Monitoring and Evaluation Report
Grand Valley Unit
Colorado River Salinity Control Project
2011
USDA-NRCS
Grand Junction, Colorado

IWM MONITORING & EVALUATION REPORT
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EXECUTIVE SUMMARY
GRAND VALLEY UNIT
2011

Hydro-Salinity -

- The project plan is to treat approximately **60,000 acres** with improved irrigation systems.
- To date **40,912 acres** [/1] have been treated with improved irrigation systems.
- The project plan is to reduce salt loading to the Colorado River system by **132,000 tons/year** of salt.
- In FY 2011, salt loading has been reduced by **3,542 tons/year** [/2] as a result of installed salinity reduction practices.
- The cumulative salt load reduction is **140,003 tons/year**, or 106 percent of the project goal.

[/1] Note: The 40,912 acres include acres that have been treated a second time to a higher level of irrigation improvement and salt savings over the course of this salinity project.
[/2] Note: The salinity reduction was increased due to previous under reporting for on-farm and off-farm ditches piped or lined

Cost Effectiveness -

- The planned cost per ton of salt saved with FY 2011 contracts (one year) is **$199.49 /ton**. This figure is calculated as follows:

(FA + TA = Total Cost) X Amortization factor = Amortized cost
Amortized cost / Tons salt reduced = Cost/Ton
FA = Total dollars obligated in EQIP and Basin States/ Parallel Program (including wildlife)
Amortization for 2011 = 0.0623
TA = technical assistance cost: (FA x 0.67)

Wildlife Habitat Replacement -

- The original Grand Valley habitat replacement goal is **1,200 acres** of habitat developed or significantly enhanced.
- The inclusion of the DeBeque and Whitewater areas added and additional **6 acres** of replacement for a current total of **1,206 acres**
- For Fiscal Year 2011 there were **1.5 acres** of habitat replacement applied
- Most FY 2011 habitat projects were targeted for BSP funding and the lack of a signed funding agreement prevented additional implementation.
- To date, **735 acres** or 61% of the original wildlife habitat replacement goal has been established and is being maintained.
- Additional efforts are being made through wildlife only sign-ups, with various conservation groups, and with other Federal and State agencies to accelerate the implementation of wildlife habitat enhancement projects.

Key Considerations and Conclusions –

- Announcing the wind-down of the Grand Valley Salinity Control Project seems to have accelerated the implementation and sign-ups have been higher for 2011, and appear to be the same for 2012.
- A meeting was conducted with Bureau of Land Management, Bureau of Reclamation, US Fish and Wildlife Service, and NRCS to look for additional opportunities to develop or enhance wildlife habitat to meet the replacement goals.
- The Field Office inventory indicates there are about 2,900 acres of agricultural land with untreated or unknown irrigation system improvements.
- The follow-up sample inventory of irrigation improvement practices installed throughout the 1979-2011 salinity control program identified 98.3% of the reported salinity reduction is still being accomplished.
- Activities are being planned with the partners to celebrate the conclusion of a highly successful NRCS Salinity Control Unit.
- Future improvements and public cost-share funding will still be available in the Grand Valley area through the Environmental Quality Incentives Program for water quality resource concerns.
- A follow-up assessment will be done on a three-year interval to evaluate the salinity control projects installed through the program to assure the retention and maintenance of the publically supported salinity control benefit. The data from the analysis will be reported to the Salinity Control Forum to support their triennial review.

HYDRO-SALINITY MONITORING AND EVALUATION, COLORADO

Introduction

The Water Quality Act of 1965 (Public Law 89-234), as amended by the Federal Water Pollution Control Act of 1972, mandated efforts to maintain water quality standards in the United States. Congress enacted the Colorado River Basin Salinity Control Act (PL 93-320 in June 1974. Title I of the Act addresses the United States' commitment to Mexico and provided means for the U.S. to comply with provisions of Minute 242. Title II of the Act created a water quality program for salinity control in the United States. Primary responsibility was assigned to the Secretary of Interior and the Bureau of Reclamation (BOR). USDA was instructed to support BOR's program with its existing authorities.

The Environmental Protection Agency (EPA) promulgated a regulation in December, 1974, which established a basin wide salinity control policy for the Colorado River Basin and also established a water quality standards procedure requiring basin states to adopt and submit for approval to the EPA, standards for salinity, including numeric criteria and a plan of implementation. In 1984, PL 98-569 amended the Salinity Control Act, authorizing the USDA Colorado River Salinity Control Program. Congress appropriated funds to provide financial assistance through Long-Term Agreements administered by Agricultural Stabilization and Conservation Service (ASCS) with technical support from the Soil Conservation Service (SCS). PL 98-569, also required continuing technical assistance along with monitoring and evaluation to determine the effectiveness of measures applied.

In 1995, PL 103-354 reorganized several agencies of USDA, transforming SCS into the Natural Resources Conservation Service (NRCS) and ASCS into the Farm Services Agency (FSA). In 1996, the Federal Agricultural Improvement and Reform Act (PL 104-127) combined four existing programs, including the Colorado River Basin Salinity Control Program, into the Environmental Quality Incentives Program (EQIP). The Farm Security and Rural Investment Act of 2002 and Food, Conservation, and Energy Act of 2008 reauthorized and amended EQIP, continue opportunities for USDA funding of salinity control measures.

Colorado River Salinity Control

The USDA-Natural Resources Conservation Service (NRCS), formerly USDA-Soil Conservation Service (SCS), both herein referenced as NRCS, initiated a program to make a variety of irrigation improvements to reduce deep percolation and on-farm ditch seepage to reduce the salt load potential to the Colorado River. Salinity control projects were initiated in Colorado starting with Grand Valley Unit in 1979, Lower Gunnison Unit in 1988, McElmo Creek Unit in 1989, Mancos Valley in 2004, and Silt in 2005. The NRCS irrigation improvement work included piping or lining irrigation ditches and small laterals, and improving the on-farm irrigation systems. In 1982 the NRCS identified the need to establish an irrigation monitoring and evaluation program for Grand Valley to assess the effects to deep percolation and seepage from making the various irrigation improvements, and to assess economic impacts and wildlife habitat replacement activities.

The NRCS developed a Monitoring and Evaluation Plan to assess the effects of the Colorado River Basin Salinity Control Program being implemented, "Monitoring and Evaluation Plan, Colorado River Basin Salinity Control Program for Grand Valley Unit, Colorado and Uinta Basin Unit, Utah, July

1982." The long-range monitoring plan described uniform guidelines and procedures to assess the effectiveness of the NRCS program to reduce salt loading to the Colorado River, to determine the effects of the irrigation improvements on wildlife, and to identify the monetary benefits to the individual participants.

The Natural Resources Conservation Service (NRCS) has been placing improved irrigation methodology with selected cost-sharing to cooperators since 1979 through the Colorado River Salinity Control Program. Irrigation in the Colorado salinity control areas is characterized by mostly gravity-fed systems installed on heavy clayey soils or medium textured soils derived from or overlaying a marine shale formation (typically Mancos shale) that is very saline. The intake rates of the soils are generally low to medium. Plentiful and inexpensive irrigation water coupled with the long irrigation set times, and typically abundant flow rates contribute to the potential salinity mobilization. The available irrigation water and lower efficiency irrigation systems leads to excess deep percolation loss of water and low application efficiencies. The excess water from deep percolation contacts the underlying Mancos shale and subsequently loads salt to the Colorado River. Deep percolation and ditch seepage are considered to be the primary indicators of the effectiveness of the irrigation application.

A variety of irrigation systems were evaluated including earthen ditches with earth feeder ditches, earthen ditches with siphon tubes, concrete ditches with siphon tubes, ported concrete ditches, pipeline to gated pipe, side roll sprinklers, and micro spray. Crops included alfalfa, corn, small grain, dry beans, orchards, grapes, onions, pasture, and vegetables. This monitoring of irrigation system performance took place through the Salinity Program period from 1984 through 2003. The monitoring of wildlife and economic impacts started with each project and continues throughout the life of the project.

