



COLORADO WATER CONSERVATION BOARD



WATER SUPPLY RESERVE ACCOUNT APPLICATION FORM

Today's Date: 8/27/2014

Rural Well Level Monitoring in Douglas County

Name of Water Activity/Project

Rural Water Authority of Douglas County

Name of Applicant

Metro Roundtable

Amount from Statewide Account:

0

Amount from Basin Account(s):

13,977

Total WSRA Funds Requested:

13,977

Approving Basin Roundtable(s)

(If multiple basins specify amounts in parentheses.)

FEIN: #27-0966710

Application Content

Application Instructions	page 2
Part I – Description of the Applicant	page 3
Part II – Description of the Water Activity	page 56
Part III – Threshold and Evaluation Criteria	page 79
Part IV – Required Supporting Material	
Water Rights, Availability, and Sustainability	page 1013
Related Studies	page 1013
Signature Page	page 1216

Required Exhibits

- A. Statement of Work, Budget, and Schedule
- B. Project Map
- C. As Needed (i.e. letters of support, photos, maps, etc.)

Appendices – Reference Material

- 1. Program Information
- 2. Insurance Requirements
- 3. WSRA Standard Contract Information (Required for Projects Over \$100,000)
- 4. W-9 Form (Required for All Projects Prior to Contracting)

Water Supply Reserve Account – Application Form

Revised October 2013

Instructions

To receive funding from the Water Supply Reserve Account (WSRA), a proposed water activity must be approved by the local Basin Roundtable **AND** the Colorado Water Conservation Board (CWCB). The process for Basin Roundtable consideration and approval is outlined in materials in Appendix 1.

Once approved by the local Basin Roundtable, the applicant should submit this application **with a detailed statement of work including budget and schedule as Exhibit A** to CWCB staff by the application deadline.

WSRA applications are due with the roundtable letter of support 60 calendar days prior to the bi-monthly Board meeting at which it will be considered. Board meetings are held in January, March, May, July, September, and November. Meeting details, including scheduled dates, agendas, etc. are posted on the CWCB website at: <http://cwcb.state.co.us> Applications to the WSRA Basin Account are considered at every board meeting, while applications to the WSRA Statewide Account are only considered at the March and September board meetings.

When completing this application, the applicant should refer to the WSRA Criteria and Guidelines available at: <http://cwcb.state.co.us/LoansGrants/water-supply-reserve-account-grants/Documents/WSRACriteriaGuidelines.pdf>. In addition, the applicant should also refer to the [Supplemental Scoring Matrix](#) applied to Evaluation Criteria Tiers 1-3 for Statewide Account requests .

The application, statement of work, budget, and schedule **must be submitted in electronic format** (Microsoft Word or text-enabled PDF are preferred) and can be emailed or mailed on a disk to:

Craig Godbout - WSRA Application
Colorado Water Conservation Board
1313 Sherman St., Room 721
Denver, CO 80203
Craig.godbout@state.co.us

If you have questions or need additional assistance, please contact Craig Godbout at: 303-866-3441 x3210 or craig.godbout@state.co.us.

Water Supply Reserve Account – Application Form

Revised October 2013

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

1.	Applicant Name(s):	Rural Water Authority of Douglas County		
	Mailing address:	PO Box 4610 Parker, CO 80138		
	FEIN #:	#27-0966710		
	Primary Contact:	Barry Gager	Position/Title:	Chairman
	Email:	Swspdirector3@rwadc.org		
	Phone Numbers:	Cell: 303-956-0015	Office:	303-660-6281
	Alternate Contact:	Geoff Withers	Position/Title:	District Manager
	Email:	geoff@ccrider.us		
	Phone Numbers:	Cell: 303-882-0692	Office:	720-851-2012

2. Eligible entities for WSRA funds include the following. What type of entity is the Applicant?

- ☐ Public (Government) – municipalities, enterprises, counties, and State of Colorado agencies. Federal agencies are encouraged to work with local entities and the local entity should be the grant recipient. Federal agencies are eligible, but only if they can make a compelling case for why a local partner cannot be the grant recipient.
- ☒ Public (Districts) – authorities, Title 32/special districts, (conservancy, conservation, and irrigation districts), and water activity enterprises.
- ☐ Private Incorporated – mutual ditch companies, homeowners associations, corporations.
- ☐ Private individuals, partnerships, and sole proprietors are eligible for funding from the Basin Accounts but not for funding from the Statewide Account.
- ☐ Non-governmental organizations – broadly defined as any organization that is not part of the government.

Water Supply Reserve Account – Application Form

Revised October 2013

3. Provide a brief description of your organization

The Rural Water Authority of Douglas County (The Authority) was established on October 8, 2008 by the Board of Douglas County Commissioners, entering into an Intergovernmental Agreement (IGA) with the Grandview Estates Rural Water Conservation District pursuant to the provisions of Article XIV, Section 18(2)(a) of the Colorado Constitution, and C.R.S. § 29-1-204. Since that time, the Thunderbird Water and Sanitation District and Louviers Water and Sanitation District have also signed the IGA as Participants.

The Authority consists of a nine member Board of Directors:

- a. 5 Director Districts represent individual water providers (an owner of a water well permitted or operated for domestic or household purpose or services),*
- b. 3 Small Water System Directors (operate a small water system for 500 equivalent residential units or less)*
- c. 1 Douglas County Commissioner*

The purpose of The Authority is to assist its participants in developing water resources, systems, in whole or in part, and services for the benefit of Rural Water users and owners of land within its service area. The Authority's defined functions and services include (a) collaborating and cooperating with other local, regional, and statewide water supply agencies in the development of water supply plans and conservation of water resources, and (b) educating and informing water users as to issues affecting an adequate, sustainable, and reliable water supply.

The Authority represents the owners of approximately 8,000 household and domestic wells and 15 small water system providers in the unincorporated area of Douglas County. The estimated population within the Authority's service area is 28,620 (2010), about 9.8% of Douglas County's population, and the service area comprises 80.49% of Douglas County's geographical area.

A representation of the Authority's Service Area, Small Water Providers and Director Districts can be found in Attachment B of this Application.

