

Gunnison Basin & Grand Valley Selenium Task Force  
2009-10 Accomplishments Report  
v.07-13-10

**Purpose:** To summarize Gunnison Basin and Grand Valley Selenium Task Force accomplishments, to report on the status of projects, and to identify areas in need of action.

**A. 319 Non Point Source Grant:** *Lower Gunnison Basin and Grand Valley Watershed Plan*

**Project Summary:** To develop a watershed plan that will serve as an implementation tool for improving water-quality, specifically selenium concentrations, in the Lower Gunnison, Uncompahgre, and Colorado Rivers.

A request was made to the WQCD and approved to extend the contract period to June of 2011 in order to align the watershed planning process with Selenium Management Program planning process. Watershed plan development is occurring simultaneously with the Selenium Management Plan Technical Work Group.

**Status:** In progress (on schedule).

**Project Budget:** \$32,479.13  
Remaining Balance: \$13,492.36

**B. Conservation Innovation Grant (NRCS):** *Employing Innovative Data and Technology for Water Conservation Targeting and Planning in Salinity and Selenium Affected Areas of the lower Gunnison River Basin*

**Project Summary:** The goal of the project was to develop and implement an innovative, comprehensive GIS of water-quantity and water-quality information to enhance water conservation targeting and planning efforts. This project assisted the GBSTF by implementing innovative data management techniques to promote water use efficiency and water conservation to minimize deep percolation and therefore selenium (and salt) loading to surface and groundwater. This project will also identified the location and extent of salinity control projects (DCD and SCD areas) that will assist with ongoing efforts to predict the effects of changing land use on selenium loading. Quantification of changes in land use can also be incorporated into the development of Total Maximum Daily Loads (TMDLs).

**Status:** Complete as of 3/31/10

**Final Project Budget Summary:**

CIG Award:	\$ 75,000
Cash Match:	\$ 40,000
In-Kind:	\$ 45,499
<u>Federal Contributions:</u>	<u>\$ 5,380*</u> (not included in budget total)
Total Project Budget:	\$160,499

**C. Selenium Control Project – Loutzenhizer Lateral Piping (319 NPS Grant)**

**Project Summary:** This project will help bring several selenium impaired 303(d) listed segments into compliance with EPA standards by placing 6.5 miles of open ditch laterals with closed pipe in a highly seleniferous and saline area. The project is a collaborative effort between the State of Colorado 319 NPS program, the Colorado River Basin Salinity Control Program, the US Bureau of Reclamation, and the Uncompaghre Valley Water Users Association (UVWUA). It is estimated that the EF Lateral piping segment alone will reduce 171-214 lbs/year Se and 2,138 tons/year of salt. The entire Phase IV piping project will place approximately 11.9 miles of open ditch with pipe and will reduce a total of approximately 262-328 lbs/year Se and 3,275 tons/year of salt. *\*Selenium reduction credits are claimed by the State of Colorado NPS Program while the salt credits are claimed by the CRBSCP.*

**Status:** In progress (on schedule). The entire EF lateral has been piped. A project highlight webpage is on the Selenium Task Force website: <http://www.seleniumtaskforce.org/projects/eflateralpipingproject.html>

The USGS has been contracted to do both pre-project and post-project monitoring to document the changes in water-quality from the project. Monitoring will continue through April of 2011. It is likely that the UVWUA will continue to monitor for selenium and salinity water-quality improvements from on-going piping projects.

**Project Budget:**

NPS Funding:	\$800,000
Federal Contributions:	\$760,461
<u>In-Kind:</u>	<u>\$645,269</u>
Total Project Budget (EF Lat):	\$2,206,730*

\*Project budget is preliminary.

**D. USBR Science and Technology Program: Passive Selenium Bioreactor - Pilot Scale Testing**

**Project Summary:** Mesa State College received U.S. Bureau of Reclamation Science and Technology funding to conduct a pilot scale biochemical reactor (BCR) for the treatment of selenium contaminated surface water (Golder Associates was hired by Mesa State to assist with the project) from a United Companies Grand Valley gravel pit dewatering trench. The pilot operated, with varying detention times, over a thirteen-month period from September 2008 until October 2009. Similar to bench-scale test results, the pilot achieved maximum selenium removal rates of 98% with a hydraulic retention time of 2.4 days and a minimum effluent concentration of 0.0005 mg/L (0.5 µg/L). The highest mass removal rate achieved by the BCR was 73 mg/day/m<sup>3</sup> and the cumulative mass of total selenium removal was 600 grams. The BCR treatment process was effective throughout the cold winter months during which total selenium removal rates remained greater than 90%. The total capital cost for the

pilot BCR was \$39,200 or \$0.50 per 1,000 gallons treated. The operations and maintenance costs for a passive BCR system are minimal. Based on the successful operation of the pilot, including high rates of selenium removal and consistent year-round operation, the BCR technology appears to be an effective, low-cost selenium treatment option for low flows. For the gravel pit mining industry, it may not be a practical to treat water from gravel pits due to issues of scalability (most gravel pit operators use between 250,000 to 400,000 gallons per minute).

