STATE OF COLORADO

Colorado Water Conservation Board
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TO: Colorado Water Conservation Board Members

FROM: Dan McAuliffe
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DATE: March 10, 2009

SUBJECT: **Agenda Item 20, March 17 - 18, 2009, Board Meeting – Severance Tax Trust Fund Operational Account Recommendations**

After July 1995, one-half of the severance tax receipts credited to the Severance Tax Trust Fund are credited to the Operational Account of the Severance Tax Trust Fund. The programs supported by the Operational Account must promote natural resource planning, management, and development related to minerals, energy, geology, and water.

The General Assembly *may* appropriate funds to the following agencies from the total amount of money in the Operational Account as follows:

Colorado Oil and Gas Conservation Commission	40%
Colorado Geological Survey	20%
Division of Reclamation, Mining and Safety	25%
Colorado Water Conservation Board	5%
Division of Wildlife	5%
Division of Parks and Outdoor Recreation	5%

CWCB requests are reviewed by CWCB and are then forwarded to the state Minerals, Energy and Geology Policy Advisory Board (MEGA Board) for review and approval. MEGA Board recommendations are then forwarded to the Department of Natural Resources (DNR) Executive Director for further review and inclusion in the DNR's annual budget request.

The use of these moneys requires about 15-18 months advance planning. Information about our application process is available on our web site.

In the current Fiscal Year (2008 - 2009), CWCB received requests for funding totaling $2,134,500; we received $1,275,500. For Fiscal Year 2009 - 2010, CWCB recommended $3,389,100 in funding and we expect to receive $975,500. This money is appropriated through the Long Bill.

Part A of this memo summarizes the spending plan for the current Fiscal Year 2008 – 2009.

Part B of this memo summarizes the proposed spending plan for Fiscal Year 2009 – 2010.

Part C of this memo outlines the requests we have received (our application deadline was January 31, 2009) and have reviewed internally to share with the MEGA Board when it meets in May. The proposals have been prioritized due to the limited amount of projected funding. *Depending on the review by the MEGA Board and the DNR Executive Director, these requests may have to be further prioritized and/or reduced.*

Attachment A to this memo details the Severance Tax Distribution Process.

Attachment B to this memo is a list of the Fiscal Year 2010 – 2011 proposed projects and their respective ranking.

A. Current Year Funding Changes

The following table illustrates our current severance tax expenditure plans. Thus far, with a few exceptions, the programs and projects are being implemented as planned.

CWCB – Severance Tax Trust Fund – Operational Account – Fiscal Year 2008 - 2009

Projects	Project Allocation
Water Supply Protection Program	
Intra-State Water Planning	$ 38,500
Tamarisk Control Project	$ 10,000
Recreation Project	$ 75,000
Arkansas River Basin Transit Losses and Travel Times	$ 60,000
Wild and Scenic Project	$ 26,500
Arkansas River Basin Water Quality Program	$ 10,000
Water Supply Planning and Finance Program	
Pioneer Telemetry Project	$ 40,000
Grand Valley Lake Conceptual Study	$ 40,000
Stream and Lake Protection Program	
Alamosa River Instream Flow Project	$ 30,000
Water Rights Loans for Instream Flows	$ 20,000
Instream Flow Strategic Plan Implementation	$ 25,000
Priority Waters Project GIS Support	$ 25,000
South Saint Vrain River / Left Hand Ditch Study	$ 20,000
Water Conservation Planning Program	
Utility Water Loss in Colorado	$ 49,000
Water Education	$ 50,000
Water Conservation & Drought Mitigation Planning Program	$110,000

Projects	Project Allocation
Flood Protection Program	
Lower Mancos River Restoration Partnership	$ 75,000
NRCS SNOTEL Site Installations	$ 32,000
Pre-Disaster Floodplain Mitigation Plans	$100,000
Geomorphic Stability and Hydraulic Analysis	$ 50,000
Cloud Seeding Workstation Using NOAA's FX Network	$ 50,000
Rio Grande Snowpack and Streamflow Model Development	$ 82,500
Community Assistance Program	$ 30,000
Colorado Community Rain and Hail System	$ 5,000
Water Information	
Upper Big Sandy Water Balance	$ 60,000
Enhancing Natural Recharge to Groundwater in Mountainous Regions	$ 50,000
Rio Grande Groundwater Modeling and Rule Making	$ 45,000
Digitizing & Archiving of CWI / CSU Files	$ 25,000
USFWS Imaging	$ 11,000
Denver Basin Aquifer Delineation	$ 17,500
Operating Expenses	$ 13,500
Total	**$1,275,500**

B. Fiscal Year 2009 – 2010 Spending Plan

Below is a list of projects and the allocated funds for Fiscal Year 2009 - 2010. The allocation is based on a presumption that our portion of Severance Tax Revenue from the Operational Account will be limited to $975,500. Our original proposal to spend $3.4 million was based on past years' five-percent share availability. However, our full five-percent share would be approximately $1.3 million (after the required 1-year reserve). The Board approved the prioritization of these projects in March 2008; changes made by the Board are *italicized*.

CWCB – Severance Tax Trust Fund – Operational Account – Fiscal Year 2009 – 2010

Projects	Funding Request	Revised Amounts
Water Supply Protection Program		
Intra-State Water Planning	$250,000	$ 72,900
Federal Resource Plan Coordinator	$116,000	$ 0
Zebra Mussel Containment	$250,000	$ 0
Recreation Project	$250,000	$ 50,000
Colorado River and Mexican Delta Project	$100,000	$ 0
Elkhead Creek Transit Loss Study	$ 66,000	$ 66,000
Water Resource Considerations of Raton Basin CBM Produced Water	$126,600	$126,600
Sand Wash Basin CBM Production Depletion Effects on Water	$120,000	$ 0
Forest Influences and Water Yield in Colorado	$120,000	$ 0
Assessment of the Variability in Stream Channel Dimension	$ 80,000	$ 0

