COLORADO WATER CONSERVATION BOARD

WATER SUPPLY RESERVE ACCOUNT
2007-2008 GRANT APPLICATION FORM

Juniata Reservoir Enlargement Project	Gunnison
Name of Water Activity/Project	**River Basin Location**

$25,000 Basin $72,000 Statewide	X Basin Account X Statewide Account	X Yes ☐ No
Amount of Funds Requested	Please Check Applicable Box	Approval Letter Signed By Roundtable Chair and Description of Results of Evaluation and Approval Process

*** For the Basin Account, the Application Deadline is 60 Days Prior to the Bimonthly CWCB meeting. The CWCB meetings are posted at www.cwcb.state.co.us and are generally the third week of the month.**

*** For the Statewide Account, the Application Deadline is 60 Days Prior to the March and September CWCB Board Meetings.**

* In completing the application you may attach additional sheets if the form does not provide adequate space. If additional sheets are attached please be sure to reference the section number of the application that you are addressing (i.e., A.1. etc.).

Instructions: This application form must be submitted in electronic format (Microsoft Word or Original PDF are preferred). The application can be emailed or a disc can be mailed to the address at the end of the application form. The Water Supply Reserve Account Criteria and Guidelines can be found at http://cwcb.state.co.us/IWMD/. **The criteria and guidelines should 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 Rick Brown of the Intrastate Water Management and Development (Colorado Water Conservation Board) for assistance, at (303) 866-3514 or email Rick at rick.brown@state.co.us. Generally, the applicant is also the prospective owner and sponsor of the proposed water activity. If this is not the case, contact the Rick Brown before completing this application.

Water Supply Reserve Account – Grant Application Form
Form Revised May 2007

Part A. - Description of the Applicant (Project Sponsor or Owner);

1. Applicant Name(s): City of Grand Junction Water Enterprise Fund

Mailing address: 250 N. 5th Street
Grand Junction, Colorado 81501

Taxpayer ID#: Email address: rickbr@gjcity.org

Phone Numbers: Business: 970-244-1429
Home:
Fax: 970-244-1426

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

Name: Rick Brinkman

Position/Title Water Services Manager

3. Provide a brief description of your organization below: see "Description of Applicant" in Part 2 of Criteria and Guidance for required information.

The City of Grand Junction is a municipal corporation created under the authority of Article XX of the Colorado State Constitution with our Charter being adopted September 14, 1909. It is a council/manager form of government.

The City of Grand Junction, under Tabor guidelines, created a Water Enterprise Fund to manage and operate the water system.

The Water Enterprise Fund is managed under the direction of the Water Services Manager who reports to the Director of Utilities and Streets Systems who reports to the City Manager.

Rick Brinkman, Water Services Manager, 333 West Avenue, Bldg A, Grand Junction, Colorado 81501 (970)244-1429.

The water system has a service area of approximately 8.5 square miles and currently serves 26,500 customers through 9,500 taps. The service area and growth potential for new customers is non-existent due to being entirely surrounded by another water utility. Actual average growth rate for last five years has been 0.10%. The Water Enterprise Fund is wholly supported by water user fees.

The City owns and maintains a water treatment facility with a capacity of 16.0 million gallons per day with an average daily rate of 6.0 million gallons per day and a peak flow of 11.5 million gallons per day.

The City also owns and operates a vast raw water supply system that consists of 14 reservoirs, with twelve of these on top of Grand Mesa. These 12 reservoirs hold approximately 5,100 acre feet of water when full. The other two reservoirs are in the lower Kannah Creek drainage and are off channel reservoirs and have a capacity of 7,500 acre feet. The two lower terminal reservoirs will supply the City's municipal needs for approximately one year.

The reservoirs on top of the Grand Mesa are generally used for irrigation purposes on City owned land and other agricultural land within the basins. The City maintains in reserve a portion of the water in these reservoirs each year for use the following year in case of drought. This allots what is needed for City properties and if any excess water is available, it is then leased out to other ranchers in the basins.

4. If the Contracting Entity is different then the Applicant (Project Sponsor or Owner) please describe the Contracting Entity here.

Part B. - Description of the Water Activity – Please Refer to Criteria and Guidance Document for Eligibly Requirements

1. Name of water activity/project:

Juniata Reservoir Spillway Modification

What is the purpose of this grant application?

