MONITORING & EVALUATION REPORT--2011

MANCOS VALLEY UNIT
COLORADO RIVER SALINITY CONTROL PROJECT
USDA-NRCS

USDA- Natural Resources Conservation Service
Cortez, Colorado - Field Office Staff

EXECUTIVE SUMMARY
MANCOS VALLEY UNIT
2011

Hydro-Salinity -

- The project plan is to treat approximately **7,020 acres** with improved irrigation systems.
- To date **2,538 acres** have been treated with improved irrigation systems.
- The project plan is to reduce salt loading to the Colorado River system by **13,440 tons/year** of salt.
- In FY 2011, salt loading has been reduced by **193 tons/year** as a result of installed salinity reduction practices.
- The cumulative salt load reduction is **4,238 tons/year**, or 32 percent of the project goal.

Cost Effectiveness -

- The planned cost per ton of salt saved with FY 2011 contracts (one year) is **$164.11 /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 habitat replacement goal is at 2% of the current irrigation improvement acres, or 2% of the current 2,538 irrigation improvement acres equals **51 acres** of habitat developed or significantly enhanced.
- In Fiscal Year 2011, **41 acres** of additional upland habitat were reported as applied.
- To date, a cumulative **545 acres** [/1] of upland habitat and **198 acres** of wetland habitat have been applied, or the current wildlife habitat replacement is approximately 388% of the predicted losses based on the wetland habitat, and there may be enough habitat acres established to meet full salinity program implementation and replacement goals.
- An updated evaluation of the habitat replacement acres and status is being conducted to verify the habitat acres still in place and to confirm the goal of replacing habitat lost with habitat of comparable wildlife values.

[/1] Some of the **545 acres** of upland habitat applied may not meet riparian and irrigation enhanced habitat losses, and thus will not be credited toward meeting the salinity habitat replacement goals.

Key Considerations and Conclusions –

- Based on the habitat acres applied, there may be sufficient replacement to account of all the acres needed for a full project implementation of 140 acres of habitat improvements implemented at 2 percent of 7,020 acres irrigation improvement applied, however the current habitat status assessment is needed to assure the goal is met.
- The ongoing wildlife habitat assessment should be completed sometime in 2012.

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.

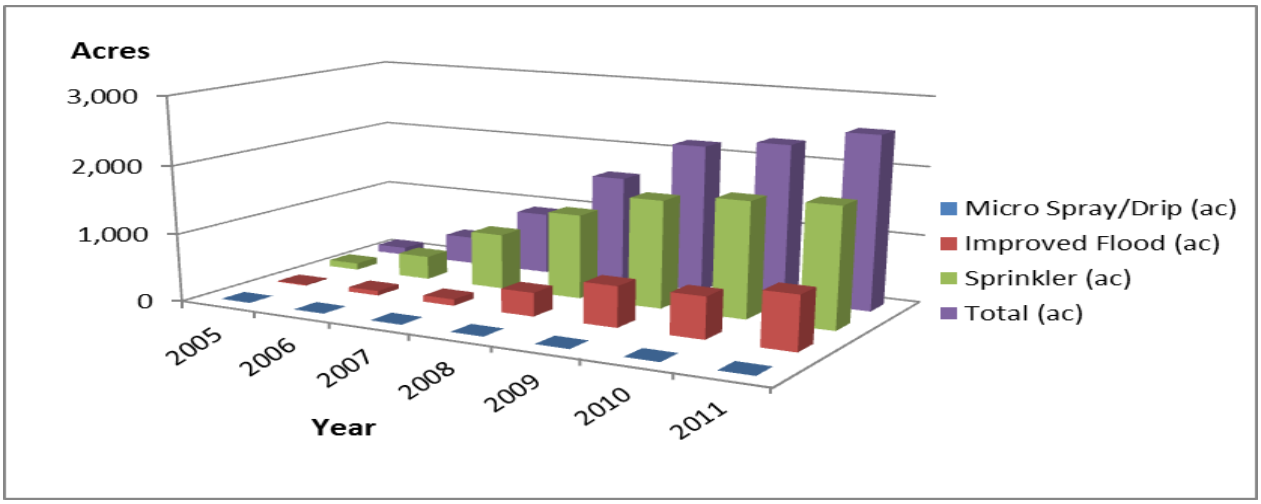
Areas with a greater conversion to sprinkler or micro spray will be at the 15 inch reduction and areas with predominantly flood irrigation will be at the 10 inch reduction. Areas that are converting from unimproved flood systems will have deep percolation plus seepage reductions in the 25 to 30 inch 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 – Mancos Valley Unit Cumulative Irrigation Systems Installed