**Status:** Complete as of 3/24/10

**Project Budget Summary:**

<b>S&amp;T Funding (USBR):</b>	\$74,660
<b><u>2008 In-kind (United Companies):</u></b>	<b><u>\$13,367</u></b>
<b>Total:</b>	<b>\$88,027</b>

**E. Co Healthy River Grant: *Lower Gunnison Basin Salinity and Selenium Water-Quality Monitoring (New!)***

**Project Summary:** This project worked within the existing Colorado River District cooperative program with the USGS to add an additional important real-time water-quality monitor in one of five identified strategic locations to capture up-gradient or baseline, water-quality information. The project will enhance down-gradient sites that are planned to capture real-time water-quality temporal changes and characteristics. The USGS was responsible for installing the monitors. USGS is also responsible for maintaining the monitors and getting the data on NWIS. They will also be doing selenium sample collection and analysis in cooperation with the Water Quality Control Division.

**Status:** On schedule. Gage has been purchased and installed on the Uncompahgre River at the Colona site. Live real-time monitoring data can be accessed through the follow website:

[http://waterdata.usgs.gov/nwis/uv?site\\_no=09147500](http://waterdata.usgs.gov/nwis/uv?site_no=09147500)

**Project Budget Summary:**

<b>CHRF:</b>	\$16,000
<b>In-Kind Services:</b>	\$4,000
<b>Cash:</b>	<u>\$5,130</u>
<b>Total Project Cost:</b>	\$25,130

**F. 319 Non Point Source Grant: Uncompahgre Project Agricultural Efficiency and System Optimization Plan (NEW!!)**

**Project Summary:** The *Uncompahgre Project Agriculture Efficiency and Irrigation System Optimization Plan* proposal will evaluate the entire Federal Uncompahgre Project Area irrigation distribution system east of the Uncompahgre River from the Gunnison Tunnel to Delta in order to identify optimal system layout and prioritize piping and lining opportunities for selenium and salinity reduction. This study proposal will serve as an addendum to the Lower Gunnison Basin Watershed Plan Update. The project will collect and

enhance existing physical and operational data to aid in the development and delivery of a comprehensive piping and lining action plan that will target, prioritize and implement projects for reducing non-point source pollution (both off-farm and on-farm), specifically selenium and salt loading to the Uncompahgre, Gunnison and Colorado Rivers.

**Status:** Award notification recently received. A project implementation plan (PIP) needs to be developed by June 30, 2010. Projects commence as soon as PIPs are approved and contracting is complete.

**Project Budget Proposal:**

<b>NPS Funding:</b>	\$37,500
<b><u>Match (Cash &amp; In-kind):</u></b>	<u>\$69,086</u>
Estimated Total Project Cost:	\$106,586

**G. Water Conservation Field Service Program Grant: *Lower Gunnison Basin Wise Water Use Program (NEW!!)***

**Project Summary:** The goal of our project is to design an education and outreach program to educate water users within the Lower Gunnison basin about appropriate water conservation measures that will promote improved water management and increase efficiencies by changing attitudes and behaviors about water use while improving regional water-quality problems. To date, there are no comprehensive water conservation education and outreach programs in the Lower Gunnison Basin. Our project proposal entails forming partnerships between Reclamation, water users, other State and Federal agencies, educational and research institutions, local governments and other interested parties.

**Status:** Recently awarded. Contracting process begins.

**Project Budget Proposal:**

<b>WCFSP Funding:</b>	\$25,000
<b>Cash (CRWCD):</b>	\$20,000
<b><u>In-Kind:</u></b>	<u>\$ 5,000</u>
TOTAL:	\$50,000

**H. Lower Gunnison Basin Long-Term Water-Quality Monitoring Program**

**Project Summary:** The Colorado River Water Conservation District is carrying out a selenium and salinity long-term monitoring program in the Lower Gunnison Basin. The U.S. Geological Survey, State of Colorado Water Quality Control Division, River Watch, Colorado Healthy Rivers Program, Gunnison Basin & Grand Valley Selenium Task Forces and a local VISTA OSM Volunteer are working in collaboration and cooperation to carry out the monitoring program. The following sites are being monitored:

- Uncompahgre River at Delta
- Gunnison River above the Uncompahgre
- North Fork Gunnison at the Mouth
- Uncompahgre River at Colona