Colorado NRCS initiated irrigation monitoring in the Grand Valley Unit in 1984 and to a limited extent in the Lower Gunnison Unit in 1992 and the McElmo Unit in 1993. The irrigation monitoring was designed to assess deep percolation changes and estimate changes to the salt loading derived from irrigated agricultural lands. Those assessments provided a baseline of deep percolation characteristics on agricultural land, and have been used by NRCS to make management decisions related to salinity control projects. Colorado State University, Cooperative Extension took over the irrigation monitoring activities from 1999 through 2003 utilizing the NRCS equipment and similar sampling techniques. The NRCS also conducted selected economic analysis and wildlife habitat analysis in all of the project areas.

The irrigated monitoring sites were selected to represent the variety of conditions common in the salinity control units. The need was identified for each irrigation event to be monitored and evaluated throughout the irrigation season for each site. From the NRCS Monitoring and Evaluation Plan, "Data will be collected to determine the amount of irrigation water infiltrated into the soil." "For each site on-farm water budgets will be prepared for each irrigation event, starting with pre-plant or start of growing season until crop harvest. The most significant output from the water budget is deep percolation." The plan proposed water budget was, "…deep percolation equals the amount of inflow plus rainfall prior to or during the irrigation event, less surface runoff and the net irrigation requirement [expressed as the amount of water needed to bring the soils profile to field capacity]." Data was compiled for 289 site years of measured irrigation inflows, outflows, crop consumptive use, precipitation, and deep percolation.

The data indicate that the salinity projects in Colorado are typically achieving a deep percolation plus field ditch seepage reduction of at least 10 to 15 inches for each acre treated which meets or exceeds the deep percolation reduction estimated in the original project reports.

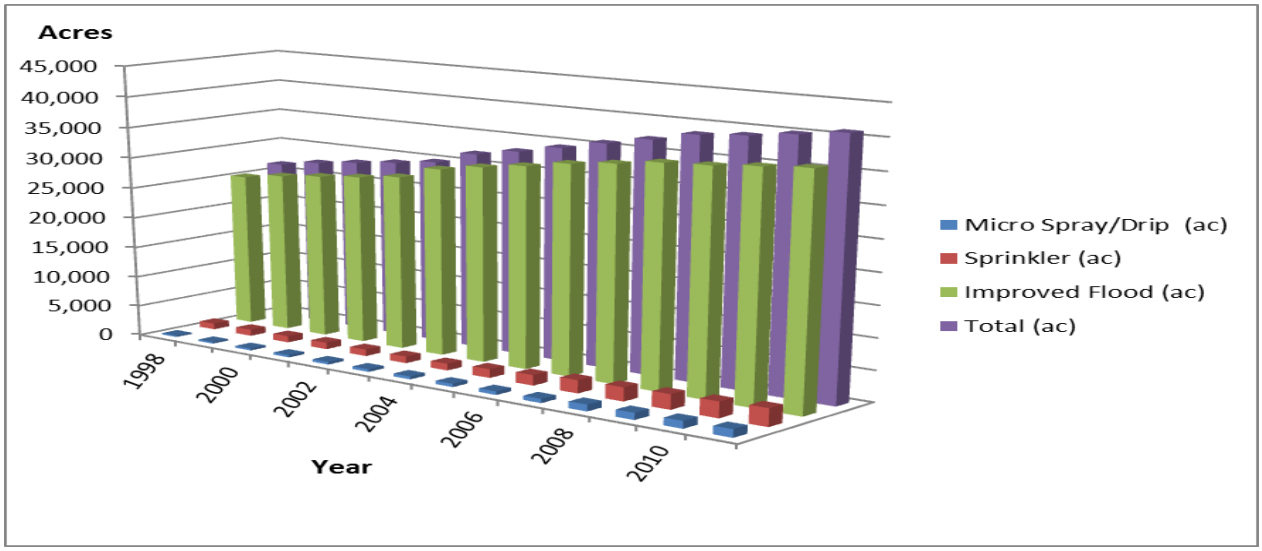
Areas with a greater conversion to sprinkler or micro spray will be at the 15 inch reduction and areas with predominantly flood irrigation will be at the 10 inch reduction. Areas that are converting from unimproved flood systems will have deep percolation plus seepage reductions in the 25 to 30 inch range. Areas that are converting very old flood irrigation systems with limited improvements, will most likely be somewhere between the higher values and the lower values, but probably closer to the 10 to 15 inch reduction.

Table 1 - NRCS Irrigation Application Efficiency Standards for Evaluation

TYPE OF IRRIGATION SYSTEM	% OF MONITORED EFFICIENCY
Open ditch	35%
Open ditch w/ siphon tubes	40%
Concrete ditch w/siphon tubes	50%
Gated pipe	50%
Underground pipe & Gated pipe	50%
Underground pipe/Gated pipe/Surge	55%
Center Pivot Sprinkler	90%
Big Gun Sprinkler	70%
Side roll Sprinkler	75%
Micro spray	90%
Drip Irrigation	95%

Note: Efficiencies listed are the NRCS planning standards for the various types of irrigation systems.

Graph 1 - Grand Valley Unit Cumulative Irrigation Systems Installed



IRRIGATION SYSTEMS APPLIED (acres)	FY2011	CUMULATIVE
Sprinkler	278	2,858
Improved Surface System	534	36,759
Micro-Spray/Drip System	89	1,295
TOTAL	901	40,912

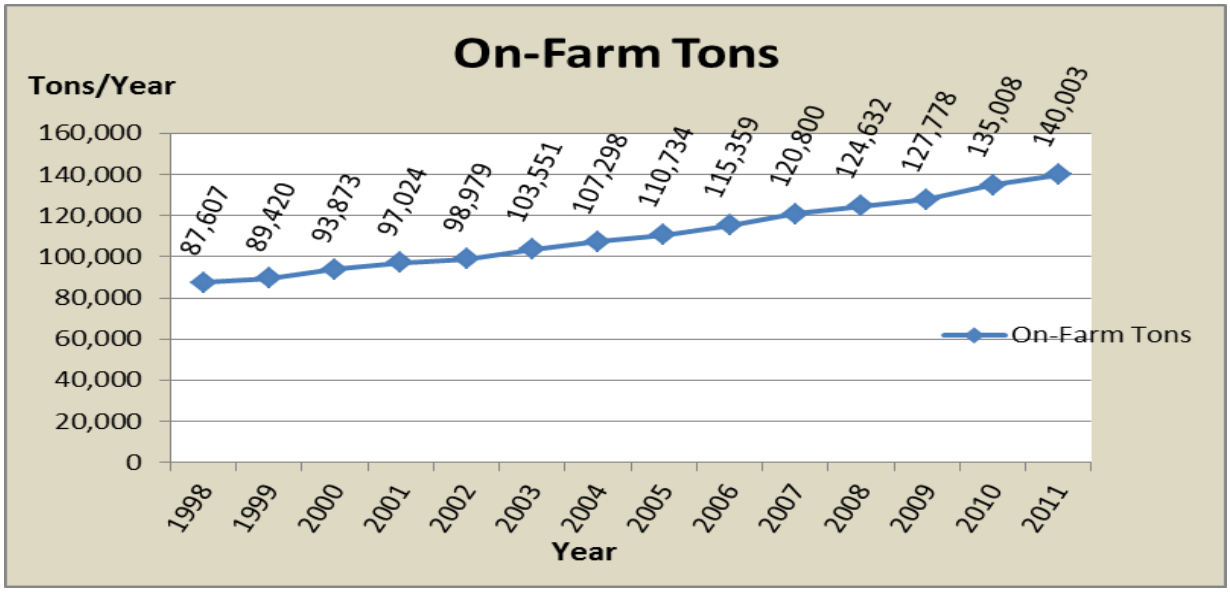
Graph 1 and the sub-set table display the cumulative acres of the various irrigation improvements in the Grand Valley project area. The earliest micro-spray systems in the Valley were installed in the early 1980's, and there has been a relatively consistent, although small acreage of micro-spray irrigation systems installed through-out the life of the project.