IRRIGATION SYSTEMS APPLIED (acres)	FY2011	CUMULATIVE
Sprinkler	58	1,751
Improved Surface System	182	787
Micro-Spray/Drip System	0	0
TOTAL	901	2,538

Graph 1 and the sub-set table display the cumulative acres of the various irrigation improvements in the Mancos Valley project area. The ease of operation and uniformity of application make sprinklers a desirable option for many irrigators.

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.

Hydro Salinity Monitoring & Evaluation Summary

- Irrigation Systems Applied Acres
  Acres Treated in 2011 = **240 Acres**
  Program Totals = **2,538 Acres**
- Irrigation Water Conveyance Delivery/ Gated Pipe
  Acres Treated in 2011 = **182 Acres**
  Program Totals **= 787 Acres**
  Average Efficiency = **50%**
- Sprinkler & Drip Irrigation Systems Installed
  (Includes Linear, Center Pivot, Side-Roll, & Big Gun)
  Acres Treated in 2011 = **58 Acres**
  Program Totals = **1,751 Acres**
  Average Efficiency = **75%**
- Overall Average System Efficiency
  In 2011 = **56%**
  Cumulative = **68%**

Graph 2 – Mancos Valley Unit Cumulative On-Farm Salinity Load Reduced

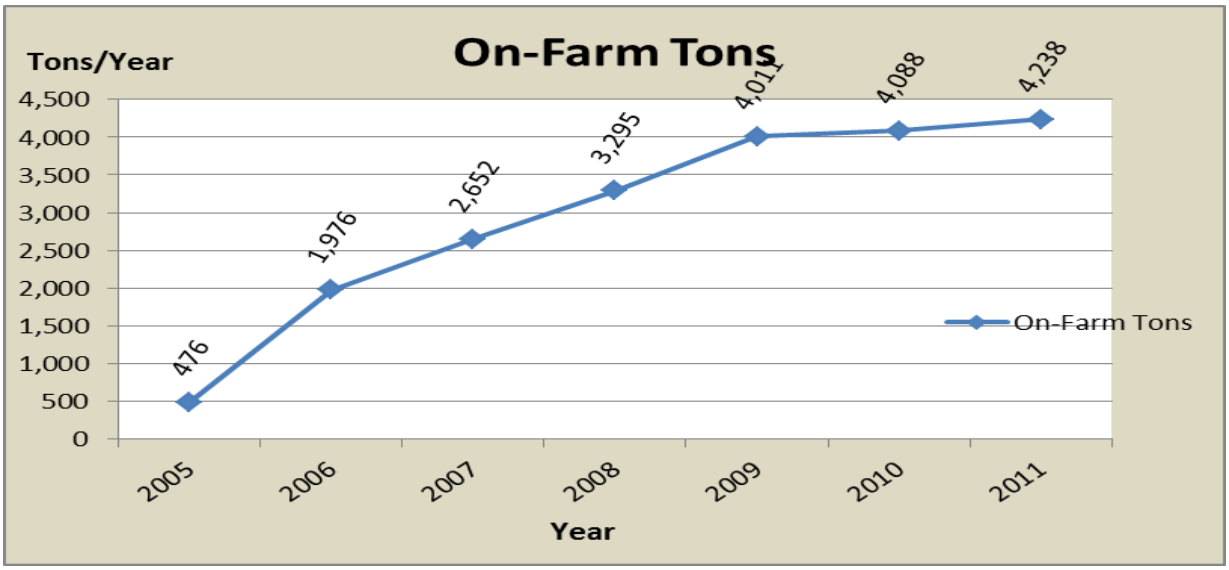


Table 2 - USGS Trend Analysis and Agency Reported Salinity Reduction

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.

