additionally it appears that potential data quality issues between the 1993 and 2010 coverage may exist (e.g. 1993 coverage tends to incorporate roadways between parcels into the irrigated acreage, whereas the 2010 coverage excludes these areas which are not irrigated).

Table 3 below presents the cropping pattern for years where data was available on CDSS. As shown, the primary crops irrigated within the Project boundary include alfalfa, corn grain, grass pasture and small grains. The “others” category in Table 3 includes dry beans, orchards, vegetables, grapes, and grass and sod farms. Much of the hay crops and row crops are sold as commodities rather than used directly for animal feed.

Table 3: Grand Valley Project, Structure 646, Cropping Pattern [%]

Crop/Year	1993	2005	2010
Alfalfa	28.6	41.4	63.6 ¹
Corn Grain	25.8	14.3	12.9
Grass Pasture	24.9	29.6	10.4
Small Grains	15.4	12.8	11.5
Others	5.3	1.9	1.6

1) Based on feedback from Mr. Mark Harris, it appears that the estimated 2010 acreage for Alfalfa includes Alfalfa and Alfalfa/Grass Pasture mix

It should be noted that the data presented in Table 3 above is based on CDSS irrigated acreage GIS coverage. As previously stated, between 1993 and 2010 the noticeable difference in total acreage is believed to be a result of urbanization within the Project. Based on recent conversation with GVWUA Manager, Mr. Harris stated that changing economics have also had an impact on the crops being grown on Project lands. With urbanization, farm lands became smaller over time. Users with smaller farms tend to grow Alfalfa or grass crops as it requires less labor than Corn, or other row crops with Grass Pasture and Alfalfa becoming more economically feasible.

Return Flows

A large proportion of the return flows from irrigation of the Association lands are collected by man-made drains (see Figure 1), which were developed as part of the Grand Valley Unit salinity control project. Class 1 lands are drained through a network of approximately 150 miles of drainage canals. Drainage canals that collect return flows discharge to the natural washes that intersect the Project lands and subsequently terminate in the Colorado River. Figure 1 below shows the location of the drainage throughout the GVWUA boundary as well as some of the more prominent natural washes.

Water collected by drains is not measured. Return flows from some Association lands accrue to natural drainages running south. Some return flows are intercepted by the Grand Valley Irrigation Company canals. Once water in drains and natural washes flows outside the Project boundary the GVWUA has no control of such water. CDSS shows a large number of diversions from the natural washes have been filed (Figure 1). Through discussion with Mr. Harris and review of CDSS diversion data, it was determined that users outside of the Project may divert from these natural washes, which means that the return flows from the Project is relied upon by other users located south of the Project boundary before these return flows reach the Colorado River. It is therefore necessary to consider whether impacts from changes in the Project's return flows arising from forbearance should be mitigated. However according to the Association the Project is under no obligation to assure a continued supply of irrigation return flow that is used downstream, regardless of whether filed upon or not. Administrative spills from the canal are discharged to the natural washes and are measured. Additionally a review of the Highline Reservoir (Structure ID 3957), located near the end of the Government Highline Canal, indicates that water from the Government Highline Canal has been used to fill the Highline Reservoir.

Groundwater

Groundwater throughout the Project is variable with evidence of locally high groundwater as indicated by the need for drainage. A review of CDSS well records indicated that only one decreed well exists within the Project boundary. During conversation with the GVWUA Manager, Mr. Harris stated that due to recent system improvements, including canal linings and drainage network improvements that started in the early 1980's; there has been a noticeable decrease in the influence of the groundwater table.

Salinity and Water Quality Issues

The Project lands are underlain by Mancos shales, which are a source of salinity and selenium problems in the Colorado River basin. Salinity levels vary within the project area. USBR's Colorado River Basin Salinity Control Project-Grand Valley Unit was authorized in 1974 and focuses on reducing seepage from conveyance systems in the Grand Valley. As mentioned, Class 1 lands are drained through drainage ditches.

Measurement, Control, and Data

Control and measurement of deliveries is excellent and has been described above. As stated, canal checks as well as a SCADA system have been installed. Irrigation return flows to nearby natural washes and drains are not measured; however Administrative spills made at the end of the canal are measured. Based on discussion with Mr. Harris, water quality discharge permits are not needed within the Project boundary for discharges of agricultural return flows.

The Colorado Agricultural Meteorological Network (CoAgMet) maintains several stations that provide daily estimates of consumptive use by crop type. In addition several other weather stations are maintained in the surrounding area and are summarized below in Table 4.