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

*The Applicant will be the contracting entity for the grant, but has an ongoing subcontract with the **United States Geological Survey (USGS)**, a scientific agency of the United States government, in pursuit of the ongoing Work Plan. A bureau of the United States Department of the Interior, the USGS is that department's sole scientific agency, and hydrology is one of their specialties.*

Water Supply Reserve Account – Application Form

Revised October 2013

5. Successful applicants will have to execute a contract with the CWCB prior to beginning work on the portion of the project funded by the WSRA grant. In order to expedite the contracting process the CWCB has established a standard contract with provisions the applicant must adhere to. A link to this standard contract is included in Appendix 3. Please review this contract and check the appropriate box.

☒ The Applicant will be able to contract with the CWCB using the Standard Contract

☐ The Applicant has reviewed the standard contract and has some questions/issues/concerns. Please be aware that any deviation from the standard contract could result in a significant delay between grant approval and the funds being available.

6. The Tax Payer Bill of Rights (TABOR) may limit the amount of grant money an entity can receive. Please describe any relevant TABOR issues that may affect the applicant.

Article II(E)(ii) of the Authority's Creation Agreement states that one of the powers of the Authority is

To operate as an enterprise under Article X, Section 20, of the Colorado Constitution and create one or more entities which qualify as an enterprise under Article X, Section 20, of the Colorado Constitution.

Therefore, we believe that the Authority has minimal exposure to TABOR's Fiscal Year Spending limit, emergency reserve mandate or any of its other provisions, by virtue of the Authority being defined as a TABOR enterprise.

Water Supply Reserve Account – Application Form

Revised October 2013

Part II. - Description of the Water Activity/Project

1. What is the primary purpose of this grant application? (Please check only one)

☐ Nonconsumptive (Environmental or Recreational)

☐ Agricultural

☐ Municipal/Industrial

☒ Needs Assessment

☐ Education

☐ Other Explain:

2. If you feel this project addresses multiple purposes please explain.

3. Is this project primarily a study or implementation of a water activity/project? (Please check only one)

☒ Study ☐ Implementation

4. To catalog measurable results achieved with WSRA funds can you provide any of the following numbers?

New Storage Created (acre-feet)

New Annual Water Supplies Developed, Consumptive or Nonconsumptive (acre-feet)

Existing Storage Preserved or Enhanced (acre-feet)

Length of Stream Restored or Protected (linear feet)

Length of Pipe/Canal Built or Improved (linear feet)

Efficiency Savings (acre-feet/year OR dollars/year – **circle one**)

Area of Restored or Preserved Habitat (acres)

☒ Other -- Explain: Analysis of existing water supplies

Water Supply Reserve Account – Application Form

Revised October 2013

4. To help us map WSRA projects please include a map (Exhibit B) and provide the general coordinates below:

Latitude: 39.37° N

Longitude: 104.85° W

[A map of the Service Area of the RWADC is included in Exhibit B, as noted above. A map of the wells targeted for monitoring can be found in Attachment C.]

5. Please provide an overview/summary of the proposed water activity (no more than one page). Include a description of the overall water activity and specifically what the WSRA funding will be used for. A full **Statement of Work** with a detailed budget and schedule is required as **Exhibit A** of this application.

In 1990, the population of Douglas County, Colorado was just over 60,000 people. By 2011 the population had increased by about 66 percent from 175,766 to 292,305 residents occupying more than 106,859 housing units. The Douglas County Planning Commission forecasts the population to grow to more than 450,000 by 2030. While some Douglas County municipal water providers have water rights to the South Platte River and its tributaries Cherry Creek and Plum Creek, their allocations do not provide enough water to satisfy the renewable supplies necessary to fulfill the existing water demands of the county. Development of the groundwater resources has become necessary to meet the growing needs of the county.

About 485 mi² of central and eastern Douglas County lie over the Denver Basin aquifer system. Groundwater pumped from the aquifers is the primary source of municipal and domestic water supply in Douglas County. Domestic groundwater use is less than municipal use but is widespread throughout the basin, and rural areas depend solely on self-supplied groundwater for water supply (Paschke, 2010). Douglas County reports the total number of private wells increased from 1,242 in 1970, to 8,264 by 2008, 8,021 of which are classified by the state as household or domestic wells. The Denver Basin aquifer system is administratively recognized as nonrenewable by State water law because the aquifers are primarily confined and receive little precipitation recharge (Graham and Van Slyke, 2004). Therefore groundwater availability in this area may be insufficient for long-term demand.

To assess seasonal and long-term water-level changes, a county-wide groundwater-level monitoring network was established for Douglas County in April, 2011. The network consists of 36 domestic wells throughout the county (Attachment C-Figure 1). Water levels have been measured bi-monthly in all wells and 15 of these are equipped with pressure transducers for continuous (hourly) water-level monitoring (Attachment C-Figure 1). The creation of this network and the data collected from the study has added to the current network of wells currently being used to monitor water levels in the Denver Basin.

The primary objective of this grant's work is to continue monitoring the county wide groundwater-level network, established during the 2011-2014 phase of the project, at a reduced scope. The frequency of the manual water-level measurements will be reduced from bi-monthly to triannual site visits and the number of wells will be reduced from 36 to the 15 wells with transducers. In addition, manual water-level measurements will be made in all 36 wells in February 2015 and 2106. The monitoring period will be from October 1, 2014 through October 31, 2016. The publication of the report from the previous agreement, scheduled for release by June 2015, will be delayed until June 2017 to include the data collected through October 2016.

Water Supply Reserve Account – Application Form

Revised October 2013

Water levels measured from wells in the network over a long term provide a better assessment of the current water resource and provide the basis from which to monitor long-term changes of the hydrologic system. This project will help document rural areas of the county that should be considered a priority in infrastructure planning efforts. In order to develop data that can be used reliably to evaluate groundwater supply trends, it is necessary to have as long a time series as possible. Funding this grant would continue to meet that need. Note that continued funding of this project will result in much less cost per well tested than in earlier phases, due to reduction of manual measurements in non-transduced wells to only February, when static water levels are seasonally highest, and reduction of site visits to wells with transducers, yet retaining full data collection.

Water Supply Reserve Account – Application Form

Revised October 2013

Part III. – Threshold and Evaluation Criteria

1. Describe how the water activity meets these **Threshold Criteria**. (Detailed in Part 3 of the Water Supply Reserve Account Criteria and Guidelines.)