[ ] Environmental compliance and feasibility study

[ ] Technical Assistance regarding permitting, feasibility studies, and environmental compliance

[ ] Studies or analysis of structural, nonstructural, consumptive, nonconsumptive water needs, projects

Study or Analysis of:

[ ] Structural project or activity

[ ] Nonstructural project or activity

[ ] Consumptive project or activity

[ ] Nonconsumptive project or activity

[X] Structural and/ or nonstructural water project or activity

2. Describe how the water activity meets these **Threshold Criteria.**

a) The water activity meets the eligibility requirements outlined in Part 2 of the Criteria and Guidelines.

The project meets the eligibility requirements of the project being a structural project and the entity is a governmental entity.

b) The water activity is consistent with Section 37-75-102 Colorado Revised Statutes. The requirements/language from the statute is provided in Part 3 of the Criteria and Guidelines.

This project does not supersede, abrogate or otherwise impair the current water allocation system within Colorado because there is already an existing conditional storage decree for this project.

c) The water activity underwent an evaluation and approval process and was approved by the Basin Roundtable (BRT) and the application includes a description of the results of the BRTs evaluation and approval of the activity. At a minimum, the description must include the level of agreement reached by the roundtable, including any minority opinion(s) if there was not general agreement for the activity. The description must also include reasons why general agreement was not reached (if it was not), including who opposed the activity and why they opposed it. Note- If this information is included in the letter from the roundtable chair simply reference that letter.

This project will be reviewed by the Selection Committee of the Gunnison Basin Roundtable and then by the full Roundtable at their November or December meeting.

d) The water activity meets the provisions of Section 37-75-104(2), Colorado Revised Statutes. The requirements/language from the statute is provided in Part 3 of the Criteria and Guidelines.

The Gunnison River Basin is currently conducting a needs assessment for both non-consumptive and consumptive water supply needs. Even though the assessment is not complete this project will help meet some of the current and future rural domestic consumptive needs in the Kannah Creek drainage along with reducing the vulnerability to drought for the Grand Junction municipal water supply.

3. For Applications that include a request for funds from the Statewide Account, describe how the water activity meets the **Evaluation Criteria**. See Part 3 of Criteria and Guidelines.

This project meets the Evaluation Criteria by addressing a variety of the needs and interest in the Kannah Creek Drainage basin. The project will ensure an adequate supply of water for the Kannah Creek Water District, PWSID CO-0-139434,a rural domestic water system with a growing population in the basin. It will also add drought protection to the City of Grand Junction Water District, PWSID CO-0-139321, municipal water supply. The City of Grand Junction owns and operates both of the above water systems, Juniata reservoir supplies raw water for both systems.

Grant funding for this project will ensure that this project is completed within the 2009 calendar year. The project engineering has been completed and plans have been approved through State Engineers office. The City of Grand Junction is contributing matching funds towards the engineering and construction of the project. The City Water Enterprise Fund has limited funds due to the water system has been land locked by another water utility since the early 1960's and we have not had any growth within the system to help pay for capital improvements. The City's water system is currently the smallest water provider of the three in the valley. All capital improvements are funded through use fees and the current demand for capital improvements projects for the water distribution system is using almost all of the available funds for the next few years. Water rates are being raised five percent per year to cover inflation costs and expenses that don't reduce even though our demand continues to remain flat or actually decrease due to our water conservation efforts.

4. Please provide an overview of the water project or activity to be funded including – type of activity, statement of what the activity is intended to accomplish, the need for the activity, the problems and opportunities to be addressed, expectations of the participants, why the activity is important, the service area or geographic location, and any relevant issues etc. Please include any relevant TABOR issues that may affect the Contracting Entity. Please refer to Part 2 of Criteria and Guidance document for additional detail on information to include.

This project involves raising the spillway on Juniata Reservoir.

Juniata Reservoir currently has a capacity of 6,868 acre feet and a freeboard of eight feet. State regulations require only five feet of freeboard. Raising the spillway three feet will allow us to store an additional 445 acre feet of water.

This additional storage will serve many purposes. This first and most important will be drought protection. The 445 acre feet of additional storage represents 7.5% of annual water demands in the City of Grand Junction domestic water system. There are several components to drought protection with most believing water quantity is most important. We discovered that during the drought of 2002 that water quantity was secondary to water quality. The drought of 2002 caused us to worry about water quantity but we were sure we could make it through. What we didn't realize until the spring of 2003 is that water quality in Juniata Reservoir was as important as water quantity.