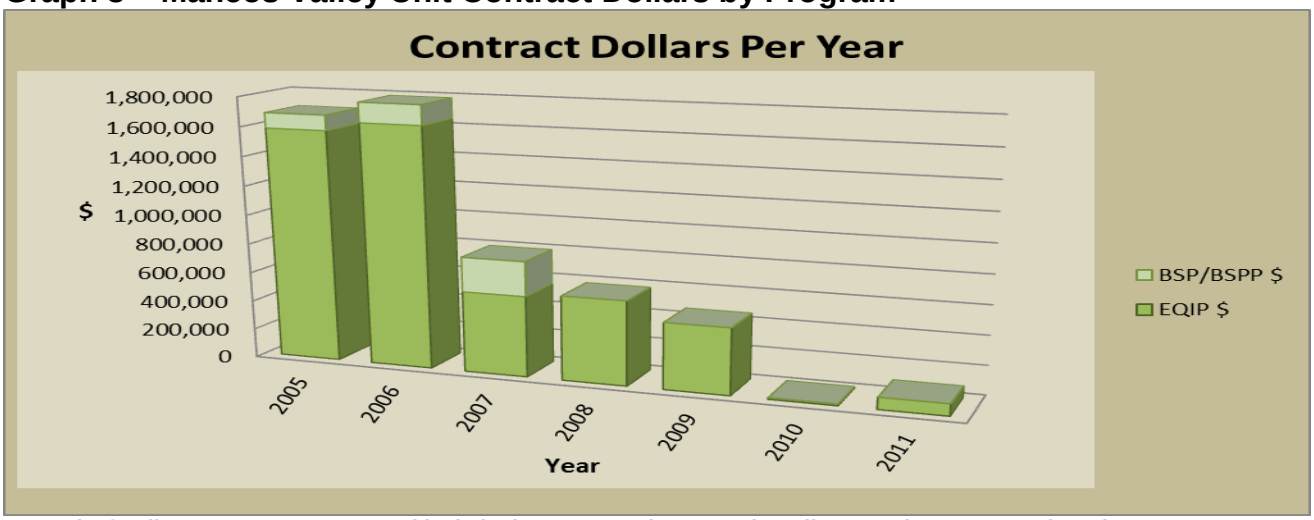
Table 2 References

"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 – Mancos 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.

Both 2010 and 2011 are relatively low contract years. The recession, low hay prices, and higher input costs made farmers apprehensive about signing contracts for irrigation improvements. There is opportunity to make significant irrigation improvements and outreach efforts have been increased. The estimated number of contracts is down by about two thirds as a result of the recession. The re-funding of the Basin States Program should allow for additional future contracts with landowners who may not be EQIP eligible, and it is assumed the amount of both EQIP and BSP contracts will increase as the local economy improves.

Most of the new projects will be on farm, converting from flood irrigation to sprinkler. They will be utilizing gravity pressure generated as a result of group pipeline projects installed in previous years.

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.

MANCOS VALLEY OVERVIEW

The Mancos Valley is an agriculture valley situated in the middle and lower portions of a 203 square mile watershed of the Mancos River, in the vicinity of Mancos, Montezuma County, Colorado. The watershed, with elevations ranging from 6,200 ft to 13,192 ft, consists of semi-arid high valleys, canyons, forested mountains and alpine tundra. The watershed is bound by Mesa Verde National Park in the southwest, the Ute Mountain Reservation to the south, the ridge of the Montezuma-La Plata county line in the southeast, the La Plata Mountains in the northeast, and a low ridge line to the northwest. Mean annual precipitation ranges from 16 inches in the valley to 40 inches on the ridges. Agriculture is primarily limited to the lower elevations of the valley and composed of irrigated grass-pasture and alfalfa production.