- a) The water activity is consistent with Section 37-75-102 Colorado Revised Statutes.¹

The project meets the water needs identification activities by the Statewide Water Supply Initiative (SWSI). Eligible Water Activities, as identified in Senate Bill 06-179, include the following:

- *Studies or analysis of structural, nonstructural, consumptive, and nonconsumptive water needs, projects, or activities; and*
- *Structural and nonstructural water projects or activities.*

The applicant is an eligible grantee, being a political subdivision of the state, pursuant to 29-1-204(4), C.R.S.

- b) 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 BRT's 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.

The project was approved by the Metro BRT and by the CWCB Board in 2011, when the initial phase of the project was funded, and again in 2013, when the first continuation grant was awarded.

¹ 37-75-102. Water rights - protections. (1) It is the policy of the General Assembly that the current system of allocating water within Colorado shall not be superseded, abrogated, or otherwise impaired by this article. Nothing in this article shall be interpreted to repeal or in any manner amend the existing water rights adjudication system. The General Assembly affirms the state constitution's recognition of water rights as a private usufructuary property right, and this article is not intended to restrict the ability of the holder of a water right to use or to dispose of that water right in any manner permitted under Colorado law. (2) The General Assembly affirms the protections for contractual and property rights recognized by the contract and takings protections under the state constitution and related statutes. This article shall not be implemented in any way that would diminish, impair, or cause injury to any property or contractual right created by intergovernmental agreements, contracts, stipulations among parties to water cases, terms and conditions in water decrees, or any other similar document related to the allocation or use of water. This article shall not be construed to supersede, abrogate, or cause injury to vested water rights or decreed conditional water rights. The General Assembly affirms that this article does not impair, limit, or otherwise affect the rights of persons or entities to enter into agreements, contracts, or memoranda of understanding with other persons or entities relating to the appropriation, movement, or use of water under other provisions of law.

Water Supply Reserve Account – Application Form

Revised October 2013

- c) The water activity meets the provisions of Section 37-75-104(2), Colorado Revised Statutes.² The Basin Roundtable Chairs shall include in their approval letters for particular WSRA grant applications a description of how the water activity will assist in meeting the water supply needs identified in the basin roundtable's consumptive and/or non-consumptive needs assessments.

***SWSI:** Key recommendation #5 “Create a Common Understanding of Future Water Supplies. To more accurately assess the alternatives available to the state in meeting our future water needs, the analysis of supply availability for each basin will determine developable flows, taking into account factors such as ... hydrologic conditions.”*

***SWSI:** Key recommendation #6 “Develop Implementation Plans Towards Meeting Future Needs. While many of the Identified Projects and Processes are already progressing toward implementation, their successful implementation, and the success of any current or future option, for meeting our water needs will have some degree of uncertainty. To better facilitate successful implementation, the following should be addressed in more detail:*

- a. Addressing gaps in rural areas and smaller water providers.*

The proposed project supports 37-75-104(2)(c), C.R.S. by contributing to a basin-wide water supply needs assessment, by identifying water availability and those areas at the greatest risk of depletions.

- d) Matching Requirement: For requests from the **Statewide Fund**, the applicants will be required to demonstrate a **25 percent** (or greater) match of the total grant request from the other sources, including by not limited to Basin Funds. A minimum match of 5% of the total grant amount shall be from Basin funds. A minimum match of 5% of the total grant amount must come from the applicant or 3rd party sources. Sources of matching funds include but are not limited to Basin Funds, in-kind services, funding from other sources, and/or direct cash match. Past expenditures directly related to the project may be considered as matching funds if the expenditures occurred within 9 months of the date the contract or purchase order between the applicant and the State of Colorado is executed. Please describe the source(s) of matching funds. (NOTE: These matching funds should also be reflected in your Detailed Budget in **Exhibit A** of this application)

A summary of the budget for the proposed grant, indicating the match from USGS, is included below in Part IV, #3. Statement of Work, Detailed Budget, and Project Schedule, on page 14 of this application.

² 37-75-104 (2)(c). Using data and information from the Statewide Water Supply Initiative and other appropriate sources and in cooperation with the on-going Statewide Water Supply Initiative, develop a basin-wide consumptive and nonconsumptive water supply needs assessment, conduct an analysis of available unappropriated waters within the basin, and propose projects or methods, both structural and nonstructural, for meeting those needs and utilizing those unappropriated waters where appropriate. Basin Roundtables shall actively seek the input and advice of affected local governments, water providers, and other interested stakeholders and persons in establishing its needs assessment, and shall propose projects or methods for meeting those needs. Recommendations from this assessment shall be forwarded to the Interbasin Compact Committee and other basin roundtables for analysis and consideration after the General Assembly has approved the Interbasin Compact Charter.

Water Supply Reserve Account – Application Form

Revised October 2013

2. For Applications that include a request for funds from the **Statewide Account**, describe how the water activity/project meets all applicable **Evaluation Criteria**. (Detailed in Part 3 of the Water Supply Reserve Account Criteria and Guidelines and repeated below.) Projects will be assessed on how well they meet the Evaluation Criteria. **Please attach additional pages as necessary.**

Evaluation Criteria – the following criteria will be utilized to further evaluate the merits of the water activity proposed for funding from the Statewide Account. In evaluation of proposed water activities, preference will be given to projects that meet one or more criteria from each of the three “tiers” or categories. Each “tier” is grouped in level of importance. For instance, projects that meet Tier 1 criteria will outweigh projects that only meet Tier 3 criteria. The applicant should also refer to the Supplemental Scoring Matrix applied to Evaluation Criteria Tiers 1-3 for Statewide Account requests. WSRA grant requests for projects that may qualify for loans through the CWCB loan program will receive preference in the Statewide Evaluation Criteria if the grant request is part of a CWCB loan/WSRA grant package. For these CWCB loan/WSRA grant packages, the applicant must have a CWCB loan/WSRA grant ratio of 1:1 or higher. Preference will be given to those with a higher loan/grant ratio.