The drought of 2002 caused the water levels in Juniata Reservoir to drop almost 50% more than a normal year. This in turn caused some of the following water quality problems in the subsequent years when the reservoir was refilled to capacity.

- Turbidity levels coming into the both the Kannah Creek Water Treatment facility (KCWTF) and the City of Grand Junction Water Treatment facility were 28% higher (3.8) for 2003 (3.4) and 15% higher in 2002 as compared to the average over the last 8 years (2.96).
- Chemical usage at both treatment facilities was higher during 2002-2003 than at any other time.
- The first ever blue-green algae bloom in Juniata Reservoir was first noticed in August of 2003. This bloom persisted for 8 weeks, elevated TOC levels which elevated DBP levels. To date, the all-time high compliance DBP levels for both plants were collected during this quarter.
- In addition to the blue-green algae bloom, a comparison of total algae counts before and after 2002 show that the average algae count in post-2002 samples is approximately twice what they were before 2002.
- Filter run times were also shortened which meant more backwashing of the filters to maintain the high quality of effluent water. The KCWTF required 26% more backwash water per million gallons produced in 2002 and 10% more in 2003 as compared to the 8 year average.

Other benefits of the project are:

- The project will allow us to perfect a conditional water right for the reservoir.
- Allows for increased drought protection.
- Increase the ability to provide drinking water to Ute and Clifton water systems via our interconnections in cases of emergency.

5. Please summarize the proposed scope of work. Please refer to Part 2 of the Criteria and Guidance document for detailed requirements. On the following page there is an example format for the Scope of Work. You can use the example format or your own format, provided that comparable information is included.

The scope of work should outline by task how the water activity will be accomplished. It is important that the scope of work detail the specific steps, activities/procedures that will be followed to accomplish the water activity and the specific products/deliverables that will be accomplished. The scope of work should 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.

This project includes an engineering evaluation, design plans and construction for modification of an existing spillway. The project will provide an additional 445 ac-ft of storage capacity for the City of Grand Junction, CO.

The engineering estimate for this project is $194,586. Of this estimate, $61,745 has been expended by the City of Grand Junction for the engineering and design portion of project. The construction portion is estimated at $132,841, with the City contributing $35,841 towards construction. The City is asking for $25,000 from the Gunnison Basin Roundtable and $72,000 from the State IBCC.

Based on this estimate the increased storage capacity of 445 ac-ft would cost $438 per ac-ft.

Task 1

Professional engineering design services.

- A request for proposals for professional engineering design services was advertised in February of 2008 for this project. Seven engineering proposals were received and evaluated based on professional experience in the fields of hydrology/hydraulics, geotechnical evaluation of class 1 structures, and recent project experience with similar work completed that had been reviewed and approved by the State Engineers Office (SEO) Colorado Water Resources Dam Safety Division.

- The scope of engineering services provided by Buckhorn Geotech included a geotechnical investigation and structural evaluation of the dam, hydrologic study of the tributary basin, and hydraulic evaluation of the emergency spillway. The resulting design report, supported by geotechnical and hydrologic evaluations, including construction plans and specifications, demonstrate that that the proposed storage enlargement will have no adverse impacts on the continued safe operation of the reservoir and comply fully with Rule 5 of the Colorado "Rules and Regulations for Dam Safety and Dam Construction," dated 2007, as adopted by the Colorado SEO.

- Buckhorn Geotech was selected, and has completed the engineering study, and construction plans & specifications for this storage enlargement effort. The City of Grand Junction has received approval from the State Engineers Office for this project.

Task 2

Construction Contract

- December 2008 – apply for IBCC Grants
- May 2009 – Bid construction portion of project
- June 2009 – Award construction contract to complete modifications to Juniata reservoir spillway.
- September 2009 – complete construction
- December 2009 – submit final project documents to State Engineering Office.

Personnel

Buckhorn Geotech

Buckhorn provides a wide array of engineering and geotechnical investigations and designs as well as oversight for private, commercial, industrial, and municipal projects.

Buckhorn Geotech is headquartered in Montrose, CO, and we have satellite offices in Telluride, Crested Butte, and Gunnison, CO.

Our staff of over 40 employees includes licensed professional engineers, licensed professional land surveyors, professional geologists, soil scientists, certified materials testers, CAD operators, and laboratory technicians.