- Gunnison River below the Gunnison Tunnel
- Gunnison River at Whitewater, Colorado
- Colorado River at the State Line

**Status:** In progress (on schedule)

**Project Budget:** \*Approximately \$130,000/year

## **I. Grand Valley Long-Term Monitoring Program (Lower Colorado)**

- \*Colorado River Segment 2b (Rapid Creek to the mouth of the Gunnison)  
WQCD Monitoring and Evaluation List
- Colorado River below Plateau Creek
- Colorado River at Horsethief Canyon
- Leach Creek at the mouth
- Adobe Creek at mouth
- Indian Wash at the mouth

\*At present, the sites listed above with the exception of the Colorado River Segment 2b are being monitored by the Colorado Water Quality Control Division (WQCD). The development of a cooperative monitoring program is in progress for Segment 2b. Cooperators are the Town of Palisade, City of Grand Junction, State of Colorado, STF, and Colorado River District.

## **J. USGS Study: *Effects of Urbanization on Salinity and Selenium Loading in Montrose Arroyo, Western Colorado, from 1998 to 2008***

**Project Summary:** Salinity loading to the Montrose Arroyo from its surrounding watershed is a major impairment to water quality. While there is natural salinity loading, excessive loading has occurred as a result of the introduction of irrigation to the watershed. The irrigation canals and laterals bringing water are often unlined and consequently some irrigation water seeps into the ground. As the seepage from the canal or lateral moves through the ground-water system to the stream its salinity increases. Urbanization within the Montrose Arroyo watershed has changed the quantity of irrigation water received and intuitively has influenced salinity loading to the Montrose Arroyo. To determine, on a watershed level, the effects of urbanization on salinity loading the project being proposed would sample three sites on Montrose Arroyo. These three sites are identical to sites used previously to estimate salinity loading. The results of this investigation would quantify how land-use change is affecting salinity loading in the Montrose Arroyo. Moreover, these results could be used to calibrate the existing Upper Colorado Detailed Salinity Model for areas where agricultural land is being converted to urban land use.

**Status:** In progress. The USGS has been conducting water-quality sampling in the Montrose Arroyo since the summer of 2008 and will continue through the second quarter of 2010. At this time, selenium and salinity trend tests have been conducted. Analyses of the effects of urbanization and forecasting the effects of land use change are expected in the future. A *draft* final report is expected by the end of year.

**Project Budget Proposal:**

<b>Salinity Control Forum:</b>	\$166,500
<b>Colorado River District:</b>	\$ 15,000
<b>U. S. Geological Survey:</b>	\$ 18,500
<b>TOTAL:</b>	\$200,000

**K. Funding Request through Colorado Congressional Delegation**

The Colorado River Water Conservation District (CRWCD) in conjunction with, and on behalf of, the UVWUA, requested funding assistance for the recently mandated, but unfunded, Selenium Management Program in the Gunnison Basin (Pursuant to the USFWS Programmatic Biological Opinion, December 4, 2009). The request to State delegates for congressional support for a directed and temporary appropriation of \$2MM for FY 2011 will initiate crucial planning, demonstration and implementation efforts to affect decreased selenium loading to the Colorado River basin. Federal investment into infrastructure modernization pays multiple dividends and benefits by furthering environmental goals while stimulating the local economy, boosting water conservation and increasing agricultural efficiency. In addition, the request enables UVWUA to invest in resources and personnel that will ensure a consistent and dedicated program of piping and lining their 100 year old earthen delivery system. This will, in turn, create conversion opportunities for agricultural producers to pressurized highly efficient sprinkler systems. The request is guided by the Gunnison Basin Selenium Task Force's 2009 Action Plan which identifies modernizing the UVWUA delivery system as the top priority; federal monies will match available state and local monies to help meet the following objectives:

- Objective 1: Design and install off-farm efficiency improvements by piping laterals and lining canals in high selenium loading areas;
- Objective 2: Implement non-agricultural Best Management Practices by lining ponds and water features and by guiding land use decisions in high selenium loading areas;
- Objective 3: Install on-farm efficiency improvements (e.g., sprinklers) in all high selenium loading areas; and
- Objective 4: Expand data acquisition (water monitoring and soil sampling) and analysis (mapping and modeling) to further target and quantify environmental benefits.