The Grand Valley Unit typically has relatively small and sometimes irregular field sizes that make the installation of field sprinkler systems problematic. In addition, the relatively flat topography limits the opportunity to build gravity pressure through pipeline delivery systems, so the sprinkler systems in this area require some type of pumped pressure to operate. Regardless, there has been a slight increase in the number of sprinkler systems installed on some of the larger and more uniform fields in more recent years. The ease of operation and uniformity of application make sprinklers a desirable option for many irrigators.

The number of vineyard and orchard operations toward the east end of the valley account for most of the drip and micro-spray systems installed, and although they represent a significant number of systems, the fields are typically small and do not account for a large acreage. The systems perform very well from an irrigation application efficiency perspective, but are often relatively expensive on an acre treatment basis and typically are more attractive for the high value crops.

In the project area the deep percolation reduction and subsequent salinity control is typically about 50 to 60% reduction for a well-managed improved flood system, about 75 to 85% reduction for a well-managed sprinkler system, and about 85 to 95% reduction for a well-managed drip or micro-spray system.

Graph 2 - Grand Valley Unit Cumulative On-Farm Salinity Load Reduced



Note: The annual salinity reduction numbers used to generate the cumulative values shown in Graph 2 were adjusted in 2009 through 2011 to account for previously under reported salt load reductions for delivery ditch and canal improvements on or near the farm.

Table 2 - USGS Trend Analysis and Agency Reported Salinity Reduction

Unit	Trend Years	NRCS Project Start Year	NRCS Reported Reduction (tons/year) /1	BOR Reported Reduction (tons/year) /1	Total Predicted Reduction (tons/year) /1	Measured Reduction (tons/year)	Unclaimed Reduction (tons/year)
Grand Valley	1986 - 2003	1979	103,551	122,300	225,851	322,200	96,349
Lower Gunnison	1986 - 2003	1988	66,486	43,675	110,161	201,600	91,439
McElmo	1978 - 2006	1989	20,012	32,000	52,012	90,450 /2	38,438

/1 The number is the cumulative salt load reduction reported for the final trend analysis year for each study, either 2003 or 2006

/2 Includes a measured reduction plus projected salinity increase due to the introduction of the Dolores Project Water

USGS completed two salinity trend analysis reports for the gaging stations that include salt loading trends below three of the Colorado River Salinity Control Projects, and their analysis covered part of the salinity control implementation period. The measured salinity trends in the river exceeded the salinity control reductions claimed by the participating agencies for all three locations for the years represented. Certainly other management and land-use changes contributed to either increases and/or reductions to salt loading in the river, however the USGS trend analysis was corrected to account for the salt variations with changes in annual flow, and is intended to represent a flow adjusted annual change in salinity loading trends. The fact the trend reductions exceed the predicted loading reductions from the program helps support the irrigation improvement work is significantly reducing the annual load contribution from irrigation, and

possibly the amount of improvement is somewhat greater than predicted.

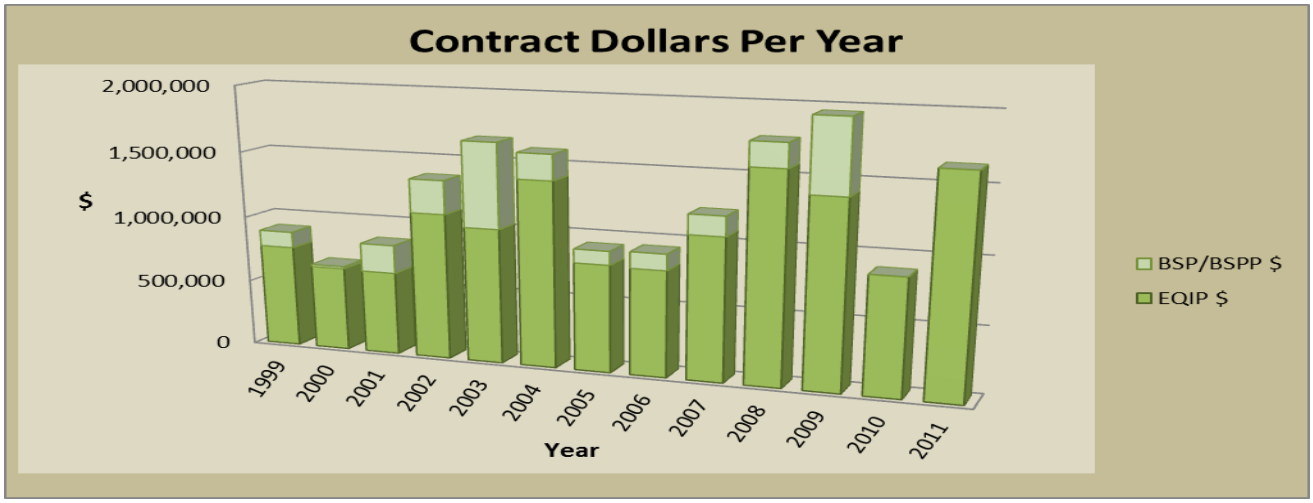
Table 2 References

"Salinity Trends in the Upper Colorado River Basin Upstream from the Grand Valley Salinity Control Unit, Colorado, 1986—2003", USGS Scientific Investigations Report 2007-5288, Kenneth J. Leib and Nancy J. Bauch, 2008.

"Characterization of Hydrology and Salinity in the Dolores Project Area, McElmo Creek Region, Southwest Colorado, Water Years 1978-2006", USGS Scientific Investigations Report 2010-5218, Rodney J. Richards and Kenneth J. Leib, 2011.

US BOR Reported Salt Load Reductions from personal communication with Nicholas Williams, Environmental Engineer, US Bureau of Reclamation, Salt Lake City, Utah.

Graph 3 - Grand Valley Unit Contract Dollars by Program



Note: The funding programs represented include the NRCS Environmental Quality Incentives Program (EQIP), and the Bureau of Reclamation funded Basin States Program (BSP), (formerly known as the Basin States Parallel Program (BSPP).

Graph 3 displays the Environmental Quality Incentive Program (EQIP) and Basin States Program (BSP/BSPP) contract dollars per year from 1999 through 2011. The amounts varied significantly on an annual basis in part due to program allocations, the local economy, the cost of the installed systems, and the landowner's ability to cover their portion of the cost. The public funding was typically intended to cover approximately 75 percent of the installation cost, however many of the peripheral costs such as getting power to the site, possible non-irrigation equipment changes, additional management costs, the cost of learning and adapting new technologies, etc. were paid by the landowner and were not eligible for public cost-share.

Although the numbers fell within some of the previous annual contract dollar ranges, 2010 was a relatively low contract year. A field survey was conducted and indicated in the Grand Valley Unit, except for about 2,900 irrigated agricultural acres, the rest of the irrigation agricultural acres in the valley had some type of improved irrigation system in place. The information was compiled and presented to the salinity control partners, and the decision to start winding down the Grand Valley Salinity Control Unit was announced. Interestingly the number and amount of contracts was up in 2011 and current indications are the same for 2012. It is possible the potential of ending the "official NRCS Salinity Program designation" encouraged additional applications.

The trend in Grand Valley in recent years has been to upgrade and improve some of the previous improved flood systems. Improvements to technology and design offer additional salinity reduction by improving the more primitive flood systems to pipeline gated pipe with or without surge irrigation valves, or in some cases change from improved flood irrigation to either sprinkler or micro-spray/drip irrigation. The salinity reductions claimed in these situations are based on the incremental improvement offered by making the change from the current system to the improved system. Additionally the higher levels of improvement typically have more management built into the system and the level of performance has a higher assured performance.

The economic value to the community and adjacent states is significant. The projects offer a downstream benefit from reduced damages through the amortized cost per ton that typically covers the public cost of installation. In addition the landowners receive economic benefits from improved crop quality, better utilization of fertilizers, reduced irrigation labor costs, etc. The local community benefits though the economic turnover in the area from the public cost-share funds, the improved crop qualities, agricultural sustainability, etc.