Projects	Funding Request	Revised Amounts
Stream and Lake Protection Program		
Instream Flow Case Management Support	$ 50,000	$ 50,000
Meeting Colorado's Non-Consumptive Water Needs	$125,000	$ 75,000
Dolores River Dialogue	$100,000	$100,000
River Protection Workgroup	$ 20,000	$ 0
Water Conservation Planning Program		
Water Supply Assessment Follow-Up	$100,000	$ 0
Statewide Water Conservation Initiative Project	$100,000	$100,000
Water Education	$150,000	$ 75,000
Flood Protection Program		
Flood Mitigation and Project Compliance	$100,000	$ 75,000
Historic Flood Information Database	$ 85,000	$ 0
Multi-Objective Watershed Restoration Projects	$100,000	$100,000
NRCS SNOTEL Site Installations	$ 45,000	$ 45,000
Climatology for Seasonal Storms to Design Cloud Seeding Programs	$ 45,000	$ 0
Community Assistance Program	$ 40,000	$ 40,000
Water Information Program		
Lost Creek Basin Groundwater Study	$ 54,500	$ 0
Enhancing Groundwater Recharge in Mountainous Regions	$ 50,000	$ 0
Energy and Water Analyst	$116,000	$ 0
Digitizing & Archiving of CWI / CSU Files	$ 60,000	$ 0
Sago Pondweed and Eurasian Watermilfoil Management	$ 45,000	*$ 0*
ISF DSS Technology Enhancement	$ 25,000	$ 0
Intra-State Water Management Program		
Water Supply Reserve Account Follow-Up	$500,000	$ 0
Totals	**$3,389,100**	**$975,500**

C. Fiscal Year 2010 - 2011 Requests

The following is a summary of the requests we received from constituents and developed internally.

Water Supply Protection Program

1. Intra-State Water Planning

Beneficiary/Grantee/Contractor: CWCB, Various
Amount of Request: $250,000 **Ranking:** High

Product Produced: CWCB needs funding to meet immediate needs for planning funds and to provide assistance to local entities related to water planning. This assistance has taken the form of grants that result in water planning products within one year. CWCB is implementing the statewide water supply initiative and is supporting the basin Roundtables. CWCB also has the responsibility to address other water planning needs that emerge during the fiscal year, but for which no other

funding source is available. These funds are also used, in part, to help local entities meet immediate needs and to plan for the future. The funds are also used to get cooperative efforts "off-the-ground."

Water Planning Relationship: The Statewide Water Supply Initiative (SWSI) process highlighted the need for funds to support local planning efforts. This need is expected to continue.

Recommendation: Staff gives a high recommendation to funding of this project because the information produced and made available will provide a consistent, factual basis for local and statewide water planning efforts.

2. Adaptive Management of Zebra and Quagga Mussels in Colorado

Beneficiary/Grantee/Contractor: Colorado State University (CSU)-Colorado Water Institute
Amount of Request: $50,000 **Ranking:** High

Product Produced: The invasive Zebra Mussel has been found in Pueblo Reservoir. Colorado State Parks, which manages recreation at the reservoir, has developed a multi-million dollar plan to address the mussel problem. This study will outline the economic impacts of Zebra and Quagga Mussels under various management strategies. A number of treatment plans have been developed to eradicate these mussels. This adaptive management model will provide a tool which incorporates the available controls and preventive treatments along with their costs and benefits.

Water Planning Relationship: The spread of nuisance aquatic species could cost water users billions of dollars. If plans are developed and implemented early enough, these adverse impacts may be able to be contained.

Recommendation: Staff gives a high recommendation to funding of this project in order to assist in taking preventive measures to curtail future problems of a greater magnitude.

3. Recreation Project

Beneficiary/Grantee/Contractor: CWCB, Various
Amount of Request: $150,000 **Ranking:** High

Product Produced: The products produced will include: 1) recreational studies or design work related to improving existing diversions that impact recreation or improving in-channel diversions that are not operating in a safe and efficient manner; 2) design drawings for communities that seek to build a Recreational In-Channel Diversion (RICD) that promotes maximum utilization and that allows Colorado to fully use its compact entitlements; 3) construction of RICD structures that promote maximum utilization, prevent flooding, and allow Colorado to fully use its compact entitlements; and/or, 4) work associated with potential litigation support to the extent that an RICD water right application is filed that does not promote maximum utilization or the ability of Colorado to fully use its compact entitlements.

Water Planning Relationship: Recreational use of water is becoming increasingly important to local communities and the State. RICD water rights, and the structures themselves, affect water planning in many important ways. The statutes and CWCB's policies on recreational use of water and on RICD's demonstrate a need to ensure compliance by local communities and to help protect Colorado's compact entitlements and to assure maximum utilization of Colorado's water resources. To the extent that recreational uses of water and RICD structures are designed and constructed in a

manner that promotes maximum utilization of Colorado's water resources and that allows Colorado to fully use its compact entitlements, then CWCB's missions are being fulfilled.

Recommendation: Staff gives a high recommendation to this project because the funding will help to enhance compliance with the goals of maximum utilization of water resources and promoting non-consumptive uses within Colorado, in an appropriate manner.

4. Tamarisk Bio-Control and Vegetative Response Monitoring

Beneficiary/Grantee/Contractor: Tamarisk Coalition, Various
Amount of Request: $94,640 **Ranking:** High

Product Produced: Funding will provide approximately one half of the cost of Fiscal Year 2010 - 2011 for an ongoing 5-year monitoring study. Significant funding will also be provided by private corporate, non-profit, and federal over the course of the 5-year work. Annual monitoring reports, data exchange with land managers and the state insectary in Palisade, and public outreach will be provided each year. A concluding final report will be prepared at the end of the 5th year in 2013.

Water Planning Relationship: The monitoring of the tamarisk leaf beetle as a bio-control agent will evaluate the efficacy of this method of tamarisk control, identify potential impacts and/or conflicts with native riparian ecosystems, and hopefully demonstrate that significant cost-savings over other methods of control can be achieved. This work will complement existing bio-control activities and those which may be funded through the CWCB's new tamarisk cost-share grant program. It will also help answer questions about potential conflicts between tamarisk control and impacts on habitat used by the endangered Southwestern willow flycatcher. Those concerns currently limit use of the leaf beetle in the Lower Colorado River Basin where tamarisk control is being considered as a means of augmenting river supplies.

Recommendation: Staff gives a high recommendation to this project because monitoring of the tamarisk leaf beetle in actual field conditions will fill a critical gap in knowledge about the efficacy and possible adverse unintended consequences of this bio-control method. In addition there is significant leveraging of funds through corporate, non-profit, and federal cost-sharing.

5. Streamflow Forecast Improvement Study

Beneficiary/Grantee/Contractor: CWCB, Various
Amount of Request: $100,000 **Ranking:** High

Product Produced: The study will provide improved and more detailed streamflow forecasts within Colorado. This project will also promote collaboration with the National Weather Service River Forecast Centers (RFCs) to implement newer tools and technologies in streamflow forecasting.

Water Planning Relationship: Competing demands for water supply are leading to increasingly tight water management throughout the state. Improved forecasts help reservoir and water system managers and administrators better anticipate and efficiently utilize the available water.