Our services include civil, structural and geotechnical engineering, surveying, and construction materials testing. This broad range of skills enables our staff to provide clients with the continuity to carry a project from its beginning in site and soil investigations, surveying and permitting, all the way through civil and structural design, construction materials testing, and contract administration.

City of Grand Junction Staff

Bret Guillory, City Utility Engineer

Budget

Task 1 - Design				
Item	Unit Cost	Total	Grant Funds	Matching Funds
Project Process Meetings	$ 2,155	$ 2,155	$ -	$ 2,155
Geotech investigation	$ 24,320	$ 24,320	$ -	$ 24,320
Survey	$ 3,450	$ 3,450	$ -	$ 3,450
Engineering Design Report, Plans, Tech Specs	$ 21,420	$ 21,420	$ -	$ 21,420
Project Management	$ 10,400	$ 10,400	$ -	$ 10,400
Sub-Total Design		$ 61,745	$ -	$ 61,745
Task 2 - Construction				
Construction	$118,715	$118,715	$ 87,330	$ 31,385
Project Management	$ 14,126	$ 14,126	$ 9,670	$ 4,456
Sub-Total Construction		$132,841	$ 97,000	$ 35,841
Total Project Cost		**$194,586**	**$ 97,000**	**$ 97,586**

Schedule

- December 2008 – apply for IBCC Grants
- May 2009 – Bid construction portion of project
- June 2009 – Award construction contract
- September 2009 – complete construction
- December 2009 – submit final project documents to State Engineering Office.

NOTE: Costs incurred prior to execution of a contract or purchase order are not subject to reimbursement.

6. Water Availability and Sustainability – this information is needed to assess the viability and effectiveness of the water project or activity. Please provide a description of each water supply source to be utilized for, or the water body to be affected by, the water activity. For water supply sources being utilized, describe its location, yield, extent of development, and water right status. For water bodies being affected, describe its location, extent of development, and the expected effect of the water activity on the water body, in either case, the analysis should take into consideration a reasonable range of hydrologic variation.

There is currently a 500 acre foot conditional storage decree associated with the Juniata Reservoir. It is this decree that will be utilized once this project is completed. The Juniata Ditch 1st Enlarged is a canal that is fed from Kannah Creek. This canal is utilized during spring runoff to refill Juniata Reservoir if needed.

Based on a flow model analysis using 64 years of record of flows in Kannah Creek and consumptive uses, there is approximately 2,037 acre feet of water available.

Reservoir Storage Decrees

Structure	Decree Amount	Units	Use	Status	Adjudication Date	Appropriation Date
Juniata Reservoir	400.094	af	I	Absolute	07/25/1941	11/01/1911
	1122.410	af	ID	Absolute	07/21/1959	06/07/1953
	1562.000	af	ID	Absolute	07/21/1959	06/07/1953
	2684.410	af	ID	Absolute	07/21/1959	06/07/1953
	751.000	af	ID	Absolute	07/21/1959	06/17/1953
	4154.600	af	MND	Absolute	12/31/1970	04/02/1967
	1794.100	af	I	Absolute	12/31/1970	04/02/1967
	919.000	af	M	Absolute	12/31/1993	12/15/2002
	500.000	af	M	Conditional	12/31/1994	12/21/1994
	1794.400	af	M	Absolute	12/31/1994	12/21/1994

Direct Flow Decrees

Structure	Decree Amount	Units	Use	Status	Adjudication Date	Appropriation Date
Juniata Ditch 1St Enl	54.000	cfs	I	Absolute	07/25/1941	09/01/1939
	75.000	cfs	O	Absolute	07/21/1959	06/17/1953
	129.000	cfs	M	Absolute	12/31/1994	12/21/1994