2011 Highlights

Beginning in 2004, NRCS, in cooperation with the Mesa Conservation District and the Colorado State Conservation Board began a program designed to place emphasis on Irrigation Water Management (IWM). During 2006, a full-time IWM position was made available to increase emphasis on IWM. Visits to check and certify IWM were made on 78 farms during 2011.

Table 3 – 2011 Irrigation Water Management (IWM) Reported

Land Use	System type	Acres IWM reported
Row crops, Hay, Grass	Gated Pipe	1,139
Orchards	Micro Spray	214
Vineyards	Micro Drip	8
Hay. Grass	Big Gun	13
Hay, Grass	Sideroll Sprinkler	252

The Mesa Conservation District has added two district technicians to help with the backlog of engineering practices that needed to be surveyed and designed. NRCS has added an engineer to help with the workload. Engineering equipment is being upgraded (GPS, Auto-CAD, etc) to help speed up survey and design for landowners.

For the coming irrigation season, the Grand Valley project area is increasing efforts to expand the use of sprinklers for smaller acreages. Smaller, subdivided parcels are causing significant problems in the traditional tail water delivery and disposal methods. This is causing water to flow more slowly and stand in ditches for longer periods of time. This problem could cancel out some of the positive deep percolation reduction effects in the program. Sprinkler systems could help to

solve that problem. One of the main drawbacks to the use of sprinklers has been the need to install pumps, as there is no gravity pressure available. Other alternatives will be studied this irrigation season. There is increasing interest in small-scale center pivots for use on larger fields in the Grand valley. CSU has received a grant to carry out irrigation audits for small acreages (10 acres or less).

The Conservation District IWM Specialist is initiating a program with local students to use ball probes to check irrigation practices at home, and is also working with small land owners to improve water management on irrigated pastures and hayland.

Salinity Outreach Activities include:

October 2011 - EQIP Brochure distribution to agricultural producers in Mesa County
October 2011 – Basin States Program presentation at the Colorado River Watershed Annual Meeting
October 2011 - Irrigation Water Management presentation at the Colorado River Watershed Ann Meeting
October 2011 - Irrigation Water Management presentation at the Mesa Conservation District meeting
November 2011 - EQIP Brochure distribution to agricultural producers in Mesa County
March 2011 - Outdoor conservation display for Grand Valley residents at the Co-Op Farm and Ranch Days
September 2010 - Presentation on the Grand Valley Salinity Control Project and the Mesa Conservation District meeting
September 2010 - Outdoor Classroom on micro-spray irrigation for Mesa County irrigators
September 2010 - Outdoor Classroom on deficit irrigation for Mesa County irrigators
May 2010 - News release on the water conservation and water quality improvement programs in Mesa County
January 2010 - Presentation on the NRCS programs at the Orchard Mesa Irrigation District Annual Meeting
January 2010 - Distributed a brochure on Estimating Deep Percolation to the Grand Valley Water Users
February 2010 - Presentation on control of tamarisk at the Tamarisk Symposium for Grand Valley landowners
February 2010 - Presentation on the salinity control program at the Grand Valley Water Users Annual Meeting
March 2010 - Booth about NRCS programs at the Farm & Ranch Day in Fruita, CO

Urban Use of Irrigation Water

Although not a part of EQIP, and the monitoring and reporting requirements of the program, there have been concerns about the potential overuse of irrigation water by suburban and urban users, both newcomers to the area as well as homeowners familiar with the area and the local conditions. In late 2004, the Mesa Conservation District received a grant to study the effects of ex-urban and suburban development on irrigation water use and deep percolation. Monitoring and study of this segment of land use continued in 2006, and was completed at the end of the irrigation season.

A final report[/1] of results has been published. The project goal was to characterize the deep percolation from urban irrigation, and compare it to historic levels of deep percolation from agricultural irrigation.

The report shows a wide range of deep percolation on small acreage and urban lot-size units, similar to the variability found in traditional farmland. It was thought that overall water use would be reduced due to an increase of impervious areas such as streets, curbs and gutters, and rooftops in these urbanizing areas. The study found that the conversion of land use from agricultural land use to urban land use reduces water use by about 74 percent and deep percolation as much as about 90 percent. Estimated reductions in salt loading were as much as 92 percent.

[/1] "Estimating the Effects of Conversion of Agricultural Land to Urban Land on Deep Percolation of Irrigation Water in the Grand Valley, Western Colorado", USGS Scientific Investigations Report 2008-5086, John W. Mayo, 2008

Conservation District and CSU Extension Projects

Mesa Conservation District working with CSU Extension conducted a deficit irrigation project in peaches. Withholding water and deliberately stressing peaches can actually save water and not hurt the crop. In agriculture, water savings are usually not possible because the crop is going to use the same amount of water no matter how efficient the system but by stressing the crop water savings are possible. On one site 9.6 inches of water was saved, $10 per acre saved in pumping costs, with a possible reduction of 668 lbs of salt per acre put into the river with no change in the crop. On the second site there was reduction of water used of 21 inches, $22 savings in pumping costs, with a possible reduction of salt to the river of 1467 lbs per acre. There was a reduction in peach size at this site. This project will be continued in 2012.

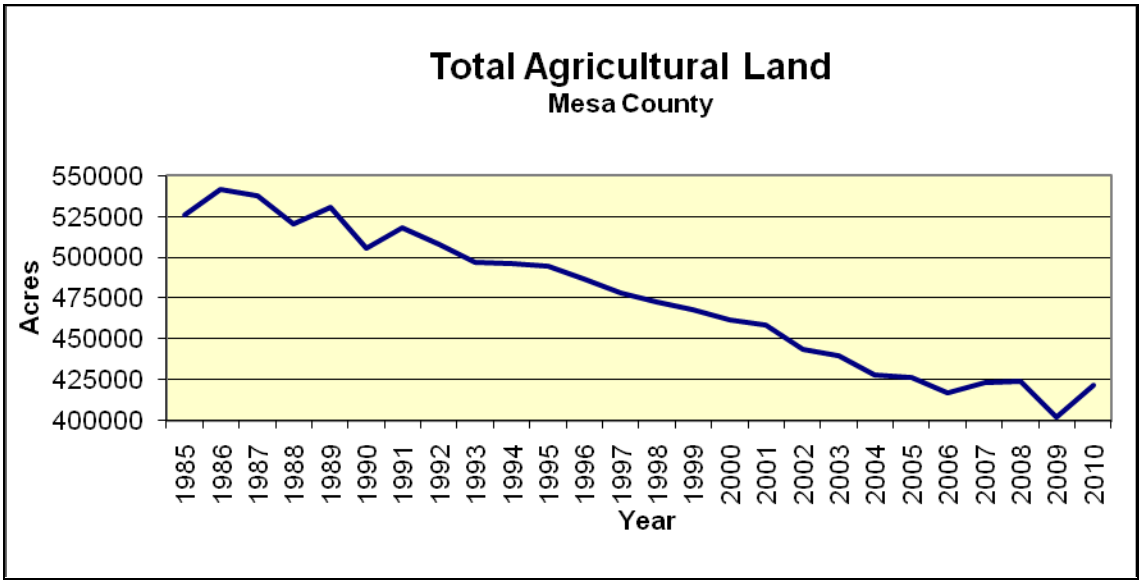
Mesa Conservation District and CSU Extension are also working with the Grand River Mosquito Control District. Over irrigation and poor field drainage not only contribute to deep percolation of salts but is also a major contributor to mosquito habitat. The mosquito district has a unique advantage to contacting landowners where the other two organizations can help with proper irrigation techniques thus helping all parties meet their goals.