Recommendation: Staff gives a high recommendation to funding for this study because of the success of similar projects completed in parts of the Colorado and Rio Grande Basins. This study would expand on the work from the previous projects.

6. Water Development Impacts on Yampa River Streamflow and Sediment Budgets

Beneficiary/Grantee/Contractor: USGS, CWCB, Various
Amount of Request: $70,000 **Ranking:** High

Product Produced: The lower Yampa River is the largest, relatively unregulated river system in the upper Colorado River basin. Water from the Yampa River basin has been sought after for a number of municipal, industrial, and energy development programs, including a recent filing by the Shell Oil Company for oil-shale development. Previous interest in Yampa River water development led to a U. S. Geological Survey (USGS) study of the potential impacts on annual streamflow and sediment transport (Elliott and others, 1984). Several operating scenarios from hypothetical impoundments and out-of-basin diversions on the Yampa and Little Snake Rivers above their confluence were investigated to determine the potential effects on the annual sediment budget at Deerlodge Park. One scenario, similar to the proposed Shell water right filing, arbitrarily removed 9 percent of the annual streamflow during the peak-flow period at a location upstream from Deerlodge Park, while retaining the prevailing 2.0 million ton annual sediment supply, mostly sand and silt from the Little Snake River. The result was a sediment surplus of 200,000 tons per year at Deerlodge Park, likely to result in substantial geomorphic and ecological changes in Deerlodge Park, Yampa Canyon, and other downstream reaches.

Since the original USGS study was published, sediment transport equations have been updated with new data (Elliott and Anders, 2005), and over 20 years of additional streamflow data from the Deerlodge Park gage are available to refine sediment budget estimates based on the Shell Oil Company water right filing. Subsequent assessments of other potential impacts are possible once altered sediment budgets are estimated, such as habitat studies at endangered native fish spawning sites downstream, and riparian vegetation encroachment studies. The proposed study updates sediment budget estimates based on the recent Shell Oil Company water right filing. Results will be published in a peer-reviewed paper.

Water Planning Relationship: The proposed study updates original Yampa River sediment budget estimates at Deerlodge Park (Elliott and others, 1984) and two other sites based on: 1) revised sediment transport equations (Elliott and Anders, 2005), 2) long-term streamflow statistics computed from USGS streamflow gaging stations, and 3) the recent Shell Oil Company water right filing or other streamflow scenarios. Updated sediment budgets will help regulatory and management agencies assess potential impacts of water development on channel maintenance, flood conveyance, sediment storage, native fish habitat, and riparian vegetation.

Recommendation: Staff gives a high recommendation to this project because of its importance to local water planning efforts.

Stream and Lake Protection Program

1. Stream and Lake Protection Outreach and Education

Beneficiary/Grantee/Contractor: CWCB, Various
Amount of Request: $10,000 **Ranking:** High

Product Produced: This project is directed at increasing public awareness of new instream flow appropriations and acquisitions. As the Interbasin Compacts Committee (IBCC) non-consumptive needs assessment recommendations are implemented, additional outreach and education activities

will be necessary as well as increased collaboration and coordination between various stakeholders. This project will not only involve the development and distribution of educational and marketing material in both electronic and paper form, but also pay the cost to provide advanced public notice of meetings in various communities throughout the state. Furthermore, the project will provide a funding mechanism to aid staff in the increase in travel activities that are inevitable.

Water Planning Relationship: This project will enable Instream Flow (ISF) appropriation and acquisition coordination and collaboration among stakeholders in areas affected by energy and mineral development activities.

Recommendation: Staff gives a high recommendation to funding for this project because of its importance to local water planning efforts and the direct tie to the ISF Strategic Plan, which called for increased public outreach and education.

2. CWCB Hydrographic Strategic Plan

Beneficiary/Grantee/Contractor: CWCB, Various
Amount of Request: $60,000 **Ranking:** High

Product Produced: This project involves the development of a Strategic Plan, which will guide the CWCB's hydrographic program. The strategic plan components will include development of stream gaging program policies and guidelines; utilization of the agency gaging budget; remote monitoring via multiple telemetry technologies; stream gage prioritization; equipment requirements; evaluation of data needs; records management and integration of CWCB gages with Division of Water Resources (DWR) and U. S. Geological Survey (USGS) hydrographic programs as well as an overall implementation strategy utilizing all available CWCB stream gaging resources.

Water Planning Relationship: Stream gaging data is essential for effective water policy and planning and is the key component in all state and local water planning strategies and initiatives. This project provides for an agency hydrographic strategic plan, which will insure a quality and quantity of gaging data to meet agency and public needs across the state and in energy and mineral impacted communities.

Recommendation: Staff gives a high recommendation to funding for this project because water data is essential for all aspects of water policy and planning from the design of new water projects to flood monitoring and In-stream water right protection.

Water Conservation Planning Program

1. Water Conservation and Drought Mitigation Planning Program

Beneficiary/Grantee/Contractor: CWCB, Various
Amount of Request: $100,000 **Ranking:** Medium

Product Produced: The CWCB's Office of Water Conservation & Drought Planning (OWCP) is statutorily charged with providing financial assistance to covered entities and other state and local governmental entities in their efforts to develop and update their water conservation and drought mitigation plans. OWCP has increased the number of opportunities for entities to submit grant applications throughout the year, thereby maximizing the benefits to entities from such financial assistance and increasing the number of local entities with CWCB approved water conservation plans. In addition, as of July 1, 2006, any covered entity seeking a loan from the CWCB or the

Colorado Water Power and Development Authority is required to have an updated CWCB-approved water conservation plan on file prior to the loan proceeds being released.

In its efforts to update Colorado's Drought Mitigation & Response Plan, the OWCP intends to work closely with local entities, including water providers, to integrate local drought plans with the overall State Drought Plan. While drought planning is not currently required of Colorado water providers, many have expressed interest in developing or revising them to be more comprehensive.

OWCP staff plan to effectively promote this program around the State through workshops and other public outreach venues. These actions should encourage more entities to submit grant applications for financial assistance in their efforts to plan effectively for water conservation and drought mitigation.

Water Planning Relationship: Comprehensive water conservation planning and effective implementation of plans by water providers is critical to the solution for meeting Colorado's growing water supply challenges identified in SWSI. CWCB has an important role in providing robust and current technical assistance to water providers as they develop conservation measures to meet their water savings goals. In addition, CWCB, in its efforts to better understand the relationship between conservation and the 2030 and beyond water supply gap, must develop and implement methodologies and databases to track and monitor conservation measures being implemented and the actual realized savings from that implementation in order to better inform decision-making and statewide water planning initiatives.