Tier 1: Promoting Collaboration/Cooperation and Meeting Water Management Goals and Identified Water Needs

- a. The water activity addresses multiple needs or issues, including consumptive and/or non-consumptive needs, or the needs and issues of multiple interests or multiple basins. This can be demonstrated by obtaining letters of support from other basin roundtables (in addition to an approval letter from the sponsoring basin).
- b. The number and types of entities represented in the application and the degree to which the activity will promote cooperation and collaboration among traditional consumptive water interests and/or non-consumptive interests, and if applicable, the degree to which the water activity is effective in addressing intrabasin or interbasin needs or issues.
- c. The water activity helps implement projects and processes identified as helping meet Colorado’s future water needs, and/or addresses the gap areas between available water supply and future need as identified in SWSI or a roundtable’s basin-wide water needs assessment.

Tier 2: Facilitating Water Activity Implementation

- d. Funding from this Account will reduce the uncertainty that the water activity will be implemented. For this criterion the applicant should discuss how receiving funding from the Account will make a significant difference in the implementation of the water activity (i.e., how will receiving funding enable the water activity to move forward or the inability obtaining funding elsewhere).
- e. The amount of matching funds provided by the applicant via direct contributions, demonstrable in-kind contributions, and/or other sources demonstrates a significant & appropriate commitment to the project.

Tier 3: The Water Activity Addresses Other Issues of Statewide Value and Maximizes Benefits

- f. The water activity helps sustain agriculture & open space, or meets environmental or recreational needs.
- g. The water activity assists in the administration of compact-entitled waters or addresses problems related to compact entitled waters and compact compliance and the degree to which the activity promotes maximum utilization of state waters.
- h. The water activity assists in the recovery of threatened and endangered wildlife species or Colorado State species of concern.

Water Supply Reserve Account – Application Form

Revised October 2013

- i. The water activity provides a high level of benefit to Colorado in relationship to the amount of funds requested.
 - j. The water activity is complimentary to or assists in the implementation of other CWCB programs.
- Continued: Explanation of how the water activity/project meets all applicable **Evaluation Criteria**.

Please attach additional pages as necessary.

A Brief Update on the Findings of the Current Grant and justification for this grant continuing the work:

Current Findings

Water levels have been measured bimonthly from April 2011 through April 2014, then in August 2014, and data downloads will occur on the wells equipped with transducers in October 2014. Analysis of the water level measurements shows seasonal fluctuations as expected. Water levels rise in the winter months (October through March) and decline during the summer (April through September). The time-series data indicate, on average, the highest water levels are observed during early March and the lowest are observed in late August. The bi-monthly manual measurements typically have their highest levels in February and their lowest in August.

Analysis of the manual water level measurements in all 36 wells (Attachment C- Figure 2) shows more-pronounced decline in all of the aquifers from 2011 to mid-2012 than from mid-2012 to 2014.. A comparison of water level measurement change in the high (February) and low (August) months shows the following 2-year declines for each of the high and low periods (Feb 2012 to Feb 2014 and Aug 2011 to Aug 2013, respectively): Upper Dawson (high:0.8ft, low:0.5ft), Lower Dawson (0.3ft rise, 7.7ft), Denver (3.4ft, 4.9ft), Arapahoe (5.7ft, 3.2ft), and Laramie-Fox Hills (7.0ft, 11.7ft).

During the seasonal decline of 2012, April through August, a relative rise in water levels was observed multiple times in several of the wells (fig. 3). Most rises in water level were less than 2 ft and typically occurred over several days to a week. In some cases, the time frame of the rise correlated with rises in other wells in the same aquifer or, occasionally, with other wells in the other aquifers. In early July 2012, a relative rise in water levels was observed in 12 (all except UDAW10, LDAW6, DENV6) of the 15 wells (light blue shaded area, fig. 3). Almost 8 ft of rise was observed in UDAW5, over 5 ft of rise was observed in LDAW1, and about 3 ft of rise was observed in DENV9. Although the exact cause of this increase is not known, decreased pumping or natural and induced recharge are possible factors. Regardless of cause, this observed rise demonstrates that water levels in the aquifers can respond quickly to changes in the hydrologic system and that there generally is good lateral hydraulic connection within each aquifer."

Continued Monitoring

Current funding was due to be exhausted after three full years of data collection with the June 2014 readings, but those readings were postponed to August 2014 since that month delivers more meaningful data. Continued water level monitoring will be necessary to determine if the declines observed to date are in response to short term events or are part of a longer cycle. If water level declines continue, additional data can be used to better quantify the rate of decline. This information can be used by State and local officials when making critical decisions about the management of local water resources. Data collected from the study can also be used to calibrate current or future groundwater models that can aid in the better understanding of the hydrologic conditions.

The ultimate goal of the project has been to have at least five years of sampling data to indicate in a time series where changes in aquifer water levels are taking place. After three years of data collection, this

Water Supply Reserve Account – Application Form

Revised October 2013

application would fund two more years of the labor portion of the project. The cost of leasing pressure transducers was previously obviated by a separate grant from the Severance Tax Trust Fund, which was awarded March 9, 2013 (see Attachment C). A [second](#) report will be prepared by the USGS at the end of this proposed two-year extension.

Part IV. – Required Supporting Material

1. **Water Rights, Availability, and Sustainability** – This information is needed to assess the viability of the water project or activity. Please provide a description of the water supply source to be utilized, or the water body to be affected by, the water activity. This should include a description of applicable water rights, and water rights issues, and the name/location of water bodies affected by the water activity.

The ultimate purpose of this work is to be prepared for eventual necessity of securing a sustainable source of water supply for areas of Douglas County where and when they need it.

2. Please provide a brief narrative of any related studies or permitting issues.

The Douglas County 2030 Comprehensive Master Plan includes the following items

a. Goal 8-3, Objective 8.3A:

8-3A.1 Work with municipalities, other counties, water providers and user groups in planning for long-term water supplies

8-3A.2 Encourage local leaders to work together to take a pro-active approach in creating a sustainable water supply

In addition, the following work is cited:

Colorado Division of Water Resources, 2003, Ground water levels in the Denver Basin bedrock aquifers, 2003 annual report, 132 p.

Colorado Division of Water Resources, 2004, Ground water levels in the Denver Basin bedrock aquifers, 2004 annual report, 132 p.

Colorado Water Conservation Board, 2004a, Statewide Water Supply Initiative Report, November 2004, variously paginated, accessed March 19, 2009, at

<http://cwcb.state.co.us/IWMD/SWSITechnicalResources/SWSIPhaseIReport/SWSIPhaseIReport.htm>

Colorado Water Conservation Board, 2004b, South Platte Decision Support System Ground-water Component Phase 1, Task 44.2, Denver Basin region water level technical memorandum, July 30, 2004, 27 p.