Demographic and Area Changes in the Grand Valley

For several years it has been reported that parcel and field sizes are changing in the Grand Valley, and that this has begun to limit potential applicants and eligible property to further implement the Grand Valley portion of the salinity control program. For 2008, data was gathered and compiled to determine the extent of these changes. During the 25 year period from 1985 to 2006, the data showed a 19.85% decrease in total agricultural acres in Mesa County. Acres included Irrigated farmland, Meadow hayland, Grazing land, and Orchard land. This process was continued and updated through 2010. From 2006 to 2010, the data showed an increase of 1.01% in total agricultural acres *(See graph 4)*. New and beginning farmers applying for salinity control programs during those years have increased as well. Data were collected from Mesa County Planning and Development Department subdivision and land development records, and County Assessor records to estimate parcel and ownership size changes, if any for the Grand Valley area.

Additionally, an estimate of parcel size change was determined by utilizing ArcView (GIS) information. Using this data it was determined that the average parcel size in the Grand Valley area remains at under 5 acres.

Graph 4 – Mesa County Total Agricultural Land



Note: The general trend in the amount of agricultural lands is down due to development and other land-use changes. The difference between 2009 and 2010 is likely due to either annual changes in cropland acres or some type of statistical blip due to reporting and compiling data.

Recommendations for Future Monitoring and Discussion

- For 2012, effort will continue on all new EQIP and BSP contract recipients to address irrigation water management and proper use of newly installed irrigation systems.
- Emphasis needs to be placed on landowner irrigation scheduling tools and methods such as “checkbook” and field probing for soil moisture observation.
- For 2012, data will continue to be collected and compiled from urban and small acreage sites. The effects of conversion to urban and small acreage land units must be evaluated to assess the effects of the changes on the projected salinity reduction. Many of the areas treated under the program are being converted to smaller 1 to 2 acre parcels. The Grand Valley areas near Grand Junction, Fruita, and Loma are transitioning to these smaller parcels. There appears to be increasing support and transition to smaller parcels in the Grand Valley, in spite of the general community desire for larger lots that create the appearance of more open space, etc. They continue to be irrigated, but by a new landowner and with different crops, usually hay or pasture and lawn and garden.
- Many of the larger parcels are being subdivided in the 20 acre to 40 plus acre size and remain in some type of crop production, but under a new owner/manager that works a primary job off the farm and may have no previous experience with irrigation.
- Significant problems still exist in the delivery of water in unimproved and outdated laterals and other group delivery systems. There is a need for these groups to incorporate and improve these systems; however it is increasingly difficult for this to occur. Most laterals have doubled or even tripled the number of users on the laterals due to subdivision, and this influx of inexperience has driven more complaints and operation problems. The EQIP program is poorly suited to planning and providing cost share for improving these systems, as participants must be agricultural producers. BSP and AWEP will be the programs used to address these problems.

- The cost of improving many of these systems exceeds the cost-effectiveness limits for the BSP and EQIP programs, set at $100/Ton for BSP and $200/ton for EQIP. The recession has had a major impact on landowners. Funding levels will need to increase to get landowners interested in signing a contract under BSP or EQIP.
- Many irrigation systems improved in the early years of the salinity programs are nearing the end of their practice life. This will need to be addressed as some of these systems will eventually need to be replaced. Some systems are capable of lasting far longer than the stated practice life, e.g. underground pipeline, while other systems have definitely deteriorated. It is important for these systems to remain “on line”.
- The participation level of the program and the treated area completed to date show significant success for both the popularity and the past participation of the program. There is still much interest for improvements in parts of the Grand Valley dominated by vineyards and fruit crops. For more traditional crops, the treated acreage level is resulting in fewer applications, as the majority of large acreages have been treated. Many applications are received for irrigation improvements for parcels as small as one acre.
- There are opportunities to assist the new and inexperienced land owners through education and training on effective irrigation water management and systems operation. There has been an increase in absentee landowners which is also a challenge.
- The projected salinity reduction for these types of units should be evaluated so appropriate adjustments to cumulative salinity loading information can be made based on measured values.
- Additional efforts to find funding to increase incentive payments on wildlife habitat management to get more interest from landowners.
- Have staff continue to receive training in the latest irrigation technology to improve our assistance to landowners
- Knowing that many of the land units may be facing future land use changes due to development, requires adjustments to irrigation system designs to provide a salinity reduction benefit with the current operation. Designs must take into account further and future development, which may drive up the construction cost.
- Cost effectiveness of the Grand Valley program is being affected by the construction cost increase, and by the reduction of the size of parcels being treated through the cost-share programs.

Grand Valley Salinity Control Project 2010 Status Inventory Report

NRCS Colorado, in cooperation with the Colorado State Conservation Board (CSCB) and the Mesa County Conservation District, conducted a field inventory and review of irrigated lands and near farm irrigation delivery systems during the spring and summer of 2010. The objectives were to assess the irrigation improvement land treatment and wildlife habitat replacement status for fields within the Grand Valley salinity project, to create a database for analyses, and to develop a process transferrable to other salinity control areas for long term progress tracking and project management. The project accomplishments were evaluated in relation to the Grand Valley Unit project authorization goals.

Key findings of the 2010 survey of the Grand Valley project land treatment status are:

- The original Grand Valley salinity control project plan was to treat approx. 60,000 acres with improved irrigation systems. The 2010 field inventory shows 47,600 of irrigated land. Land use changes, since 1979, have reduced the acres of irrigated cropland within the project area.
- Through Fiscal 2011, 40,912 acres[/1] have been reported by NRCS as treated with improved irrigation systems. The 2010 field inventory observed 44,700 acres (95%) with improved systems. Some acres have been treated without USDA or Basin States assistance.
- Through FY 2011, the cumulative salt reduction applied is 140,003 tons/year, or 106 percent of the goal.
- The project plan set a goal to reduce salt loading to the Colorado River system by 132,000 tons of salt.

[/1] Note: Some of the 40,912 acres have been treated a second time to a higher level of irrigation and salt savings efficiency over the course of this salinity project.

Inventory methods

Personnel from the NRCS State and Grand Junction Area and Field Office, local Colorado State Conservation Board, and Mesa Conservation District staff participated in the inventory. Information was also obtained from irrigation companies and the Bureau of Reclamation. Project area maps were developed using a combination of Mesa County Assessor parcel ownership information and field office case files. Staff brought physical maps to the field, drove irrigation canal and lateral rights-of-way and documented observed field and later irrigation systems. Irrigation systems were observed in the spring and early summer. Systems were categorized by improvements and not by funding source for improvements, i.e. EQIP, Basin States Program, or landowner funded.

The inventory was conducted at the field level. Basic information was collected and recorded in the field through on-site visits. Results are shown in Table 4. Field maps were used to develop a geo-database and GIS maps for display and analyses. Mesa County 2007 ortho photography available to the field office was used to create the field maps and to provide supplemental information in the event a field or irrigation ditch lateral was not accessible to the field reviewers.

Table 4 – On-Farm Irrigated Acreage by System Type – 2010 Survey

Irrigation Method	Coverage (acres)	Percent of Total Area Surveyed	Number of Fields
Earthen Field Ditch	2,900	6.1%	546
Concrete Field Ditch	7,338	15.4%	590
Gated Pipe	32,766	68.8%	4,005
Surge	498	1.1%	21
Sprinklers	2,579	5.4%	166
Micro-spray	1,455	3.1%	398
Drip	65	0.1%	14
Total	47,601	100%	5,740

Note: These figures do not include any planned practices under contract that have not yet been applied. The 2010 inventory *resulted in categorization of 94% of the irrigated fields in the Grand Valley salinity project area with improved irrigation* systems. No classification of practice condition was done as part of this inventory process.

Irrigation Lateral System by Improvement Type

Irrigation lateral treatments were observed and categorized. Information was obtained with assistance from irrigation companies and other agencies. Map analysis was used to characterize untreated irrigation lateral length, shares, and head gate locations. All laterals were mapped from photos. Field checks were completed where possible. Additional field checks will be completed by staff from irrigation districts this fall. The Bureau of Reclamation (BOR) and irrigation districts are providing additional information on head gates, locations and designed flow rates. All irrigated land and water delivery laterals in the Valley including the Grand Valley Canal, Highline Canal system (Grand Valley Users Association), the Palisade Irrigation District, the Mesa County Irrigation District, and the Orchard Mesa area were inventoried. Results are shown in Table 5.