Recommendation: Staff gives a medium recommendation for funding of this project because, while this work is critical for planning Colorado's future water needs, under normal budgetary conditions support will be provided by funding through House Bill 04-1254 and the CWCB Water Efficiency Grant Program Cash Fund.

2. Drought Planning and Water Adaptation Project

Beneficiary/Grantee/Contractor: CWCB, Various
Amount of Request: $100,000 **Ranking:** High

Product Produced: In 2007 the findings of the most recent Drought and Water Supply Assessment (DWSA) completed indicated a lack of drought response planning in all seven Colorado Water Divisions and that more than 70% of the survey respondents had not considered the impact of climate change on long term water supply planning. Respondents expressed strong support for State assistance to Colorado water providers.

Therefore, as part of the Colorado's Drought Mitigation & Response Plan revision, CWCB will provide a planning tool box to include guidance documents that will aid water providers statewide to better prepare for and mitigate the effects of future drought; as well as a drought risk information system which will provide entities with the capacity to determine the potential impacts of drought. These tools are needed to strengthen planning efforts locally and statewide. Tools to help providers better adapt to climate change to ensure future water goals will also be developed.

Water Planning Relationship: Statewide water planning efforts have focused much on the water supply gap associated with increased population over the next 50 years and what that corresponding increased demand will mean. However, drought conditions, both those associated with natural climate variability historically experienced in this State, and as a result of climate, must be addressed

in statewide water planning efforts. Developing a comprehensive state drought initiative and a strategy for adapting to climate change will support ongoing water planning initiatives.

Recommendation: Staff gives a high recommendation to the funding of this project because of its importance to local water planning efforts as well as the State's initiatives and efforts to develop water adaptation strategies to climate variability and change.

3. Statewide Water Conservation Initiative Project

Beneficiary/Grantee/Contractor: CWCB, Various
Amount of Request: $100,000 **Ranking:** High

Product Produced: Activities related to this initiative and to be funded may include:

- Development of water conservation planning technical tools for municipal, commercial, industrial, and institutional water sectors.
- Development of a comprehensive Water Conservation Economics Model to help water providers predict the operational & financial impact of water conservation measures.
- Development and update of a Statewide Water Conservation database to monitor and integrate water conservation activities and projected water savings by water providers in the State's ongoing water resource planning activities. This database would be compatible with the Colorado Decision Support System (CDSS).
- Coordinate the water conservation technical platform for the House Bill 05-1177 Roundtable Process and the ongoing SWSI process.
- Coordinate statewide water conservation workshops and an annual summit focusing on the science and technical aspects of water conservation.

Water Planning Relationship: Comprehensive water conservation planning and effective implementation of plans by water providers is critical to the solution for meeting Colorado's growing water supply challenges identified in SWSI. CWCB has an important role in providing robust and current technical assistance to water providers as they develop conservation measures to meet their water savings goals. In addition, CWCB, in its efforts to better understand the relationship between conservation and the 2030 and beyond water supply gap, must develop and implement methodologies and databases to track and monitor conservation measures being implemented and the actual realized savings from that implementation in order to better inform decision-making and statewide water planning initiatives.

Recommendation: Staff gives a high recommendation to the funding of this project because of its impact on water conservation and its contribution to attaining the goals of SWSI and the Water for the 21st Century Act.

4. Water Education Projects

Beneficiary/Grantee/Contractor: CWCB, Various
Amount of Request: $75,000 **Ranking:** High

Product Produced: CWCB needs funding to meet immediate needs for water education and water program marketing. These funds are also used for "outreach" activities and to sponsor, promote and partner with other entities that can help CWCB accomplish its goals and implement its mission. CWCB annually implements a wide variety of water education initiatives. These have included

participation in the State Fair, the development of displays, workshops, brochures and other marketing tools that educate the public about CWCB activities. As CWCB trends towards thinking of itself in terms of "resources" instead of sections, this work and the need for money is expected to increase. The need for funds for outreach activities and to sponsor annual activities is also increasing.

Water Planning Relationship: These funds are used for "outreach" activities and to sponsor, promote and partner with other entities that can help CWCB accomplish its goals and implement its mission. The funds and associated projects improve the public's understanding of the value of water as a scarce natural resource. This will help local and regional water planning efforts where public understanding is important.

Recommendation: Staff gives a high recommendation to the funding of this project because of its impact to educate the public to understand the scarcity and value of our water commodity.

5. Estimating the Cost Effectiveness of Water Conservation Programs

Beneficiary/Grantee/Contractor: CSU, Colorado Water Institute, Various
Amount of Request: $50,000 **Ranking:** Medium

Product Produced: This project would develop a better understanding of the costs and potential effectiveness of various water demand and drought management programs. Specifically addressing the following questions: (1) what conservation programs work (in terms of their impact on both short and long-term water use) and (2) what do they cost per acre foot of water saved? This project would build off of existing regional water demand research being conducted by CSU researchers in collaboration with the City of Aurora and scientists at CU and NOAA.

Water Planning Relationship: Demand management is quite likely the most economically and politically viable of all adaptation options, but it is also among the most poorly understood. Designing effective demand management and drought polices requires an understanding of the effectiveness, in terms of cost per acre foot saved, of various conservation programs. Unfortunately, the level of information needed for Colorado water managers to identify the role that demand management should play in their planning efforts does not currently exist. Developing such an understanding involves statistically linking observed changes in demand to changes in such factors as price, water use restrictions, weather, and household characteristics. This, in turn, requires knowledge of how households make water use decisions and the information they utilize when making these decisions.

Recommendation: Staff gives a medium recommendation for funding of this project because, while this work would be helpful for planning Colorado's future water needs, there is other similar work currently going on that need to be complete prior to undertaking this study.

Flood Protection Program

1. Flood Mitigation and Project Compliance

Beneficiary/Grantee/Contractor: CWCB, Various
Amount of Request: $250,000 **Ranking:** High

Product Produced: The focus of this work will be to address local requests as well as identification and design of projects that can be implemented or upgraded to reduce the flood risk.

The funding will be used to provide a means of cost-sharing with local entities and other agencies to accomplish the much needed work. Cost-sharing will be emphasized when practical to leverage the funds. In some cases, some financial assistance may be provided to smaller communities to perform required one-time maintenance activities for regulatory purposes provided that the local governments and other entities benefiting from the project expend as many local resources as available to perform the work.

Water Planning Relationship: CWCB has identified a substantial need for identification of deficiencies to flood mitigation projects throughout Colorado. The best example of the use of these funds is the current nationwide focus on the condition of levees, which has already impacted some Colorado communities and is expected to impact many more in the coming years. Many of these levees and other flood control/mitigation projects are located in small or impoverished communities throughout the state that are in need of both technical and, in some cases, financial assistance. Funds from this program will be used to develop solutions to bring these projects back into technical or regulatory compliance.