Colorado Water Conservation Board, 2006a, South Platte Decision Support System Ground-water Component Phase 3, Task 44.2, Denver Basin region water level technical memorandum, November 28, 2006, 65 p., accessed February 27, 2008, at

http://dwrftp.state.co.us/cdss/gwm/tm/SPDSS44-2_20061128.pdf/

Water Supply Reserve Account – Application Form

Revised October 2013

- Everett, R.R., in press, 2014, *Groundwater levels in the Denver Basin bedrock aquifers of Douglas County, Colorado, 2011–2013*: U.S. Geological Survey Scientific Investigations Report 2014–XXXX, x p.
- Fenneman, N.M., 1931, *Physiography of the western United States*: New York, McGraw Hill, 534 p.
- Graham, Glenn, and Van Slyke, George, 2004, *Development of the regulatory framework for Denver Basin aquifers*: *The Mountain Geologist*, v. 41, no. 4, p. 153-160.
- Major, T.J., Robson, S.G., Romero, J.C., and Zawistowski, Stanley, 1983, *Hydrogeologic Data from Parts of the Denver Basin*. Colorado: U.S. Geological Survey Open-File Report 83-274.
- McConaghy, J.A., Chase, G.H., Boettcher, A.J., and Major, T.J., 1964, *Hydrogeologic data of the Denver Basin, Colorado*: Colorado Water Conservation Board, Basic-Data Report no. 15, 224 p.
- Paschke, S.S. ed., 2011, *Groundwater availability of the Denver Basin aquifer system*, Colorado: U.S. Geological Survey Professional Paper 1770, 274 p.
- Robson, S.G., 1987, *Bedrock aquifers in the Denver Basin, Colorado – A quantitative water-resources appraisal*: U.S. Geological Survey Professional Paper 1257, 73 p.
- Robson, S.G., and Romero, J.C., 1981a, *Geologic Structure, Hydrology, and Water Quality of the Dawson Aquifer in the Denver Basin*, Colorado: U.S. Geological Survey Hydrologic Investigations Atlas HA-643.
- Robson, S.G., and Romero, J.C., 1981b, *Geologic Structure, Hydrology, and Water Quality of the Denver Aquifer in the Denver Basin*, Colorado: U.S. Geological Survey Hydrologic Investigations Atlas HA-643.
- Robson, S.G., Romero, J.C., and Zawistowski, Stanley, 1981, *Geologic Structure, Hydrology, and Water Quality of the Arapahoe Aquifer in the Denver Basin*, Colorado: U.S. Geological Survey Hydrologic Investigations Atlas HA-647.
- Romero, J.C., 1976, *Ground-water resources of the bedrock aquifers of the Denver Basin*: Colorado Division of Water Resources Report, 109 p.

3. Statement of Work, Detailed Budget, and Project Schedule

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.** All WSRA funds are disbursed on a reimbursement basis after review invoices and appropriate backup material.

Funding Sources

Basin Account	\$13,977	25.0%
U.S. Geological Survey	\$27,955	50.0%
RWADC	<u>\$13,978</u>	<u>25.0%</u>
Total Project Cost	\$55,911	100%

Water Supply Reserve Account – Application Form

Revised October 2013

Please provide a detailed statement of work using the template in Exhibit A. Additional sections or modifications may be included as necessary. Please define all acronyms and include page numbers.

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.

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 10 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 Basin Roundtables and the general public and help promote the development of a common technical platform.

Water Supply Reserve Account – Application Form

Revised October 2013

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

Signature of Applicant:

Barry Gager

Print Applicant's Name: Barry Gager, Chairman, Rural Water Authority of Douglas County

Project Title: Rural Well Level Monitoring in Douglas County

Return an electronic version (hardcopy may also be submitted) of this application to:

Craig Godbout – WSRA Application
Colorado Water Conservation Board
1313 Sherman St., Room 721
Denver, CO 80203
303-866-3441, ext. 3210 (office)
303-547-8061 (cell)
craig.godbout@state.co.us

**Attachment A - CWCB Grant Application
Rural Water Authority of Douglas County
Supplemental to Existing Contract Number C150473**

Statement of Work

WATER ACTIVITY NAME - Rural Douglas County groundwater-level monitoring network

GRANT RECIPIENT – Rural Water Authority of Douglas County (RWADC)

FUNDING SOURCE – USGS matching funds, CWCB Metro Basin Account, RWADC

INTRODUCTION AND BACKGROUND

This project established a county-wide groundwater-level monitoring network in 2011 for the long-term monitoring of the water resources of rural areas of unincorporated Douglas County, Colorado. A scientific evaluation of groundwater resources in the Authority's service area has never been accomplished. In 2010, Douglas County estimated the population would grow from 293,521 residents to more than 444,784 by 2030. Some water providers in the county have surface-water rights, but their allocations do not provide enough water to satisfy the renewable supplies necessary to fulfill the existing water demands of the county. Development of the groundwater resources will continue to be necessary to meet the growing needs of the county.

Funding of this application would continue aquifer water level sampling for two more years. The ultimate goal of the project is to collect at least five years' data, for a more accurate representation of changes in the groundwater levels.

OBJECTIVES

The primary objective of this study is to continue monitoring the county wide groundwater-level monitoring network for two years (24 months), to eventually achieve long-term monitoring of the rural water resources of Douglas County, Colorado. The network consists of 36 wells throughout the county. Water levels measured from wells in the network will provide an assessment of the current water resource and provide the basis from which to monitor long-term changes of the hydrologic system.

TASKS

TASK 1 - Water- Level Measurements and Data Management

Description of Task Water levels in 36 wells (*Attachment C-Figure 1*) will be measured and recorded. Fifteen wells are equipped with pressure transducers and data recorders for continuous monitoring, from which data will be downloaded and a manual measurement taken triannually. The other 21 wells will be monitored manually, each year in February. This task includes reviewing the field data forms for accuracy, and entering the water level data into the U.S. Geological Survey's National Water Information System (NWIS) database.

Water Supply Reserve Account – Application Form

Revised October 2013

Method/Procedure

Completion of this task is estimated to require 48 hours every fourth month to download data, measure water levels and perform data management and quality assurance procedures. After each round of water-level measurements, hydrographs will be produced and reviewed to ensure that the selected wells are providing reliable data.