The higher elevations of the watershed are dominated by Ponderosa, Spruce, Fir and Aspen. On non-agriculture land, the vegetation of the lower elevations of the valley is dominated by Sage and Pinon-Juniper, with willow in riparian areas and large stands of invasive Tamarisk in the Mancos Canyon.

Mancos River flow is dominated by precipitation falling on the higher elevations in the northeast portion of the watershed, in the San Juan National Forest. The East, Middle, and West branches of the Mancos River and Chicken Creek drain these higher precipitation areas. Mud creek drains the lower elevations in the northwest. The lower valley is divided by Weber and Menefee Mountains, between which the Weber Drainage flows. The confluence of the Mancos River and Weber drainage marks the lower end of the valley. Immediately below the valley is the Ute Mountain Reservation, through which the Mancos River flows to its confluence with the San Juan River in New Mexico.

Irrigated Agriculture

According to a US Bureau of Reclamation GIS study (U.S. Bureau of Reclamation 1994) agriculture in the valley is composed of 145,900 acres, with 11,700 acres irrigated (9900 acres by flood practices and 1800 acres sprinkled). A breakdown of the acreage is provided below:

a. Irrigated: 11,695 acres
   (1) Flood 9,900 acres
      A. Alfalfa: 280 acres
      B. Grass: 9541 acres
      C. Orchard: 41 acres
      D. Small grain: 38 acres
   (2) Sprinklers: 1,795 acres
      A. Alfalfa: 948

B. Grass: 847 acres
C. Fallow: 61 acres
D. Intermittent: 80 acres

b. Not Irrigated: 2,996

There are approximately 46 diversions of water for Mancos Valley agriculture. Thirty six of these ditch diversions from the Mancos River and its tributaries provide water directly to 9,290 acres of agriculture lands. Eight reservoir diversions provide water to an additional 2,091 acres. Jackson Gulch, the primary storage reservoir for the valley, provides flow augmentation captured by a number of the 36 ditch systems.

Table 3 – Mancos Valley Salt Loading

Salt Load Source	Tons/Year	Tons/Year from Irrigation	% Reduction Planned	Tons/Year Reduced	Tons/Year After
Natural and Other Sources	16,300				16,300
Irrigation Salt Load	26,000				
Off-Farm Ditch Seepage		14,500			
47 Systems Deliver Water to 11,799 Acres					
26 Systems Deliver Water to 10,800 Acres, 92%, 60% Participation			**90%	7,440	7,060
On-Farm Irrigation Systems		11,500			
Existing Improvements on 1,800 Acres			76%	1,550	
Proposed Improvements on 5,400 Acres			***76%	4,500	5,500
Totals	42,300	26,000		13,440	28,860

*** Basin Total Salt Load 42,300 - 43,000 Tons/Year - Based on analysis of a 30-year (1969 through 1998) USGS record of water quantity and water quality to determine salt loading in average tons/year. The record includes a representative mix of wet and dry years.**

**** Predict a 90% net reduction in seepage loss from the estimated 16 ditches to be treated.**

*** **Estimated deep percolation reduction of 58% for conversion from uniproved flood to imrpoved flood on 25% of the treated acres; and an estimated deep percolation reduction of 82% for conversion from un-improved flood to side-roll sprinkler on 75% of the treated acres for a 76% net reduction in salt loading for each acre treated.**

Table Source: " Mancos Valley Salinity Control Project Plan and Environmental Assessment", NRCS, 2004.

2011 Activities

Several activities were undertaken in 2011 to improve salinity management. In 2011, 2 IWM plans where written on 35 acres of pasture and hayland, and 135 acres if IWM was applied. The IWM specialist held 2 half day classes where the fundamentals of IWM where taught. These classes also include some hands-on teaching on how to test for soil moisture. A stronger effort was put forth to provide one-on-one training of IWM with the irrigator in the field. Multiple pivot evaluations were conducted to ensure the sprinkler systems had correct nozzle packages installed, and were being operated at the correct speed for optimal efficiency.