**Status:** On-going, no action

**L. Selenium Management Program Activities**

The Selenium Task Force is participating in the development of a Selenium Management Program in cooperation with the U.S. Bureau of Reclamation and other water users in the basin as required under the Gunnison PBO. Selenium Management Program (SMP) planning meetings have been occurring regularly since the release of the PBO on December 4<sup>th</sup>, 2009 through SMP Technical Work Group Meetings. Subcommittees have been formed to accomplish tasks defined by the work group of which the STF is a member (e.g. Science and

Research, Education and Outreach, and Advanced Planning Subcommittees). The STF coordinator is responsible for leading the Outreach Subcommittee. An education and outreach plan has been developed and is in the process of being implemented by the Outreach Subcommittee.

**M. TMDL for the Gunnison and Uncompahgre Rivers and their Tributaries**

A Draft Total Maximum Daily Load (TMDL) Assessment for Selenium was released by the WQCD/Division in November of 2009 for the Gunnison and Uncompahgre Rivers and their tributaries. It's estimated that approximately 8,600 pounds/year of selenium needs to be reduced to meet the State of Colorado water-quality standard for selenium at Whitewater, Colorado.

Public comments on the TMDL were received by the WQCD through January of 2010. The last update received by the STF from WQCD staff (4/28/10) indicated that the Division had finished drafting their responses to comments and had incorporated what they felt were appropriate changes into the body of the TMDL. The Division also received additional monitoring data that was referenced by those who commented and the information was incorporated into their analysis. The response to comments was being circulated internally for review by Division's permit staff and management. No additional information was received in regard to next steps. The STF coordinator will stay in contact with WQCD staff and request periodic updates.

**Status:** TMDL development in progress by WQCD.

**N. STF Education and Outreach (2009 & 2010)**

The Gunnison Basin and Grand Valley Selenium Task Force Action Plans identify stakeholder outreach as a high priority action. Outreach activities include public presentations, development of outreach materials, and annual maintenance and updates to their website: [www.seleniumtaskforce.org](http://www.seleniumtaskforce.org). The following information summarizes outreach activities completed in 2009 and planned for 2010.

Public Presentations:

- Montrose County Planning Commission
- Gunnison Basin Roundtable
- Colorado River District
- Uncompahgre Agriculture Forum
- Delta Technical College (June 2010)
- Selenium Summit
- Colorado Water Workshop
- Upper Gunnison Water Conservancy District
- Colorado Watershed Assembly
- Colorado Water Workshop (July 2010)
- Selenium Management Program (On-going 2010)

O. **2010 High Priority Action Items (see below)**

The Gunnison Basin & Grand Valley Selenium Task Force develop and maintain an annual high priority action item list to ensure that sufficient progress is being made in accomplishing goals. A copy of the “2010 High Priority Action Items” is provided below.

**2010 High Priority Action Items**  
**Gunnison Basin & Grand Valley Selenium Task Force**  
v. 05-19-10

1. NPS Grant Proposal - UVWUA Ag Efficiency and System Optimization Study (Sonja, Dave, Mike, Marc) Proposal due date is Dec. 4<sup>th</sup>, 2009.  
Status - **Complete** ✓ Grant awarded to STF in the amount of \$37,500.
2. Lower Gunnison Basin and Grand Valley Watershed Plan
  - Align watershed planning process with Selenium Management Plan Status.Status - **Complete** ✓
3. Selenium Summit Planning (February 18<sup>th</sup>, Bill Heddles Center, Delta). Status - **Complete** ✓
4. Water Quality Monitoring Program
  - Conduct regular monitoring of high priority sites: Status – **In progress/on going**
  - Continue to seek long-term funding sources: Status – **In progress/on going**
5. On-farm selenium reduction assessment (e.g. gated pipe to sprinklers)
  - Develop Concept Paper (D. Reich, CSU CE). Status – **Complete** ✓
  - Seek funding for project (Coordinator) – **In progress**
6. Continue to seek additional funding for piping and/or lining.
  - EC Canal Lining Demonstration (Fall 2010):
    - a.) CO Species Conservation Trust Fund - \$500K. Status – **Funded** ✓
    - b.) CO River Water Conservation District Large Grant Request - \$39K. Status – **Funded** ✓
    - c.) CO Salinity Control Program - \$1.45MM. Status – **Funded** ✓
  - Congressional appropriation request - \$2MM (FY 2011). Status – **In progress**
7. Coordinating with the Uncompahgre Watershed Planning Partnership and the North Fork River Improvement Association watershed planning processes to eliminate redundancy and to increase efficiency to ensure successful outcomes.  
Status – **In progress**



8. Outreach to other agricultural interests to facilitate information exchange (e.g. North Fork of the Gunnison, Smith Fork, Fire Mountain, Overland, Leroux Creek). **In progress/on going**
  - Outreach to these areas for the Selenium Summit (Feb. 18<sup>th</sup>) **Complete** ✓
  - Outreach for salinity/selenium projects under Salinity Control Program  
**In progress/on going**