Deliverable

Data log of water levels in selected wells. Data will also be published on the USGS National Water Information System Web site (NWISWeb).

TASK 2 - Report Preparation

Description of Task

A USGS Scientific Investigation Report (SIR) has been prepared, and is awaiting publication, to summarize the water-level monitoring results for the period of monitoring from inception in April 2011 through June 2013, per contract C150473. The publication of the report due for the first contract extension, scheduled for release by June 2015, will be delayed until June 2017 to include the data collected through October 2016. Any GIS data sets generated during the project will be provided to the RWADC as a deliverable from the USGS to the RWADC.

Method/Procedure

Preparation of report. This task is estimated to require 200 hours of labor.

Deliverable

SIR Report and any GIS data sets generated. All data will be available to the public on NWISWeb.

REPORTING AND FINAL DELIVERABLE

Reporting: The applicant shall provide the CWCB a progress report every 6 months, beginning from the date of the executed/amended contract. The Progress Report shall describe the 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.

Water Supply Reserve Account – Application Form

Revised October 2013

BUDGET

Total Costs by Colorado Fiscal Year (CO FY)

	Labor	Other Direct Costs	Total Project Costs	USGS Matching Funds	RWADC	CWCB Grant to RWADC
Task 1 – CO FY15 Monthly water-level measurements and data management	\$8,340	\$2,448	\$10,788	\$5,394	\$2,697	\$2,697
Task 1 – CO FY16 Monthly water-level measurements and data management	\$15,139	\$3,128	\$18,267	\$9,133	\$4,567	\$4,567
Task 1 – CO FY17 Monthly water-level measurements and data management	\$1,570	\$1,060	\$2,630	\$1,315	\$658	\$658
Task 2 – CO FY17 Report preparation	\$24,227	\$0	\$24,266	\$12,113	\$6056	\$6055
Total Costs:	\$49,275	\$6,636	\$55,911	\$27,955	\$13,978	\$13,977

Total Costs by Federal Fiscal Year (FFY)

	Labor	Other Direct Costs	Total Project Costs	USGS Matching Funds	RWADC	CWCB Grant to RWADC
Task 1 – FFY15 Monthly water-level measurements and data management	\$8,871	\$1,929	\$10,800	\$5,400	\$2,700	\$2,700
Task 1 – FFY16 Monthly water-level measurements and data management	\$16,962	\$2,246	\$19,208	\$9,604	\$4,802	\$4,802
Task 2 – FFY17 Report preparation	\$23,442	\$2,461	\$25,903	\$ 12,952	\$6,476	\$6,475
Total Costs:	\$49,275	\$6,636	\$55,911	\$27,955	\$13,978	\$13,977

Water Supply Reserve Account – Application Form

Revised October 2013

SCHEDULE

*May be adjusted to reflect change in start date or other delays

By Colorado Fiscal Year (CO FY)

Work plan Element	CO FY-2015				CO FY-2016				CO FY-2017			
	July	Oct	Jan	Apr	July	Oct	Jan	Apr	July	Oct	Jan	Apr
Task 1: Water-level Monitoring		X	X	X	X	X	X	X	X			
Task 2: Report Update										X	X	X

By Federal Fiscal Year (FFY)

Work plan Element	FFY-2015				FFY-2016				FFY-2017			
	FFY Quarter				FFY Quarter				FFY Quarter			
	Oct	Jan	April	July	Oct	Jan	April	July	Oct	Jan	April	July
Task 1: Water-level Monitoring	X	X	X	X	X	X	X	X				
Task 2: Report Update									X	X	X	

FUTURE WORK

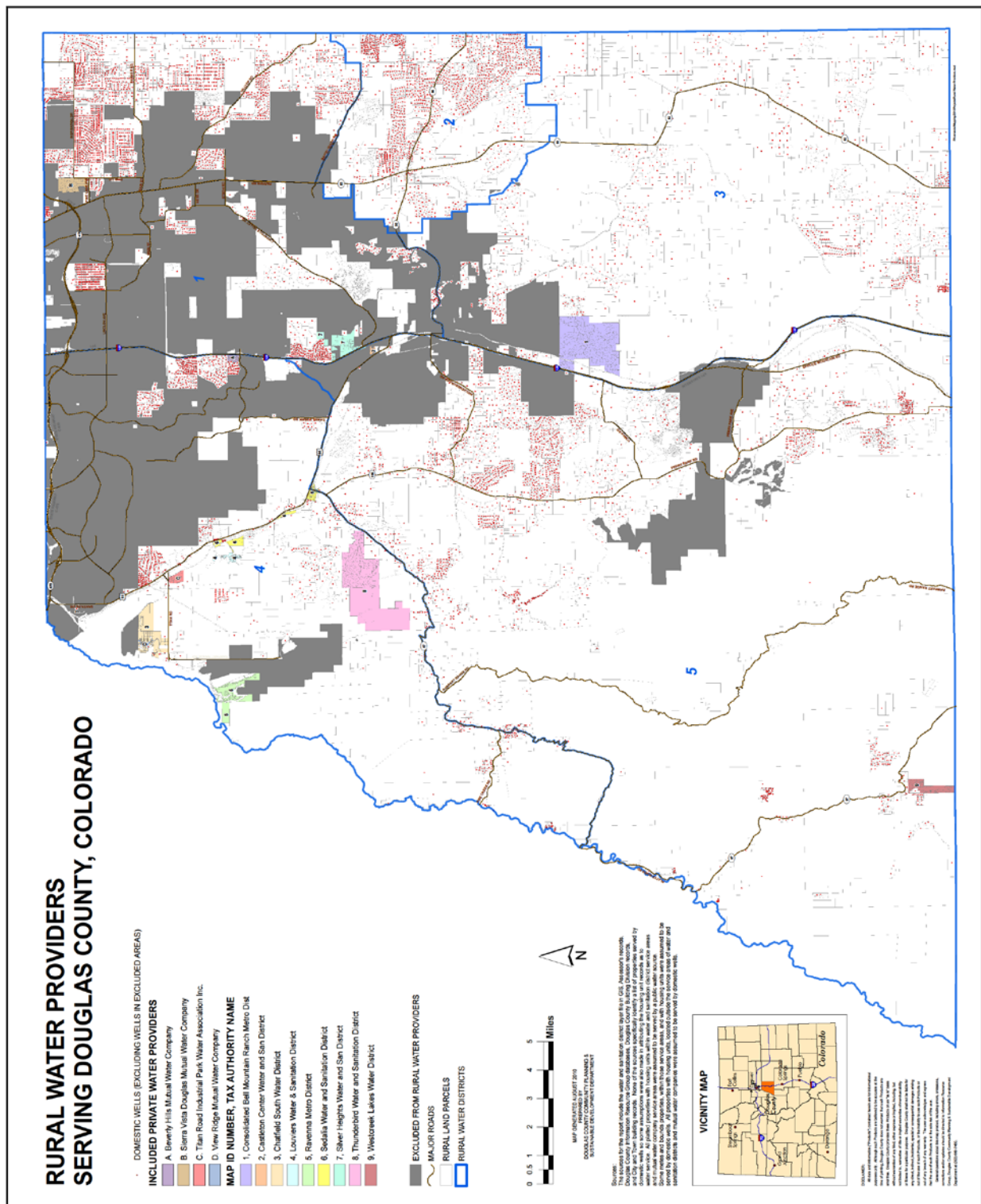
Monitoring activities may be extended if additional funds are available before the completion of the proposed project extension. Additional monitoring beyond the period covered by this Application will require funds for another report publication. An additional 24 months (October 2016 through October 2018) of monitoring in the same manner is estimated to cost about \$60,000, plus substantial costs, estimated as \$20,000 for report preparation. At the current USGS Matching Funds rate of 50%, the USGS could match \$40,000 reducing the cost to others to \$40,000.