Table 4: Summary of nearby meteorological stations

Station Name	Agency	Approximate Distance from GVWUA Service Area [miles]	Comments
Palisade	NOAA	24.0	-
Grand Junction Walker Field	NOAA	14.0	-
Grand Junction, 3 Mi NW Grand Junction	CoAgMet	8.25	Record ends in 2009
CSU Fruita Expt Station	CoAgMet	4.75	-
Orchard Mesa	CoAgMet	20.50	Record begins in 2006
Fruita 1W	NOAA	5.25	Record ends in 2012

Potential for Water Banking and Potential Challenges

Due to the administrative and operational structure of the Project, any involvement in the Water Bank would require the participation of the GVVUA, USBR, and various land owners served by the Project. Operational potential exists for both fallowing and deficit irrigation on parcels where grass pasture or alfalfa is grown (approximately 74% of the total acreage in 2010) where several cuttings per season take place. Annual row crops could also forbear on a year-to-year basis.

Hydraulic considerations may limit the degree to which deliveries can be reduced, since a certain level of flow is required to maintain head in the canal sufficient to make deliveries to farm headgates. However, with the recent upgrades including the SCADA system and canal checks, flow may be able to be reduced while maintaining adequate head to ensure delivery to non-participants.

In addition to being able to maintain adequate head in the main canal, the recent system upgrades including the increased farm headgate delivery measurement may serve as a way to measure foregone consumptive use. The system improvements may also allow the system to move water from the main canal through the drainage system to the Colorado River and subsequently to the Colorado-Utah Stateline. The Project's location would allow for efficient shepherding of foregone consumptive use to the Stateline. Review of CDSS diversion records indicate that only two senior downstream water rights exist. However, based on the review of the 2002-2003 period (one of the worst dry periods on record), the Project's water rights were not called out by these two senior downstream rights. Careful consideration of any Intentionally Created Surplus (ICS) and their relationship to the Grand Valley Power Plant, the related water rights put to beneficial use by the Association and the Orchard Mesa Irrigation District, the impacts on the operating partners, and other concerns must be included in discussion of Water Banking in the Grand Valley and on the GVP system.

Located near the end of the Government Highline Canal is the Highline Reservoir, which is owned by the State. The Highline Reservoir, which has an appropriation date of 4/27/1966 and adjudication date of 12/31/1978, captures wastewater from the Government Highline Canal for recreation and piscatorial uses with a decreed volume of 3,400 acre-feet. The Association currently has an agreement with the State that allows the Association to store water in the top 2 feet of the reservoir for up to 72 hours. It might be feasible for the Association to expand the reservoir capacity to allow for a permanent storage under a new filing. This would allow the Association to store banked water as well as unappropriated water available during free river conditions. Under existing conditions, the Highline Reservoir could potentially be used to store foregone consumptive use or system savings temporarily for delivery to the Stateline. Due to the reservoir's location near the end of the system, water may be delivered near the end of the Government Highline Canal in order to maintain adequate head within the main canal. The water then could be delivered to the Highline Reservoir and be subsequently released to the Colorado River via the Mack Wash which delivers water to the Colorado River approximately 10 miles upstream of the Stateline. It should be noted that there is a measuring structure at the terminus of the Government Highline Canal which is used to spill excess water to Badger Wash. This structure could also potentially be used to deliver water through the system to the Colorado Stateline.

The Association envisions two approaches to forbearance: individual forbearance, or collective Association-wide forbearance. During conversation with Mr. Harris, he stated that he believes water users may be interested in participating in a water bank due to the potential economic benefits. Mr. Harris indicated that the two most feasible methods to supply a water bank would be rotational fallowing and deficit irrigation. System improvements may also provide a means by which to make limited amounts of water “available” for other purposes under certain circumstances. Under a water bank scheme, the Association will continue to make sure that its water rights and current uses are fully protected.

Savings through system improvements such as using shorter runs for furrow irrigation systems to reduce on-farm losses and additional lining of canal may also be feasible. Savings through using higher efficiency irrigation systems such as sprinkler systems may not be feasible in most cases given current agronomic regimes. This is because of the current size, and irregular shape of the irrigated parcels and lower value crops that are typically grown within the Project which makes the switch to a sprinkler system economically infeasible. Although the system has recently undergone major improvements including lining of significant portions of the main canal, piping of many laterals, installation of check structures and installation of a SCADA control system, participation in a water bank scheme may still be complicated due to carriage water requirements.