Recommendation: Staff gives a high recommendation for funding of this project because flood protection infrastructure around the state is getting older and in need of maintenance and improvement. A small amount of funds can be leveraged with funds from local governments and other state and federal agencies to accomplish this work in a manner that is cost efficient to the State.

2. Multi-Objective Watershed Restoration Projects

Beneficiary/Grantee/Contractor: CWCB, Various
Amount of Request: $150,000 **Ranking:** High

Product Produced: This project will provide funding to allow CWCB to support 4 or 5 Multi-Objective Watershed Restoration Planning Studies, with an emphasis on watershed restoration efforts, in watersheds throughout Colorado. In the past, CWCB's Watershed Restoration Program has funded studies in the Fountain Creek Watershed, in the Willow Creek Watershed in and around Creede, in the Lake Fork Watershed near Leadville, in the Dolores River Watershed in and around Rico, and the Ski Creek Watershed on Pikes Peak. These studies have addressed issues of mining impacts, water supply, stream instability, and flood hazards. Using GIS and various hydraulic and hydrologic engineering tools, the studies have identified current watershed problems, causes of those problems, and strategies for addressing the problems in a short-term and long-term manner. The Statewide Water Supply Initiative (SWSI) has called for watershed restoration efforts to be combined with water supply projects, and this program can help meet that goal.

The Colorado Healthy Rivers Fund Tax Check-off Program has identified numerous watersheds where local watershed groups are working to address a variety of watershed issues. The Healthy Rivers Fund generally does not have sufficient funds to award grants to all applicants. CWCB proposes to start with the list of unfunded applicants, with other watershed groups that have contacted CWCB about potential funding for watershed restoration planning and project activities, and with potential SWSI projects.

Water Planning Relationship: This program is statewide in nature and is intended to assist in meeting watershed restoration needs throughout Colorado. The specific candidate watersheds for this project will be derived from local applications and expressions of interest and from the list of potential SWSI projects. The purpose of each individual effort will explicitly address local watershed planning and project needs. CWCB will provide technical and administrative support to

further local efforts (including SWSI efforts) that are already underway. To the fullest extent possible, these local efforts will emphasize watershed restoration needs.

Recommendation: Staff gives a high recommendation for funding of this project because it is another high priority within the CWCB Watershed Protection & Flood Mitigation Section. Much success has already been achieved in the past few years on river restoration projects (Roaring Fork River, Mancos River, Rio Grande, and others) with similar projects.

3. Hydraulic Analysis of Reconfigured Stream Channels Study

Beneficiary/Grantee/Contractor: USGS, Various
Amount of Request: $98,000 **Ranking:** High

Product Produced: The proposed study will expand the scope of the Reconfigured Channel Monitoring and Assessment Program (RCMAP) to include an ephemeral alluvial channel and fan, tributary to the Arkansas River in southern Colorado. It will be consistent with ongoing monitoring and analyses of river restoration projects in western Colorado, and will evaluate the hydraulic characteristics of the reconfigured reach with the USGS multidimensional surface-water model (MD_SWMS). The proposed 1-year funding will be used to establish a monitoring site, to collect baseline data against which future data will be evaluated, and to evaluate channel hydraulic conditions with MD_SWMS. Results will be published in a peer-reviewed paper. The study will increase the applicability of RCMAP geomorphic analysis of river response to channel modifications by including an ephemeral channel and alluvial fan.

Water Planning Relationship: The proposed study, and the ongoing USGS RCMAP project that the proposed study compliments, are designed to provide information to resource managers, planners, and designers on the effectiveness and durability of channel restoration techniques used for stream rehabilitation, sediment management, and flood protection. The proposed study increases the geomorphic range of applicability of the RCMAP, and evaluates reconfigured channel hydraulic conditions with a multi-dimensional surface-water model (MD_SWMS) developed by USGS.

Recommendation: Staff gives a high recommendation for funding of this project because it provides unbiased monitoring for a stream restoration project. Staff has identified a crucial need to monitor restoration projects to assess both short and long term durability of reconfigured stream reaches.

4. Suspended Sediment and Bedload Data Collection Study on the Alamosa River

Beneficiary/Grantee/Contractor: Alamosa River Foundation, Various
Amount of Request: $38,070 **Ranking:** Low

Product Produced: The sediment load on the Alamosa River will be quantified to determine present baseline conditions at multiple locations. This will provide comparison points at which to monitor the effects of watershed management activities including mine reclamation, stream channel restoration, land management and residential development. The collected baseline data can be used to determine whether estimated reductions in sediment, due to various land management practices, will be significant relative to the total sediment load in the river system.

Water Planning Relationship: The Water Supply and Stream and Lake Protection Programs will benefit most, as well as ongoing sediment reduction efforts and the Foundation's Instream Flow Project, a partnership between the Alamosa RIVERKEEPER and Terrace Irrigation Company. Since

sediment eroded from portions of the river below Terrace Reservoir can accumulate and displace downstream channel capacity, ditch owners, the Conservancy District, and the Watershed Protection and Flood Mitigation Program are also related. These data will assist the MEGA Board to implement responsible practices relating to a watershed's sensitivity to mineral development, roads and land use practices.

Recommendation: Staff gives a low recommendation for funding of this project because funding may not be available to complete the three year project. Good baseline sediment load data requires a three year collection period that includes flows greater than bankfull. Staff believes that Severance Tax is not the best source for this project given the sunset provisions on funding. Staff recommends that the applicant pursue funding through one of the Watershed Protection and Flood Mitigation Section's competitive grant programs.

5. NRCS SNOTEL Site Installations

Beneficiary/Grantee/Contractor: USDA, Various
Amount of Request: $30,000 **Ranking:** High

Product Produced: Each proposed location would increase the data coverage for a particular basin to improve water supply forecasting. These sites either automate existing manually measured snow course sites or provide new data in previously unmeasured basins. New SNOTEL sites provide daily snowpack readings, whereas the manual sites provide data two to four times per winter. When new SNOTEL sites are installed in previously unmeasured locations, this new data is valuable in helping to calibrate basin forecasts and assessments of snowpack and streamflow. New SNOTEL sites can help explain previously unknown hydrologic variability within the basin. Since 2004, CWCB has used this funding to cost share with local interests to convert manually measured sites to automated SNOTEL sites. The cost for one site is approximately $20,000; the cost share is 50/50 (CWCB to Local). The $30,000 will be used to cost share in the equipment for three new SNOTEL sites; which are in the Upper Gunnison River Basin, Upper Colorado River Basin, and Upper Piedra River Basin.