Other activities included outreach to educate landowners about the salinity program and its benefits. Some of the activities included displays at the Four Corners Ag Expo, newspaper articles, and radio announcements. Work was also done with the local conservation districts and irrigation water districts to encourage large canals and ditches to consider converting to pipeline systems to reduce seepage and improve efficiency.

Salinity Outreach Activities include:

Dec-09	Passed out info on Salinity Program at the Dolores CD annual meeting
Jan-10	Mailed 1,500 postcards to landowners about the EQIP Salinity Program
Mar-10	Promoted Salinity Program at AgExpo
Apr-10	Talked about the Salinity Program at Mancos CD annual meeting
May-10	Talked about the Salinity Program at Mancos CD annual meeting
Jul-10	Article on IWM for salinity control
Aug-10	Promoted Salinity Program at Verde Fest
Jan-11	Posted flyers at public locations in Cortez, Mancos and Dolores
Jan-11	Info on Salinity Program in FSA Newsletter
Jan-11	Contact groups by phone that may be interested in Salinity Program
Feb-11	Article in newspaper on Salinity Program
Feb-11	Info on Salinity Program in MVIC Newsletter
Feb-11	Posted posters on Salinity Program at Ag Stores 1/2 hour radio magazine show on Salinity Program by Mike Rich and Deb Clairmont
Mar-11	Presentation at Cattleman's Annual meeting about Salinity Program
Mar-11	Promoted Salinity Program at AgExpo

The Mancos Conservation District installed a weather station in the Mancos Valley. Evapo-Transpiration data is now available to the landowners in Mancos Salinity area through the CoAgMet (Colorado Agricultural Meteorological) system. The landowners can utilize this information to enhance their irrigation water management by more accurate evapotranspiration data to predict when to irrigate next. Originally the NRCS tested using the Yellow Jacket weather station which is approximately the same elevation as Mancos, but the evapotranspiration data did not match the moisture withdrawal from the soil. It was determined that although the elevation is about the same, Mancos Valley has a different climatic environment than the Yellow Jacket area.

Future IWM Goals & Recommendations & Tasks

1. Future monitoring efforts should focus on the conversion of large agricultural tracts into smaller tracts to monitor the effects the change in land use has had on Salinity. Future monitoring efforts should also focus on maturing irrigation conservation practices to address their declining Irrigation efficiencies. This should include the investigation of cost-share methods to help producers adapt their existing systems to the new technologies, to bring these systems up to new NRCS Irrigation standards.
2. It is recommended that the Irrigation Water Management Specialists continue to provide assistance to the landowners during the First season of use, for the improved irrigation systems installed under the Salinity Program.
3. The NRCS will also be assisting landowners whom are requesting a higher level of irrigation water management and technical assistance. Technical assistance can be provided, through workshops, field days, tours, news & media events and technical references.
4. Utilizing and partnering with other skilled professionals like the CSU Extension, Irrigation Suppliers, Conservation District Boards, and Irrigation Districts can accelerate the Success of the IWM Program and its acceptance.

2012 OUTLOOK

The recession, low hay prices, and higher input cost made farmers apprehensive about signing contracts for irrigation improvements. There are still a lot of irrigation improvements to make and our outreach efforts have been increased. The Field Office estimated the number of contracts will be down by about two thirds as a result of the recession. The Field Office believes the pace will pick up once the economic downturn starts to end.

Most of the new projects will be on farm, converting from flood irrigation to sprinkler. They will be utilizing gravity pressure generated as a result of group pipeline projects installed in previous years.

Continued improvement of the IWM program offered by the NRCS is planned. It is anticipated that the new weather station will help landowners enhance their irrigation water management by more accurate evapotranspiration data to predict when to irrigate next. Use of the evapotranspiration data will be enhanced by workshops on how to use the information to help schedule irrigations.