Table 5 – Observed Off and Near Farm Irrigation Lateral Improvements – 2010 Survey

Canal System and Conveyance Method	Length (Feet)	Percent of Total Length
Government Highline	**953,721**	
Earthen Ditch	0	0%
Concrete Ditch	0	0%
Piped Lateral	953,721	100%
Grand Valley Irrigation Company	**1,229,385**	
Earthen Ditch	104,601	9%
Concrete Ditch	399,298	32%
Piped Lateral	725,486	59%
Orchard Mesa Irrigation District	**368,288**	
Earthen Ditch	12,040	3%
Concrete Ditch	53,536	15%
Piped Lateral	302,712	82%
All Irrigation Companys	**2,551,394**	
Earthen Ditch	116,641	5%
Concrete Ditch	452,834	18%
Piped Lateral	1,981,919	77%

The 2010 inventory identified 95.5% of the irrigation laterals in the areas surveyed in the Grand Valley Salinity Project Area as treated. No classification of irrigation conveyance condition was done as part of this inventory process.

III. **Wildlife Habitat Replacement Status.**

The original USDA Grand Valley Project wildlife habitat replacement goal is 1,200 acres as specified by US Department of the Interior memorandum. The addition of the DeBeque and Whitewater areas added an additional 6 acres to the total for 1,206 acres of habitat replacement.

During the 2010 field review, 59 wildlife projects, funded by US Bureau of Reclamation and USDA financial assistance programs, were assessed to determine current condition. Based on the assessment, 7 projects with 17.8 acres no longer provide the planned wildlife habitat benefits.

As of December 31, 2011 there are 735 acres of projects that meet planned wildlife habitat replacement requirements. USDA currently has 10 wildlife contracts with 196 planned acres.

IV. **Recommendations and Proposed Actions**

Based on the 2010 inventory and analysis, the USDA on farm goals for the Grand Valley project is substantially complete. The Grand Valley Unit Project Environmental Assessment, completed in December of 1977, predicted levels of on farm and off farm treatment and effects.

USDA on farm objectives as documented “On Farm Program for Salinity Control – Final Report of the Grand Valley Salinity Study” – December 1977 set a goal for USDA to achieve 132,000 tons of salt reduction.

As of fiscal 2011, the reported salt control for the Grand Valley project was 140,003 tons or 106% of the Grand Valley Unit USDA goal. The original project assessment set a goal of 40% of the Grand Valley laterals to be treated. This goal has also been met.

The 2010 Grand Valley project inventory identified 546 fields comprising 2,900 acres serviced by earthen field irrigation ditches and classified as untreated. This represents approximately 6% of the irrigated lands within the Grand Valley project. The average field size is 5 acres. Many of these fields are within urban and developing subdivisions, are in isolated areas, or are not currently farmed.

Currently 735 acres or 61% of the original wildlife habitat replacement goal has been established and is being maintained. Current efforts targeting riparian corridor habitat projects using USDA and partner funding are ongoing. Outreach activities such as riparian buffer workshops and cooperation with the Mesa land Trust are scheduled over the next two years to accelerate the rate of wildlife habitat replacement. Activities are under way with the UCEC Meeker Plant Materials Center tp test materials for habitat replacement. Demonstration plantings have been scheduled with local producers. Due to changing land use and the objective to develop enduring, high quality wildlife habitat, the USDA encourages the BOR or other entities to purchase or place easements on suitable land and use USDA and / or BSP funds for habitat restoration practices. NRCS is currently exploring ways to utilize BSP funding for work on State of Colorado owned land, and Bureau of Land Management lands to meet the goal of developing enduring, high quality wildlife habitat. NRCS easement program opportunities are also being pursued to assure

the long-term maintenance and management of replacement habitat.

NRCS Colorado established a two year timeframe to be implemented during Fiscal Years 2011 and 2012 to accept applications and develop EQIP contracts to close out the formal on-farm USDA portion of the Grand Valley Unit Salinity Control Project designation. NRCS staff will conduct outreach through consultation with partner agencies, targeted mailings, a public information campaign, and a public meeting to encourage the remaining potential participants to apply for the current EQIP salinity program in the Grand Valley. NRCS will continue to provide technical support for current the Basin States Program efforts to improve remaining irrigation laterals and other projects during this timeframe and thereafter as recommended by the Colorado River Salinity Control Forum.

Beyond the fiscal 2012 EQIP contracting cycle general EQIP water quality, the Basin States Program and other NRCS Program funding will be used to address water quality, wildlife and other resource concerns in the Grand Valley. In the future, all current salinity program projects and the derived benefits can be served under these Programs. In consultation with the Salinity Control Forum and the BOR, NRCS proposes to implement a salinity control bonus incentive payment process in the Grand Valley to provide financial assistance for future water quality projects with salinity and wildlife habitat benefits. General EQIP combined with partner funding is proposed to provide the bonus incentive payment. Discussions are also underway with the Salinity Forum's Work Group to develop strategies for improving outdated and lower efficiency irrigation systems.

The USDA-NRCS recognizes the extraordinary efforts and partnerships put forward over the past 30 years in implementing the Grand Valley Salinity Control Project. The Agency proposes an appropriate closing report and celebration to acknowledge the success of the Salinity Control Program for Upper and Lower Basin water users. Appropriate public notice and meetings will be used to close the USDA requirements of the Grand Valley Unit environmental analysis.

In addition, a follow-up assessment will be done on a three-year interval to evaluate the salinity control projects installed through the program to assure the retention and maintenance of the publically supported salinity control benefit. The data from the analysis will be reported to the Salinity Control Forum to support their triennial review.

WILDLIFE HABITAT REPLACEMENT
2011

History and background

The Grand Valley Unit is located in west central Colorado adjacent to the Colorado-Utah state line and includes the entire irrigated area of the Grand Valley North of the Colorado River and the area served by the Orchard Mesa Irrigation District on Orchard Mesa. Added to the Grand Valley Unit in 2006 are the DeBeque and Whitewater Units. The DeBeque Unit is located 24 miles east of Grand Junction adjacent to the Colorado River. The Whitewater Unit is located 7 miles south of Grand Junction adjacent to the Gunnison River. The Grand Valley is characteristic of arid, cold desert ecosystems common to western Colorado and eastern Utah. Historically, the Grand Valley Unit was dominated by desert vegetation communities. Narrow wetlands and riparian zones were located along the Colorado and Gunnison rivers as well as several natural washes.

The present mosaic of habitat types (agricultural, riparian, wetland, and desert shrub) is a result of current irrigation systems and practices. With the advent of irrigation and associated waste water return flows and seepage, the natural vegetation has changed. A sparse, saltbush desert community has been converted to crops and habitat types such as wetland, riparian, willow and cottonwood, tamarisk, tall wheatgrass, or a mosaic of these cover types. Habitat types other than cropland are restricted to areas unsuitable for agriculture, such as canal and lateral banks, fence rows, washes, irrigation return flows and drains, roadsides, and other low-lying areas.

Agricultural areas are composed of orchards, pastures, and crops. Crops grown vary from peaches, grapes and cherries, to alfalfa, corn and small grains. All crops are entirely dependent upon irrigation for production. The area originally comprised about 66,000 acres of agricultural land; however, urban and commercial development over the last 32 years has reduced the agricultural area to approximately 47,600 acres. Areas west and north of Fruita, Loma, and Mack have large irrigated agriculture fields. Other areas in the unit are characterized by small fields associated with ranchettes and growing specialty crops.

The size of most program participant's properties is small (1-20 acres). Many landowners and participants are moving from the city to recently created small parcels. The Grand Valley area is beginning to see a shift in how landowners view and manage the land. Landowners purchase these parcels for open space, privacy, views, and a rural life style. They manage the parcels as "extra-large lots", rather than farms. Many of these landowners are still interested in improving their land and irrigation, but not just for agricultural reasons.