As an update to previously approved funding, the sites being installed this summer of 2009 will include: the Piedra River Basin; a tributary to the San Juan River; the Fraser River Basin; and above Taylor Park Reservoir in the Gunnison River Basin. Two sites currently being completed are the Long Draw and the Pan Handle sites high up in the Cache La Poudre River Basin. In 2008, the sites installed were: Hourglass Lake in the Poudre River Basin, and Moon Pass and Sergeants Mesa in the Rio Grande River Basin.

Water Planning Relationship: SNOTEL data is integral to many of the CWCB program functions and provides the means to assess and forecast conditions for snowpack, streamflow, and reservoir storage within the given water year. The NRCS Snow Survey products are featured presentations in the Colorado Governor's Flood and Water Availability Task Forces.

Recommendation: Staff gives a high recommendation for funding of this project because of the importance to water supply protection, flood protection and water resource managers. Additional automated snowpack instruments will provide real-time data to assist in water supply and flood forecasting. In addition, it matches effectively with local and federal resources.

6. Integrated Evapo-transpiration Monitoring System for Colorado

Beneficiary/Grantee/Contractor: CSU, Colorado Climate Center, Various
Amount of Request: $49,500 **Ranking:** Medium

Product Produced: The project will leverage existing partnerships and weather observation networks to develop and promote an effective low cost monitoring system to track and display the amount of water likely being utilized by evapo-transpiration (ET) across Colorado.

Water Planning Relationship: A recent needs assessment by the National Integrated Drought Information System (NIDIS) cited the specific need to monitor all components of the hydrologic cycle, not just the supply side components. ET accounts for the vast majority of water utilization in Colorado. Recent uncertainties in water supplies and climate have led to the need for timely and accurate assessments of water use.

Recommendation: Staff gives a medium recommendation for funding of this project because of competition for limited funding. CSU-Colorado Climate Center needs to coordinate the scoping of this project to ensure that the methodology, data quality and data format are consistent with existing ET estimation projects within Colorado and are compatible with the CWCB-DSS.

7. Colorado Community Rain and Hail System (CoCoRaHS)

Beneficiary/Grantee/Contractor: CSU, Colorado Climate Center, Various
Amount of Request: $15,000 **Ranking:** High

Product Produced: The Colorado Community Rain and Hail System **(**CoCoRaHS) was founded in 1998 in northern Colorado and has now expanded to several western states. It currently engages over 1,500 volunteers to measure rain, hail and snow throughout Colorado as well as to report abnormalities. For instance, a huge flash flood resulting from a highly localized intense rain storm that dropped over 14 inches of rain over a few neighborhoods in Fort Collins, Colorado, helped point out the role that volunteers can play to report weather events, track rainfall patterns, help scientists, and monitor water resources.

Water Planning Relationship: CWCB has conducted three years of rain and hail data collection in the San Luis Valley (Valley) from 2006 through 2008 to study the in target area and out of target area effects of rain and hail patterns as they related to hail cannon operations. This source of data enabled CSU to compare normal climate observation network data in the Valley with data collected in and near the hail cannon operational network. The CWCB Flood Response Fund will fund NOAA-NSSL to deploy a dual polarization Doppler radar in the Gunnison River Basin to collect radar data during storm events. This radar data will be collected below the scanning horizon of the Grand Junction WX88D radar on top of the Grand Mesa. CoCoRaHS' volunteers will be solicited to collect rain data in the Gunnison Basin and compare it with radar data collected during this two month summer project in 2009. The physical observations of CoCoRaHS' gages compliment radar and remote sensing data that can update rainfall estimates used for flash flood forecasts.

Recommendation: Staff gives a high recommendation for funding of this project because of its importance to several CWCB related projects and programs. The CSU-Colorado Climate Center also leverages National Science Foundation funding when it matches state and local funding.

8. Mobile Radar Gap Filling Project – Four Corners Area (CO, UT, AZ and NM)

Beneficiary/Grantee/Contractor: NOAA, National Severe Storms Laboratory, Various
Amount of Request: $40,000 **Ranking:** Medium

Product Produced: This is a field project to demonstrate the utility of a gap filling radar in the Four Corners area and study convective storm properties. National Oceanic and Atmospheric Administration (NOAA)/National Severe Storms Laboratory (NSSL) would deploy an X-Band dual polarized mobile Doppler (NXP) for two summer months to collect data. This is the research and development branch of NOAA working on behalf of Colorado local governments, emergency managers, and the National Weather Service. Data and analysis will update algorithms that estimate summer flash flood precipitation. NOAA-NSSL has completed similar studies and projects in Arizona and California. NSSL will do the same project during the summer of 2009 in the Gunnison River Basin. The Gunnison Project was presented at the Colorado Stormwater and Floodplain Managers Association Conference in September 2008. Conference attendees from the Durango area requested CWCB to do the same project in the Four Corners area as the radar coverage is equally as poor in the southwest as it is in the Gunnison Basin.

Poor NEXRAD radar coverage over the Four Corners area results in high uncertainty of radar-based precipitation estimates. Radar coverage is over 6 km in some areas and precipitation detected high above the ground is rarely representative of what actually reaches the ground. In many instances the radar "overshoots" the storms. These effects in turn cause uncertainty in National Weather Service (NWS) flash flood warnings and river forecasts. NWS precipitation estimates provided by the Colorado Basin River Forecast Center are based solely on gauge data. Unfortunately, there are few gauges to sufficiently depict the full precipitation distribution.

Water Planning Relationship: The CWCB Watershed Protection and Flood Mitigation Program coordinates with FEMA, the U.S Army Corps of Engineers, and the Division of Emergency Management in post flood recovery and documentation. Updating precipitation data used for flash flood warnings and alerts will improve the accuracy of those warnings used by local, state, and federal emergency management officials.

Recommendation: Staff gives a medium recommendation for funding of this project because of limited funding available and will await the outcome of the Gunnison River Basin radar project prior to further consideration of this project.

9. Community Assistance Program

Beneficiary/Grantee/Contractor: CWCB, Local Water Planners
Amount of Request: $40,000 **Ranking:** High

Product Produced: The Community Assistance Program (CAP) is a product-oriented financial assistance program directly related to the flood loss reduction objectives of the National Flood Insurance Program (NFIP). States and communities that are participating in the NFIP are eligible for this assistance. CAP is intended to identify, prevent, and resolve floodplain management issues in participating communities before they develop into problems requiring enforcement action. In Colorado, the program is based on a 75:25 (federal to non-federal) cost-share basis and has been in existence for over 20 years. This program has been very effective in helping communities to understand and realize the benefits of the NFIP and to assist in making sure that they follow the program guidelines for the highest benefits.