Monitoring projects in the O&M phase of contracts will be expanded. Especially with the trend of sub-dividing old large farms and ranches into “ranch-ettes”, IWM assistance will be critical to maintaining good water management to ensure water quantity and quality for all users.

M&E SUMMARY- Mancos WILDLIFE

Fiscal year 2011 was the 7th year the Mancos Valley was funded under the Salinity Control Program. To date, 114 contracts have been approved for funding, 14 wildlife contracts. To date 48 contracts have been completed. A total of $6,795,929.00 has been obligated, with $287,628.00 (4.2%) obligated for wildlife contracts. This data has been updated to adjust for changes made in tables 4, 5 & 6.

Table 4 - Acres of Wildlife Habitat Applied 2011

Habitat Type	2010 Cumulative (acres)	2011 Cumulatvie (acres)	Net Change for 2011 (acres)
Upland	504	545	41
Wetland	198	198	0

Table 5 - Wetland Impact Data 2011

Cumulative Acres Impacted Year 2010	Cumulative Acres Impacted Year 2011	Net AREM Unit Change in 2010	Net AREM Unit Change in 2011	Net Change for 2011
128	129	29.76	0	0

Table 6 - Funding for Wildlife Habitat 2011

% of Total Funds Obligated for Wildlife through 2010	% of TotalFfunds Obligated for Wildlife through 2011
4.20%	4.20%
% of Total Funds Spent on Wildlife through 2010	**% of Total Funds Spent on Wildlife through 2011**
2.42%	2.42%

Explanation of the above results and planned wildlife program adjustments for next fiscal year: As of 2011 fifty-six contracts were completed. Sixteen of these had long term impacts to wetlands. Seven were negative impacts, with a net loss of 6.95 acres of wetland habitat, predominantly willow/buffaloberry ditch banks and sedge/rush. Nine were positive impacts affecting 121.3 acres of Mancos river bottom, adjacent palustrine emergent wetlands and some higher elevation wet meadow associated wetlands. Wetland data includes all wetland acres impacted. Included in the Wildlife Summary, is a table for percentage of funds spent on wildlife as well as obligated. Cumulative totals for dollars actually increased for wildlife this year. Focus is still being placed more on wetland/riparian habitat enhancement and development along the Mancos River corridor. Upland habitat disturbance resulting in losses, is minor in the valley.

M&E REPORT, WILDLIFE

History

The Mancos Valley Salinity Control Unit is located within Eastern Montezuma County in the Southwest corner of Colorado. It lies between prominent physiographic features such as the LaPlata Mountains to the northeast, with peaks over 12,000 feet in elevation, and Mesa Verde rising to an elevation of about 8,400 feet to the southwest. The elevation at Mancos is approximately 7,000 feet above sea level.

Most of the moisture comes in the form of late summer rains and winter snowfall. The total drainage area of the Mancos Valley is 131,200 acres. This includes the Mancos River and its major tributaries Mud Creek, Weber Creek, and Chicken Creek.

The climate is semi-arid with an average annual precipitation of 16 inches. Most of the farmed land is irrigated by surface water. The major source of irrigation water is the Mancos River with a mean daily flow of 48 cubic feet per second. Other minor water sources include Chicken Creek and Lost Canyon Creek.

Much of the valley is underlain by Mancos shale usually only a few feet below the ground surface in the lower portions of the valley. Some portions are underlain by gravelly, cobbly and stony alluvium. Soils are fairly diverse ranging from predominant clay and silty clay loams to stony, gravelly loams to a lesser extent.

Most of the cropland in the valley is irrigated grass pasture. Some alfalfa is also grown.

The Mancos Unit is monitoring habitat acreage changes. For the most part these changes are positive except for incidental losses of ditch associated wetlands and woody vegetation. Most impacts are short term in nature with re-vegetation occurring naturally or with manipulation (re-planting) in one to two growing seasons.