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 Basin Roundtables and the general public and help promote the development of a common technical platform.

Revised October 2013

Attachment B. Map of the Rural Water Authority's Service Area



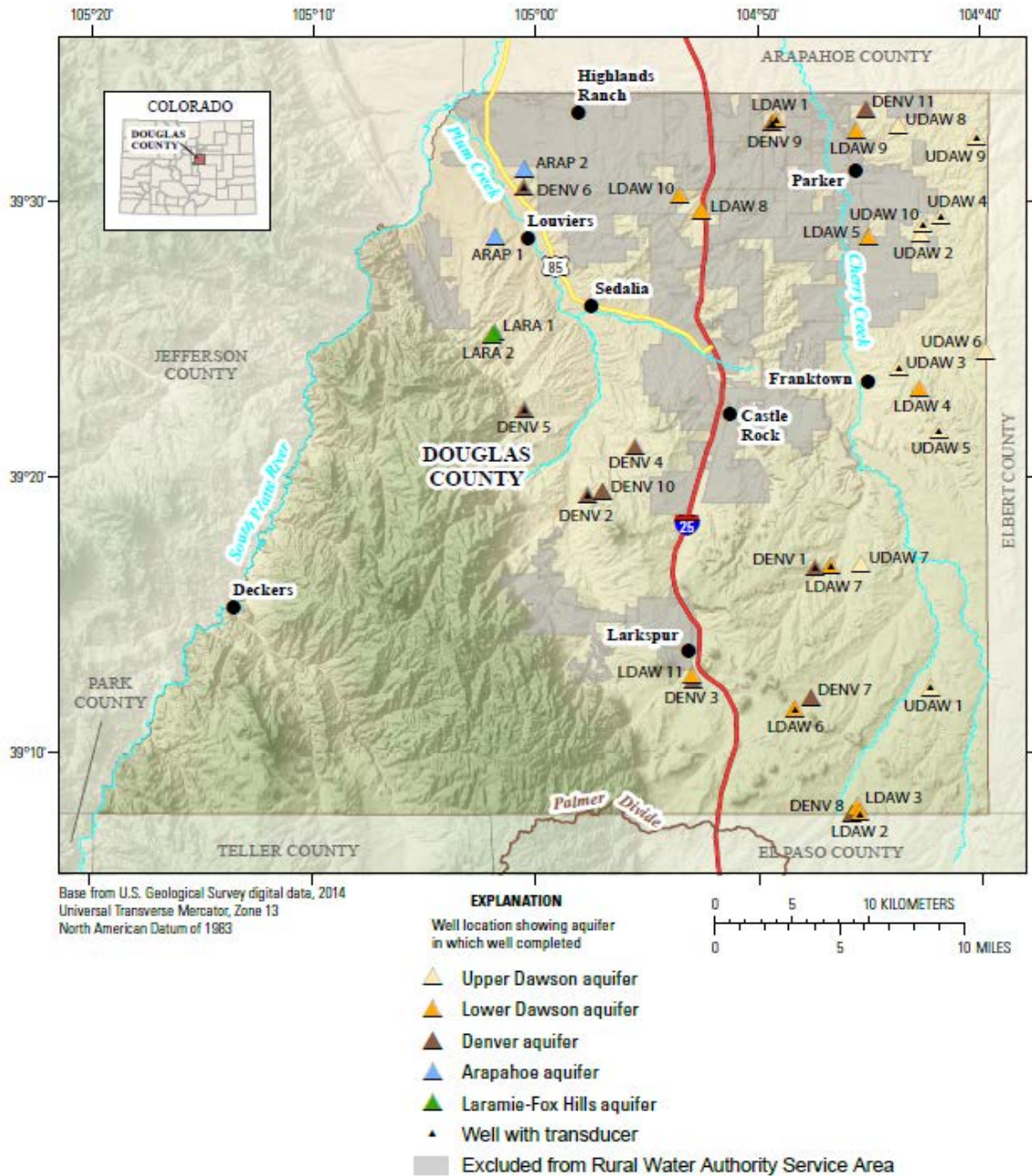
Water Supply Reserve Account – Application Form

Revised October 2013

Attachment C:

Figure 1.

Location and aquifer of domestic wells selected for the Rural Douglas County groundwater-level monitoring network, Douglas County, CO



Water Supply Reserve Account – Application Form

Revised October 2013

Figure 2.

Bar graph showing average year-to-year changes in manual water level measurements, Douglas County, Colorado.