Impacts to wildlife and habitat in the Grand Valley Unit are addressed in the Grand Valley Environmental Assessment, prepared jointly by the U.S. Bureau of Reclamation (BOR), U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), and the U.S. Fish and Wildlife Service (USFWS). The Environmental Assessment determined 4,000 acres of wildlife habitat could be lost due to improvement of on-farm and off-farm irrigation systems. Based upon analysis of the potential impacts, the assessment and subsequent agreements by the agencies required replacement of the 4,000 acres of wildlife habitat. Seventy percent of the replacement requirement was assigned to the BOR. The remaining thirty percent, or 1,200 acres, was assigned to the NRCS. In 1993, The BOR purchased 355 acres of property for development of wildlife habitat to augment the NRCS goal of 1,200 acres. In previous Monitoring and Evaluation reports for the Grand Valley it was stated that the BOR purchased nearly 400 acres to be credited to the NRCS. A review of documentation shows only 355 acres were purchased.

Wildlife habitat replacement in the DeBeque and Whitewater Units will be determined on a site by site basis by an NRCS biologist. Habitat acres that will be negatively impacted by salinity projects in these units will be added to the remaining habitat replacement goal set for the Grand Valley Unit.

Over the last 32 years, salinity and wildlife habitat improvements projects have been cost-shared by several different programs as documented in table 1. Note that there are some overlaps between programs. Additionally, wildlife habitat has been created in the Grand Valley Unit through the USDA Wildlife Habitat Incentives Program (WHIP). To date, habitat developed with the WHIP program has not been considered salinity project habitat replacement. It is addressed in this document for information purposes.

Table 6 - Salinity Control Programs in the Grand Valley Unit

Program	Years
Grand Valley Salinity Control Program (GVSP)	1978 -1989
Colorado River Salinity Control Program (CRSC)	1987 – 1995
Interim Environmental Quality Incentives Program (IEQIP)	1996
Environmental Quality Incentives Program (EQIP)	1997 -2011
Colorado River Basin States Program (BSP/BSPP)	1998 – 2011

Beginning in 2001, additional funding for wildlife projects that would contribute to habitat replacement goals was made available through the Basin States Program (BSP/BSPP). All BSP wildlife projects are selected through a ranking process developed by an interagency committee. Projects funded with BSP funds may be located outside of the Grand Valley Unit.

In 1991, the Grand Valley Unit began tracking planned and applied wetland wildlife projects, identifying type and value changes based upon the Avian Richness and Evaluation Methods for wetlands of the Colorado Plateau (AREM) and Circular 39 from the USDI. Existing wetlands impacted by wildlife conservation practices are evaluated using these methods to establish an existing habitat value. The impacted or created wetlands are re-evaluated after wildlife conservation practices are installed using the above criteria to determine applied wetland habitat values. Impacted wetland values from irrigation conservation practices have not been documented over the last 32 years. Any improved wetland values are based on projects that were targeting wildlife habitat improvement and do not reflect any negative values from irrigation impacts.

Current methods

In the Grand Valley Unit wildlife habitat replacement progress is tracked by acres. Additionally, wetland habitat value changes are assessed using AREM as described above. In an interagency meeting on December 10, 2004, it was agreed that only habitat development currently on the ground will be credited for habitat replacement. At project end, past NRCS habitat developments that no longer exists (due to a variety of reasons), will not be credited to NRCS. The process of reporting and field verification of program results and records will continue for the remainder of the program. During 2010, this field verification process resulted in 17.8 acres being removed from the total due to loss of habitat values because of recent development in the area.

For the duration of the salinity program the type of wildlife improvement practices has remained consistent. Practices include ponds, fencing, grass and forb establishment, brush (tamarisk control) management, and tree and shrub establishment. Pond construction includes membrane lining at all locations, except where the pond is at equilibrium with an existing water table to prevent a new seepage and salt loading source. To address the Colorado River endangered fish concerns, all ponds are constructed with fish screens on outlet structures (unless the pond will be drained to less that 1 foot depth during winter), and, water depletion loss is calculated and reported to the U.S. Fish and Wildlife Service for their review.

Results

Progress from wildlife projects, both planned and applied, is updated yearly in a spreadsheet maintained by the NRCS Grand Junction Field Office. This data represents the final audit and update for all wildlife projects in the Grand Valley Unit, and are verified from field visits performed by a wildlife biologist

Salinity and wildlife habitat improvements have been cost-shared by several different programs during the duration of the salinity control project. Progress in acres of wildlife habitat replacement by program, is illustrated in the Wildlife Summary Graph 1 below. Table 7 summarizes the applied data for all salinity programs. Table 8 is a summation of dollars spent on wildlife projects with salinity program funds. Table 9 summarizes the wildlife habitat replacement acres and funding for the BSPP program. Table 10 summarizes the wildlife acres and funds for the WHIP program spent in the salinity area. WHIP acres applied in Table 10 are not included in Table 7.

Wetland data collected over the last 16 years for all salinity programs and WHIP is summarized in Table 11. Table 12 and Table 13 reflect expected impacts to wildlife and wetlands in the DeBeque and Whitewater Salinity Units. Table 14 is a summary of all wildlife mitigation efforts for 2011 for the Grand Valley Unit.

Wildlife Summary Graph 1

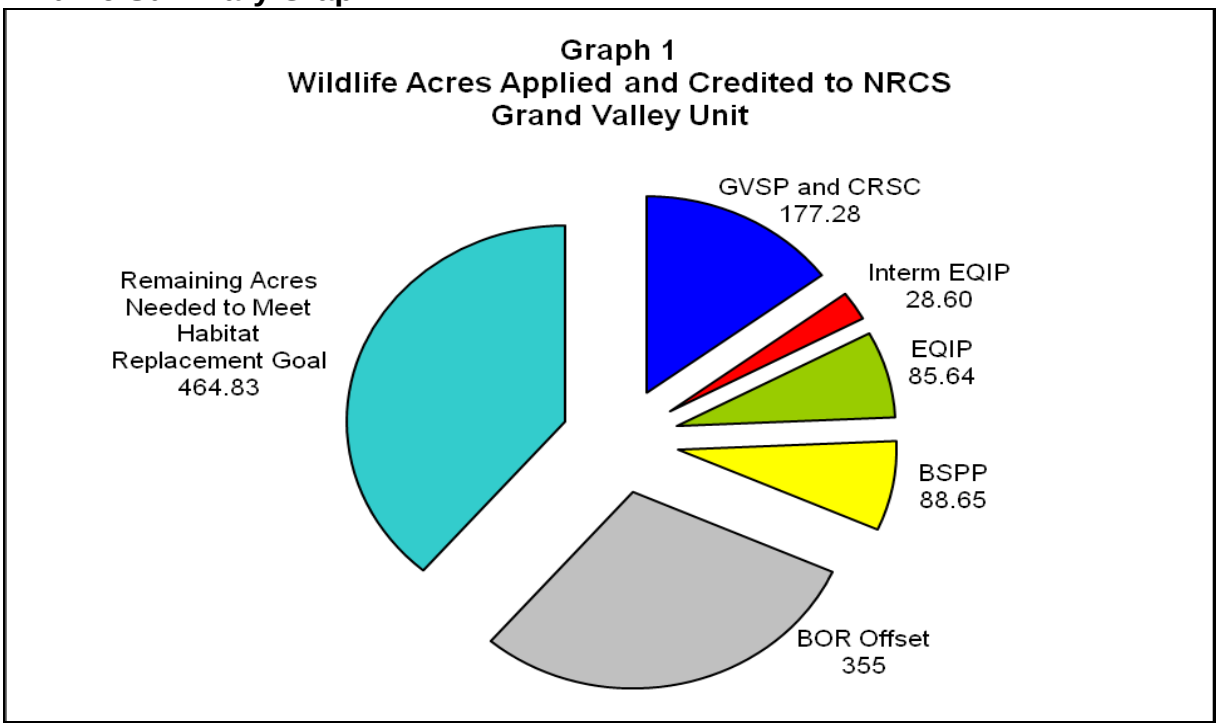


Table 7 – Summary of Wildlife Habitat Planned and Applied (All Salinity Programs)

Habitat Replacement Planned or Applied	Acres
Wildlife habitat replacement acres planned 1997-2011	1,682
Habitat replacement acres applied and existing 1978-2011	380
Bureau of Reclamation Offset	355
Remaining acres needed to meet habitat replacement goal	465
Note: These acres do not include 17 acres applied with WHIP	

Table 8 - Funding for Wildlife Habitat Replacement Projects (All NRCS Salinity Programs)

Wildlife Funding	Amount
Funds obligated to wildlife projects 1978-2011	$2,631,584
Funds spent on wildlife projects 1978-2011	$855,056
Percent of total salinity obligated funds that were obligated to wildlife projects through 2011	7.8%
Percent of total salinity obligated funds spent on wildlife projects through 2011	2.5%
Note: These funds do not include WHIP funding	
Note: These funds do not include the BOR funding for the 355 acre land purchase offset.	