NRCS also conducted a wetland inventory which basically ground truth of a 1982 U.S. Fish & Wildlife Service inventory. The wetlands were mapped and classified according to the Cowardin System for Classification of Wetlands and Deepwater Habitats. Wetland types were mapped in ARCView to determine the acreage estimates by type, and a representative sample were given a wildlife value rating using the Avian Richness Evaluation Method, developed by Paul R. Adamus. The assessment provides bird species composition and richness of lowland wetlands and riparian areas within the Colorado Plateau region of western Colorado. This assessment is also being used with each land unit completing projects potentially impacting wetlands.

All wildlife applications are presently being funded if the meet the program objectives to improve, develop and protect quality habitat sufficient to meet or exceed the salinity habitat replacement responsibilities, and meet the minimum requirements set forth in the ranking tool.

Methods

A. AVIAN RICHNESS EVALUATION METHOD (AREM)

Paul R. Adamus developed this evaluation method in cooperation with the Environmental Protection Agency for use in the “Lowland Wetlands of the Colorado Plateau” (specifically the Salinity Control Units in Utah, Colorado and Wyoming).

In 1994, the Colorado Natural Resources Conservation Service decided to adopt AREM for evaluating wetland impacts in the McElmo Creek, Lower Gunnison and Grand Valley salinity control units.

The AREM is also used in the Mancos Valley Unit. The data from these evaluations is presented in Table 9.

Values are obtained by averaging the "six habitat scores weighted by species," multiplied by .01, and then multiplied by the acres to obtain unit values.

B. Wildlife Practices

Habitat changes are currently being tracked by acreage (see table 9). They reflect the adaptation and implementation of the practices listed below. We are also tracking dollars spent on wildlife practices vs. those spent on irrigation improvement practices. See Table 7.

- Grass/legume cover plantings for upland nesting and roosting
- Shallow water developments for waterfowl and shorebird feeding and resting
- Tree and shrub plantings for upland wildlife nesting, roosting and food
- Fencing to exclude livestock grazing either permanently or during critical use periods
- Bioengineering practices to improve or protect riparian habitat
- Occasional development of irrigation to improve forage quality for wildlife
- Rock drop structures to improve cold water fish habitat
- Forest Stand Improvement
- Brush Management
- Riparian Forest Buffer

Results

Since October 1, 2004 we have begun implementing contracts written for fiscal years 2004 through 2010. Long term negative impacts to wildlife habitat have been minimal. In FY2010 approximately 47.2 acres of upland habitat were fenced, had brush control performed and were seeded to native grasses and forbs. Also in 2010, 33.0 acres of wetland habitat (riverine) were fenced to eliminate grazing and 56.5 acres of wetland habitat were enhanced (including fenced acres).

Approximately 12% of all Mancos contracts are wildlife contracts. Approximately 4.2% of total salinity funding ($282,266.00) has been obligated for wildlife practices in the Mancos Unit. Of that amount, 2.4% ($162,723.00) or 57.6% of total wildlife funding has been spent to date. Note percentages are cumulative.

Table 7 - Money Obligated and Spent on Wildlife Practices

Year	Total Contract Dollars (annually)	Planned Wildlife Contract Dollars (annually)	Applied Wildlife Contract Dollars (annually)	Percent Planned to Spend on Wildlife (cumulative)	Percent of Wildlife Dollars Spent to Date (cumulative)	Percent of Total Dollars Spent on Wildlife to Date
2004 Salinity	$987,798	$113,997	$90,477	11.5%	79.4%	9.2%
2004 Basin	$9,450	0	0	0	0	0
2005 Salinity	$2,007,971	$36,000	$26,339	4.8%	77.9%	3.9%
2005 Basin	$93,355	0	0	0	0	0
2006 Salinity	$1,645,556	$32,453	$15,627	3.7%	72.6%	2.9%
2006 Basin	$134,444	0	0	0	0	0
2007 Salinity	$588,070	$30,729	$6,141	3.7%	65.0%	2.7%
2007 Basin	$235,327	0	0	0	0	0
2008 Salinity	$520,533	$14,834	0	3.6%	60.8%	2.4%
2008 Basin	$38,168	0	0	0	0	0
2009 Salinity	$403,166	$54,254	$20,913	4.2%	57.6%	2.4%
2009 Basin	0	0	0	0	0	0
2010 Salinity	$65,839	$5,362	0	4.2%	57.6%	2.4%
2010 Basin	0	0	0	0	0	0
2011 Salinity	$76,321	0	$20,072	420.0%	5760.0%	240.0%
2011 Basin	0	0	0	0	0	0