Water Planning Relationship: This work fits in centrally with the CWCB's mission of helping to protect Colorado's citizens from flooding damages, as floodplains are defined as areas of statewide interest. This coordinator position helps provide long-term benefits in the terms of greater flood awareness and reduced flood damages and susceptibility.

Recommendation: Staff gives a high recommendation for funding of this project because of the importance to flood protection and water management. This cost-share funding is crucial to assure the continued success of the program and to ensure continued federal funding for the full-time position.

Water Information Program

1. National Hydrography Stewardship Program at Colorado Division of Water Resources

Beneficiary/Grantee/Contractor: DWR, CWCB, Various
Amount of Request: $25,000 **Ranking:** Low

Product Produced: Edits and updates to the National Hydrography Dataset (NHD) specific to the needs of the Colorado Decision Support System (CDSS).

Water Planning Relationship: This work would allow for the integration of the NHD dataset into CDSS tools and models, providing potentially higher resolution data input and outputs for the various CDSS tools.

Recommendation: Staff gives a low recommendation for funding of this project because it is currently unknown what modifications, edits or updates would be needed to integrate the NHD into framework of Hydrobase and other CDSS tools. It is also unknown what additional costs may be incurred to modify or update CDSS tools to incorporate NHD data.

2. Colorado's Virtual Water Matrices

Beneficiary/Grantee/Contractor: CSU, Colorado Water Institute, Various
Amount of Request: $25,070 **Ranking:** Medium

Product Produced: This project will assemble all of the scientific literature, current projects, and publications related to the creation of virtual water input/output matrices. The principal investigator and graduate research assistant will then collaborate with technical experts to determine sectors and subsectors to be included in the matrix. Review of the scientific literature and interview with experts will help to create the technical coefficients that populate the matrices linking water inputs (direct and indirect) to the final production of the good. The matrix will be completed and will evolve into a form readily accessible to the public. A final report will be published as a Colorado Water Institute completion report, and presentations made at appropriate meetings.

Water Planning Relationship: As the competition for scarce water increases, stakeholders, policymakers and the public must make choices in order to meet both short-term and long-term water resource needs. Yet it is not clear how much water will be released (directly or indirectly) as water consumption is reduced with various public policy initiatives such as conservation, nor the net increase or decrease of water use when other policy initiatives, such as reservoir construction, are followed. The purpose of this study is to provide policymakers with a snapshot of the use of water by Colorado sectors and subsectors so that more informed policy and water use decisions can be made.

Recommendation: Staff gives a medium recommendation for funding of this project because, while this work would be helpful for planning Colorado's future water needs, there is other similar work currently going on that need to be complete prior to undertaking this study.

Intra-State Water Management Program

1. Integration of Land Use Practices and Water Supplies Study

Beneficiary/Grantee/Contractor: CWCB, Various
Amount of Request: $149,416 **Ranking:** Medium

Product Produced: This grant would allow CWCB to obtain technical support to further refine several key questions identified by the Interbasin Compact Committee (IBCC) and Basin Roundtable processes and the Statewide Water Supply Initiative (SWSI). Specifically, as the IBCC undergoes the 2050 visioning process, several key questions should be answered as how Colorado should look in the next forty years. This project helps this process by exploring land use practices that have been successfully implemented nationally to address water supply sustainability, determine what has been accomplished within Colorado, and lastly examine more in depth the feasibility of an agricultural buffer and interruptible water supply agreements for Front Range Communities.

Water Planning Relationship: This project benefits both the Conservation and Drought Planning and Intrastate Water Management and Development Sections by helping determine strategies for how to deal with growing water supply demands and times of drought. Land use practices can have significant impacts on water resources and need to be factored into CWCB's planning efforts.

Recommendation: Staff gives a medium recommendation for funding of this project because, while this work is critical for planning Colorado's future water needs, under normal budgetary conditions support will be provided by funding through House Bill 06-1400 and the CWCB Construction Fund.

2. IBCC Process Technical Support and Evaluation of Water Supply Strategies

Beneficiary/Grantee/Contractor: CWCB, Various
Amount of Request: $250,000 **Ranking:** Medium

Product Produced: This funding will help provide technical support to CWCB and IBCC for the development and evaluation of water supply strategies. This includes analyzing the trade-offs between conservation, agricultural transfers, and new supply development for meeting Colorado's future water needs. It will also provide technical support to the nine basin roundtables in developing their consumptive and non-consumptive needs assessments. This includes analyzing agricultural, municipal, industrial, environmental, and recreational water needs in each basin, as well as identifying projects and methods to meet those needs.

Water Planning Relationship: Identifying water supply demands and what strategies can be used to meet those needs is critical to water planning. This effort further develops the work that was achieved through the SWSI and basin roundtable process, helping to focus on the strategies that are necessary in order to ensure that Colorado's competing water needs are addressed to 2050 and beyond.

Recommendation: Staff gives a medium recommendation for funding of this project because, while this work is critical for planning Colorado's future water needs, under normal budgetary conditions the legislatively mandated technical support will have adequate funding through House Bill 06-1400.

3. Assessing the Relative Costs/Values of New Water Supply Options

Beneficiary/Grantee/Contractor: CWCB, Various
Amount of Request: $35,000 **Ranking:** High

Product Produced: As water providers and other local public policy officials strive to reliably meet existing and new water demands, they must weigh four types of options: 1) new developments, 2) modifications to existing projects, 3) water transfers, and 4) demand management/conservation approaches. To examine these four categories, the project will collect a diverse set of engineering studies, EIS's, and related planning documents for recent and proposed Front Range water projects/programs in each of the identified categories. This will result in a generalized cost per acre-foot typology. The primary product will be a report written in two phases. Phase I will summarize the compiled data (projects, costs estimates, and other considerations). Phase II will add a discussion of trends, salient findings, and additional analysis of economic and other considerations, such as social, environmental and climatic.

Water Planning Relationship: SWSI identified economic factors as one of the important components to water supply planning. This project directly assists in compiling critical economic data on projects that work to help plan for how water supply projects can be successful in the future. This project will help refine estimates of how much it will cost to meet Colorado's future water needs.

Recommendation: Staff gives a high recommendation for funding of this project because there is an increasing recognition of the need for the state to help frame, guide, coordinate, and support meeting future water supply needs. The project will address the need of public policy officials to understand and evaluate the relative economic implications of available water supply options and the trends in these costs.

A summary listing the projects and the recommended rankings follows as Attachment B.