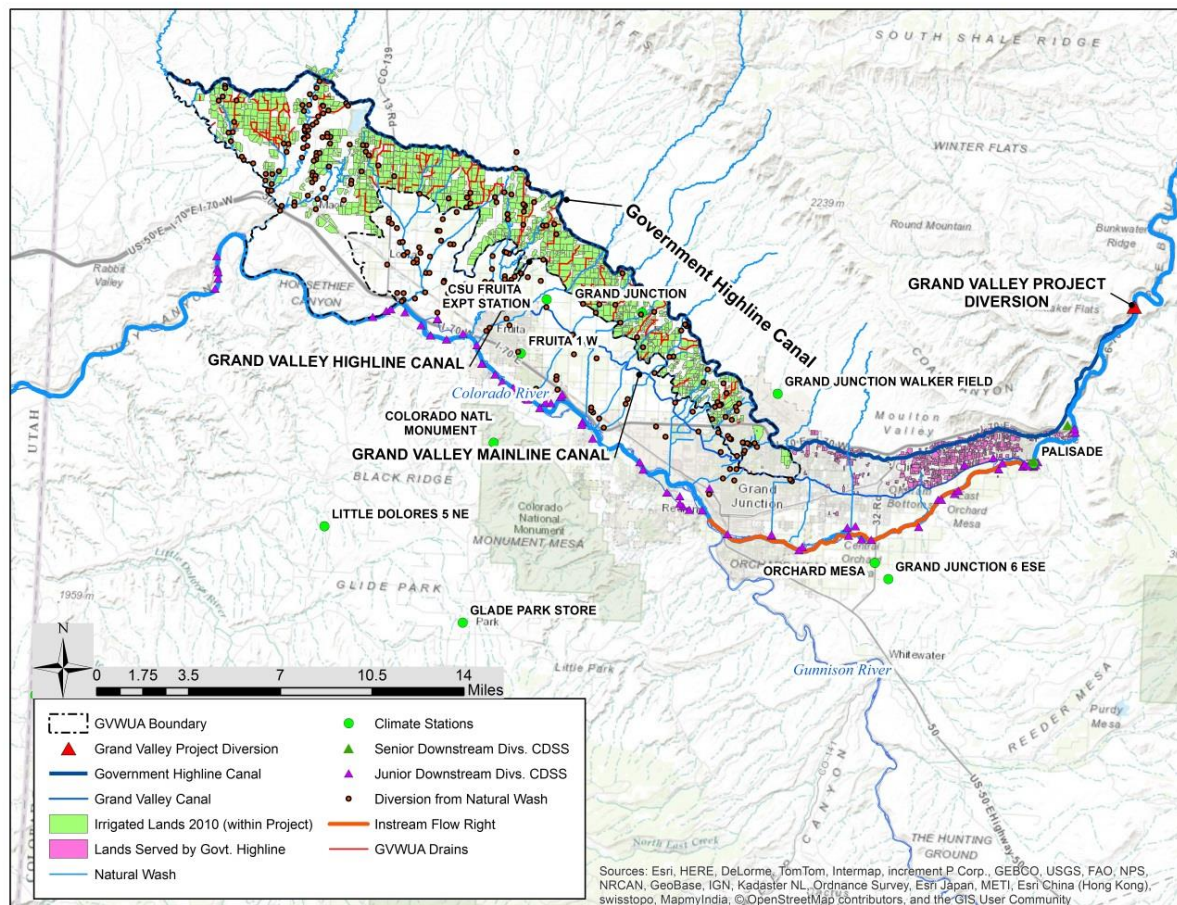


Figure 1: Irrigated Lands in 2010 and Water Rights between Palisade and Stateline

Alternative Agricultural Water Transfer Methods – Grant Application Form
October 2010

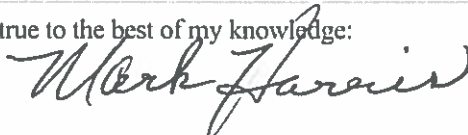
PAYMENT

Payment will be made based on actual expenditures and invoicing by the applicant. Invoices from any other entity (i.e. subcontractors) cannot be processed by the State. The request for payment must include a description of the work accomplished by major task, and estimate of the percent completion for individual tasks and the entire water activity in relation to the percentage of budget spent, identification of any major issues and proposed or implemented corrective actions. The last 5 percent of the entire water activity budget will be withheld until final project/water activity documentation is completed. All products, data and information developed as a result of this grant must be provided to the CWCB in hard copy and electronic format as part of the project documentation. This information will in turn be made widely available to the public and help promote the development of alternative agricultural transfer methods.

Additional Information – If you would like to add any additional pertinent information please feel free to do so here.

The above statements are true to the best of my knowledge:

Signature of Applicant:



Print Applicant's Name: Mark Harris

Project Title: Grand Valley Water Bank Pilot Project

Return this application to:

Mr. Craig Godbout
Colorado Water Conservation Board
Water Supply Planning Section
1313 Sherman St., Room 721
Denver, CO 80203
craig.godbout@state.co.us