Table 9 - Funding for Wildlife Habitat Replacement Projects Planned and Applied BSP/BSPP

BSP/BSPP Wildlife Projects	Amount
Acres planned 2001-2011	290.1
Acres applied 2001-2011	87.95
Funds Obligated to wildlife projects 2001-2011	$638,395
Funds Spent on Wildlife projects 2001-2011	$178,040

Table 10 - Funding for Wildlife Habitat Replacement Projects Planned and Applied WHIP

WHIP Wildlife Projects	Amount
Acres planned 2001-2011	190.4
Acres applied 2001-2011	16.9
Funds Obligated to wildlife projects 2001-2011	$76,342
Funds Spent on Wildlife projects 2001-2011	$34,708

Table 11 - Wetland Data from 1991 to 2011

Wetland Habitat Impacts	Amount
Cumulative acres impacted 1991-2011 (salinity programs)	48.1
Net AREM change 1991-2011 (salinity programs)	26.5
Cumulative acres impacted 1991-2011 (WHIP)	9.0
Net AREM change 1991-2011 (WHIP)	3.0

Table 12 - Estimated Wildlife and Wetland Impacts in DeBeque Area

Habitat Impacts	Amount
Total wildlife habitat acres expected to be impacted 2007-2011	2.8
Cumulative wetland acres expected to be impacted 2007-2011	0.3
Net AREM expected change 2007- 2011	-0.2

Note: There are currently no applied irrigation improvements in this area

Table 13- Estimated Wildlife and Wetland Impacts in Whitewater Area

Habitat Impacts	Amount
Total wildlife habitat acres expected to be lost 2007-2011	3.2
Cumulative wetland acres expected to be impacted 2007-2011	0
Net AREM expected change 2011	0

Note: There are currently no applied irrigation improvements in this area

Table 14 - Summary of Wildlife Mitigation Efforts FY 2011

Habitat Replacement	Amount
Habitat replacement acres planned (EQIP)	67
Habitat replacement acres Applied (EQIP)	1.5
Funds spent on wildlife projects (EQIP)	$14,360.64
Habitat replacement acres planned (BSPP)	132*
Habitat replacement acres applied (BSPP)	0
Funds Spent on wildlife projects (BSPP)	0
Wetland acres improved 2011 (All Salinity Programs)	0
Net AREM change 2011 (All Salinity Programs)	0

***Acres planned in anticipation of BSPP funding becoming available in 2012**

Discussion of Results

Over the last 32 years 5 salinity programs have been utilized to replace wildlife acreage (Wildlife Summary Graph 1). A majority of the replacement effort has been a result of the CRSC and GVSP salinity programs. The EQIP program has produced 85.6 acres in twelve years. During the first 7 years of the EQIP program, wildlife and irrigation projects for the same landowner were often combined in one contract, and there was a high cancellation rate of the wildlife portion of the contract. Since 2004, all wildlife contracts under EQIP are separate contracts and cancellation rates have decreased.

The NRCS replacement effort has resulted in 380.2 acres of wildlife habitat applied and existing (Table 7). These applied and existing acres account for about 25% of all planned projects. NRCS funded projects and the BOR offset of 355 acres has resulted in a total of 735.2 acres of wildlife habitat credited to the Grand Valley Unit. An additional 464.8 acres of habitat replacement is required to achieve the 1,206 acre goal. During 2011, 199 acres were planned for wildlife habitat mitigation and 1.5 acres were applied (Table 14).

Funding of wildlife projects from all salinity programs is outlined in Table 8. To date, $855,056 has been spent on wildlife projects in the Grand Valley Unit, which is 2.5% of the total obligated funds for all salinity programs. During 2011 a total of $14,360 was spent on wildlife projects (Table 14).

The BSP program has planned 268.8 acres of wildlife habitat since 2001 (Table 9). Currently 88.6 acres have been applied with this program. During 2011, 132 acres were planned and no acres applied for wildlife mitigation projects under the BSP (Table 14). A total of $638,359 BSP funds have been obligated to wildlife projects, with $178,040 spent to date on wildlife projects (Table 9).

Wildlife projects planned using WHIP funds are outlined in Table 10. The values in Table 10 are not included in either Table 7 or Table 8. Currently there are 190.4 acres planned in the Grand Valley Unit under WHIP and 16.9 acres applied and existing. At this time there have been $76,342 of WHIP funds obligated in the Grand Valley Unit, and a total of $34,708 has been spent on wildlife projects.

Since 1991, a total of 48.09 acres of wetlands have been improved through salinity programs in the Grand Valley Unit with a net AREM change of +26.49 (Table 11); however, these values do not reflect any wetlands lost due to irrigation impacts. In 2010, 1 wetland was created with 0 net AREM change (Table 14). Wetlands created in 2009 and 2010 will be evaluated for AREM after 3 years to allow for vegetation to establish and wetland functions to develop.

Wildlife and wetland loss for the DeBeque Unit and Whitewater Unit is documented in Table 12 and 13. These values are expected losses, actual losses will be determined if, and when, irrigation projects are installed and any habitat loss will be added to the wildlife mitigation goal for the Grand Valley Unit. Current expected losses for the DeBeque Unit are a cumulative 2.8 acres and a change in AREM values of -0.17. Current expected losses for the Whitewater Unit are a cumulative 3.2 acres and no change in AREM values.

The NRCS replacement effort has resulted in 380.2 acres of wildlife habitat applied and existing (Table 7). These applied and existing acres account for about 25% of all planned projects. NRCS funded projects and the BOR offset of 355 acres has resulted in a total of 735.2 acres of wildlife habitat credited to the Grand Valley Unit. An additional 464.8 acres of habitat

replacement is required to achieve the 1,206 acre goal. During 2011, 199 acres were planned for wildlife habitat mitigation and 1.5 acres were applied (Table 14).

Conclusion

Replacement effort for wildlife acres is dynamic as urban development impacts areas that once were managed for wildlife under the salinity programs. Each year wildlife acres are applied throughout the Grand Valley Unit, but acres are also removed as identified by periodic field checks by an NRCS biologist. Efforts must be placed on increasing the interest of landowners to establish and maintain wildlife habitat. Direct contact with landowners who own large parcels or land along natural washes and drainages may be beneficial. With increasing numbers of landowners having small parcels, the salinity program must adjust to accommodate for these smaller land unit areas. NRCS can utilize these opportunities by showing the benefits of improving small open space parcels for wildlife habitat.

Cancellation rates of EQIP wildlife contracts have decreased with the advent of separate contracts for wildlife projects. Retention rates should also improve as practice lifespan for practices associated with wildlife habitat have increased from 10 years under the GVSP program, to 20 and 25 years under current programs.

Retention of applied wildlife habitat acres may also be increased by working with lands that have conservation easements in place. This would entail working closely with land trust organizations to identify possible landowners with conservation easements that are wildlife oriented. Working with Mesa County and the cities of Grand Junction, Fruita, and Palisade to establish projects located in development buffer zones may increase opportunities for wildlife projects with willing landowners. Working with the Colorado Division of Wildlife and Colorado State Parks may provide opportunities on medium to large sized parcels along the Colorado River corridor in the Grand Valley.