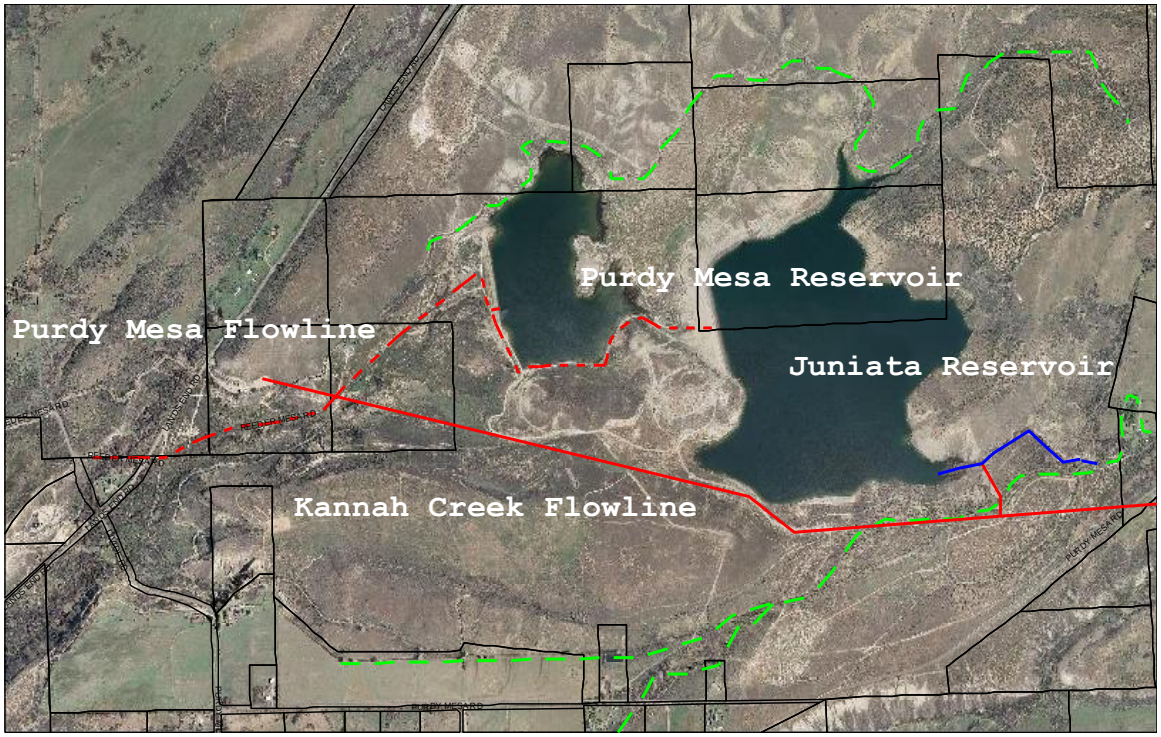
Normal operating procedures for Juniata Reservoir are to try and maintain the reservoir as full as possible by April 1st of each year. On April 1st we back off the flows from North Fork of Kannah Creek to zero cfs coming into the reservoir from an average winter time flow of 2.2 cfs. This flow is then used as irrigation water on City property per lease agreements. The water in the Kannah Creek Flowline continues to run into Juniata Reservoir to continue to fill it or if reservoir is full the flows are backed off to keep reservoir just below spillway elevation. If reservoir is more than a few hundred-acre feet from being full, then spring runoff water is brought in through the Juniata Enlarged Ditch until reservoir is full. This usually takes no more than a few days. Under normal operating scenarios the spillway is not allowed to overflow. Reservoir elevations are maintained just below lip of concrete dam of spillway as

long as direct flow waters are more than demand in town.

The Kannah Creek Flowline water runs into the reservoir on a year around basis. The flow in this line is 7.81 cfs. During the summer the reservoir elevation decreases because demand in town is higher than the base flow in the Kannah Creek Flowline. During the winter months the reservoir elevation starts to increase because demand is lower than what is coming into the reservoir from the Kannah Creek Flowline and the North Fork of Kannah Creek pipeline.

The water from Juniata Reservoir is discharged from the outlet works into a 16 inch pipe that runs through a small hydro plant at the base of Purdy Mesa Reservoir (just below Juniata Reservoir) then on into town through a 20 inch pipeline known as the Purdy Mesa flowline.

Purdy Mesa Reservoir is fed by Juniata Reservoir and is used primarily as a supplemental feed reservoir for irrigation water for downstream lessees of irrigation water or to supplement domestic water to town if demand exceeds capacity of hydro facility and extra water needs to bypass hydro.



7. Please provide a brief narrative of any related or relevant previous studies.

   None

8. Additional Information – If you feel 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: Rick Brinkman

Project Title: Juniata Reservoir Spillway Modification

Return this application to:

Mr. Todd Doherty
Intrastate Water Management and Development Section
COLORADO WATER CONSERVATION BOARD
1580 Logan Street, Suite 600
Denver, CO 80203

To submit applications by Email, send to: todd.doherty@state.co.us