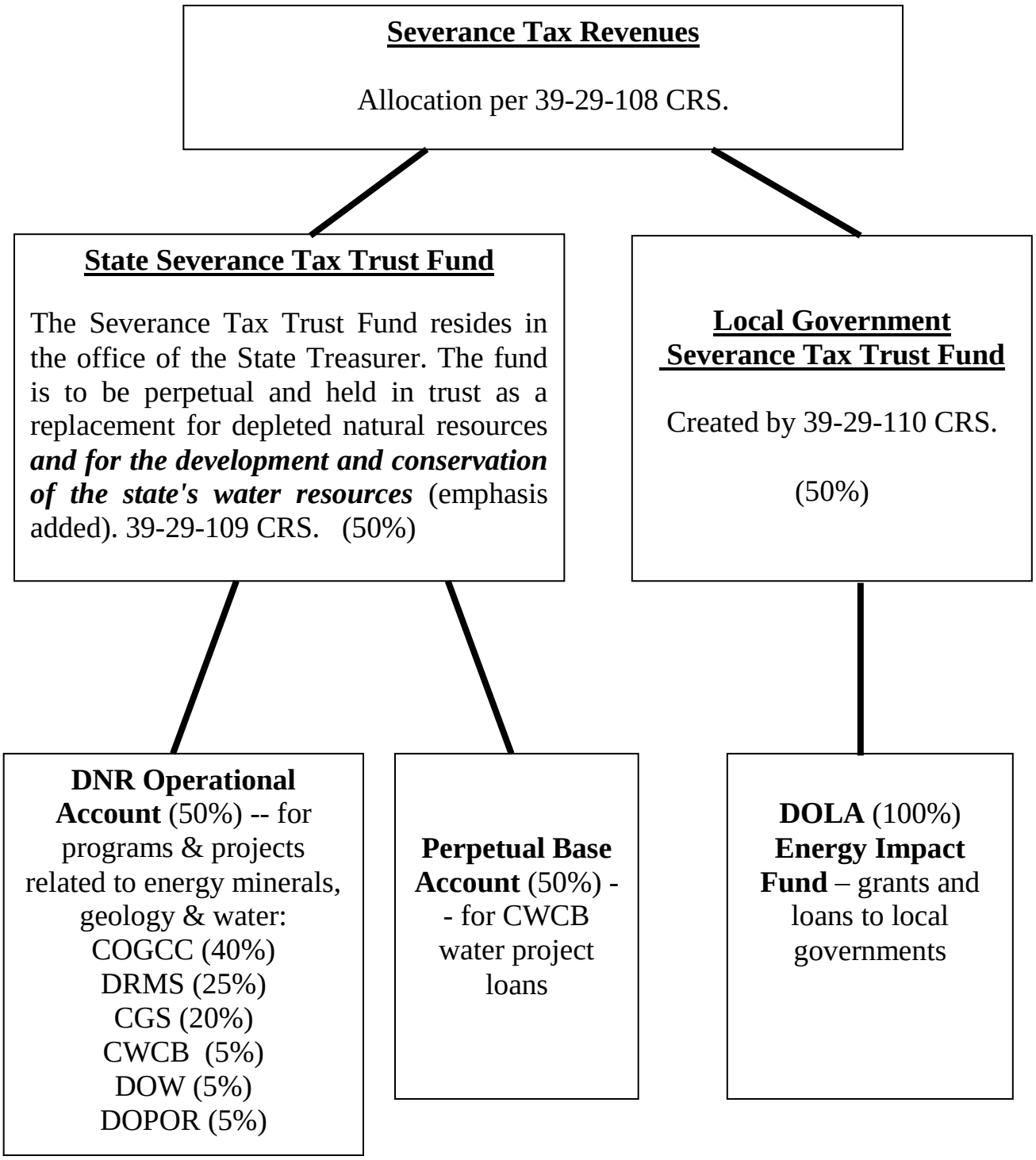
FINAL RECOMMENDATION:

No action is needed on Part A or B.

With respect to Part C, we recommend that you approve the staff ranking for each project and direct us to allocate funding based on the amount of Severance Tax available within the CWCB's five-percent share. We will not know exactly how much funding will be available until the Executive Branch and the General Assembly act on proposals to divert a portion of Severance Tax to the General Fund, place a cap on contribution into the Operational Account, or keep agency funding static for other budgetary reasons.

Attachment A

Severance Tax Trust Fund Distribution Chart



Attachment B

COLORADO WATER CONSERVATION BOARD
SEVERANCE TAX TRUST FUND OPERATIONAL ACCOUNT
Covering July 2010 thru June 2011

Projects	Funding Request	Staff Ranking
Water Supply Protection Program		
Intra-State Water Planning	$250,000	High
Adaptive Management of Zebra Mussels	$ 50,000	High
Recreation Project	$150,000	High
Tamarisk Bio-Control and Vegetative Response Monitoring	$ 94,640	High
Streamflow Forecast Improvement Study	$100,000	High
Water Development Impacts on Yampa River Streamflow	$ 70,000	High
Stream and Lake Protection Program		
Stream and Lake Protection Outreach and Education	$ 10,000	High
CWCB Hydrographic Strategic Plan	$ 60,000	High
Water Conservation Planning Program		
Water Conservation and Drought Mitigation Planning Program	$100,000	Medium
Drought Planning and Water Adaptation	$100,000	High
Statewide Water Conservation Initiative Project	$100,000	High
Water Education	$ 75,000	High
Estimating the Cost Effectiveness of Water Conservation Programs	$ 50,000	Medium
Flood Protection Program		
Flood Mitigation and Project Compliance	$250,000	High
Multi-Objective Watershed Restoration Projects	$150,000	High
Hydraulic Analysis of Reconfigured Stream Channels	$ 98,000	High
Suspended Sediment and Bedload Data Collection Study	$ 38,070	Low
NRCS SNOTEL Site Installations	$ 30,000	High
Integrated Evapo-transpiration Monitoring Systems	$ 49,500	Medium
Colorado Community Rain and Hail System	$ 15,000	High
Mobile Radar Gap Filling Project	$ 40,000	Medium
Community Assistance Program	$ 40,000	High
Water Information Program		
National Hydrography Stewardship Program	$ 25,000	Low
Colorado's Virtual Water Matrices	$ 25,070	Medium
Intra-State Water Management Program		
Integration of Land Use Practices and Water Supplies	$149,416	Medium
Interbasin Compact Process Technical Support	$250,000	Medium
Assessing the Relative Costs/Values of New Water Supply Options	$ 35,000	High
Total	**$2,404,696**	