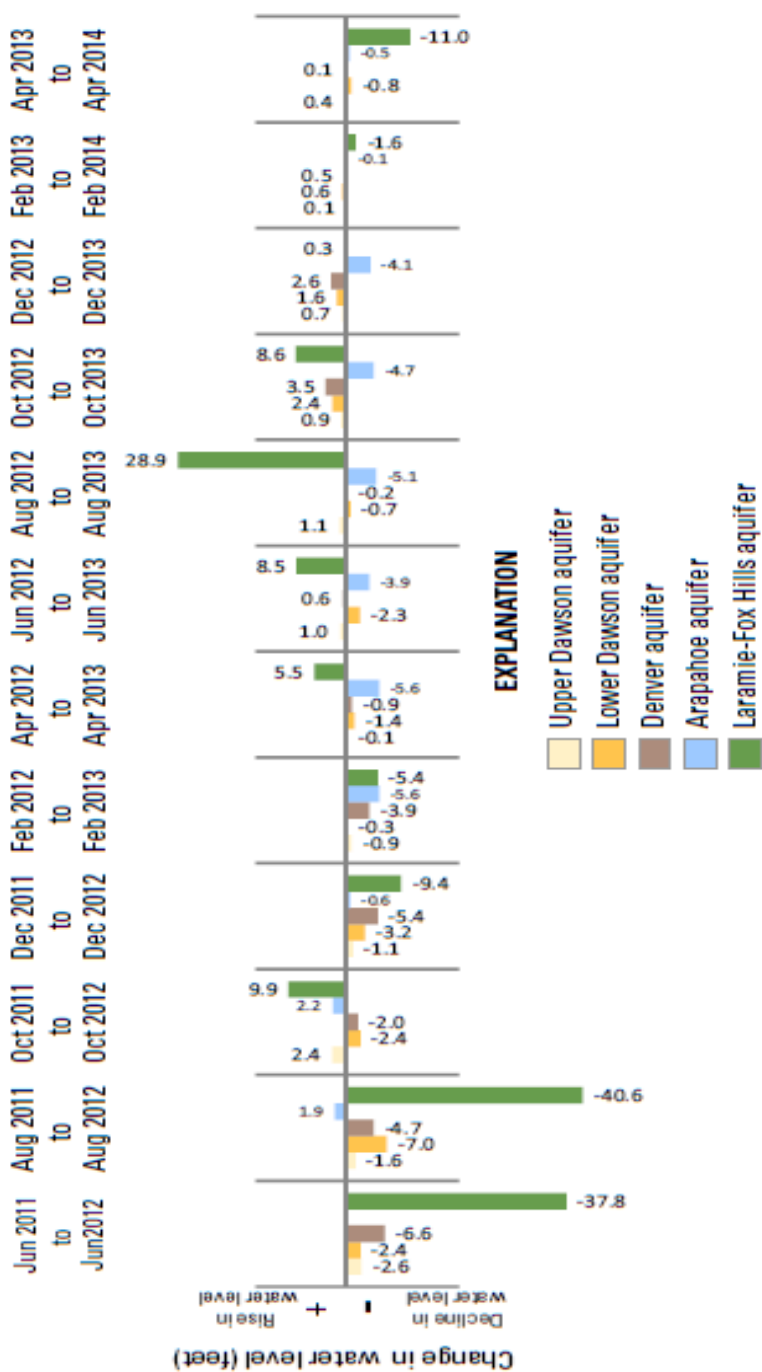


Figure 2. Bar graph showing average year-to-year changes in manual water level measurements, Douglas County, Colorado.

Water Supply Reserve Account – Application Form

Revised October 2013

Figure 3.

Graph showing average year-to-year changes in manual water level measurements, Douglas County, Colorado.

Water Supply Reserve Account – Application Form

Revised October 2013

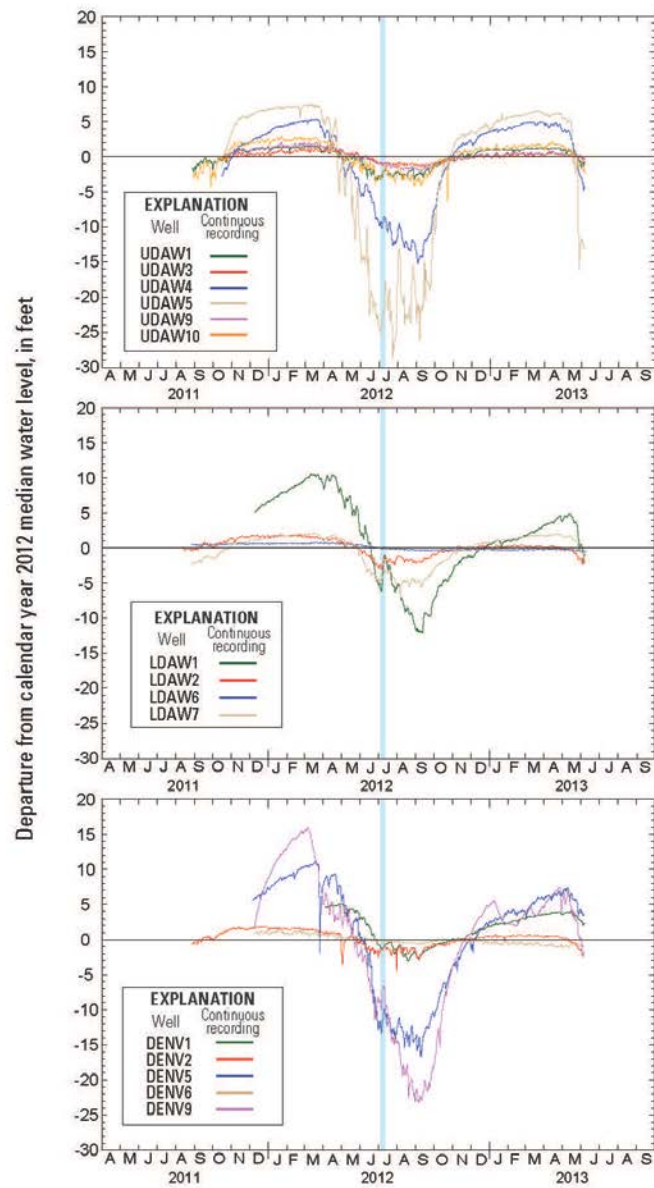


Figure XX. Departure from calendar year 2012 median water level in wells, Douglas County, Colorado.