Note: Salinity funded contracts are through the Environmental Quality Incentives Program (EQIP) salinity allocation, and Basin funded contracts are through the BOR matching Basin States Program (BSPP/BSP).

Table 8 - Number and Percent of Contracts Planning and/or Applying Wildlife Practices

Year	Total Number of Contracts (annually)	Number of Contracts with Planned Wildlife Practices (annually)	Percent of Contracts with Planned Wildlife Practices (cumulative)	Number of Contracts with Applied Wildlife Practices (annually)	Percent of Wildlife Contracts with Applied Wildlife Practices (cumulative)	Percent of All Contracts with Applied Wildlife Practices (cumulative)
2004	5	1	20.0%	1	100.0%	20.0%
2005	16	3	19.1%	3	100.0%	19.0%
2006	33	3	13.0%	3	100.0%	13.0%
2007	27	2	11.1%	2	100.0%	11.0%
2008	14	1	10.5%	0	90.0%	9.5%
2009	12	3	12.1%	3	84.6%	10.3%
2010	7	1	12.2%	0	83.4%	10.2%
2011	5	0	11.7%	2	100.0%	11.7%

Note: All numbers include both EQIP and Basin States Program, and all percentages are cumulative.

Table 9 outlines the acres of habitat management planned and applied. Approximately 91.25 acres of wetland habitat and 523 acres of upland habitat have planned management practices. Habitat management practices have been applied to 84 acres of wetland and 431 acres of upland habitat. To date, 92% of planned wetland management and 82% of planned upland management practices have been applied. Wetland impacts are recorded in the table below.

Table 9 - Acres of Wildlife Habitat Management Planned and Applied and Wetland Impacts

Year	Acres of Wetland Habitat Planned	Acres of Wetland Habitat Applied	Percent of Planned Wetland Acres Applied	Acres of Upland Habitat Planned	Acres of Upland Habitat Applied	Percent of Planned Upland Acres Applied	Acres of Wetlands Impacted	Wetland Value Before	Wetland Value After
2004	14.5	0	0	368	0	0	0	0	0
2005	16.9	0	0	429.7	323.0	75.2%	0	0	0
2006	67.0	36.7	54.7%	462.5	388.7	84.0%	37.9	39.1	62.6
2007	86.9	40.4	46.5%	490.1	416.3	84.9%	43.0	43.1	63.0
2008	90.9	84.3	92.7%	490.1	431.1	88.0%	90.0	130.7	179.4
2009	126.5	117.3	92.7%	703.2	449.1	63.9%	124.3	178.9	257.2
2010	126.8	117.3	92.4%	736.2	449.1	61.0%	124.5	182.9	263.5
2011	126.8	117.3	92.4%	736.2	480.1	65.2%	124.5	182.9	263.5
					Overall Net Change			80.6	

Note: All numbers include both EQIP and Basin States Program, and all data is cumulative.

Discussion & Conclusion:

Voluntary replacement efforts are meeting the expectation for the area. The voluntary replacement success in this area could change as more landowners participate, but habitat replacement is concurrent to date. Much of what is happening with development in the McElmo Creek Unit is occurring at a much slower pace in the Mancos Valley. The "character" of the valley is important to its citizens and wildlife is a component of that character.

At this time habitat replacement is substantially exceeding habitat losses. The local conservation district and the Mancos community have organized the Mancos River Stakeholders Group and placed a great deal of importance on the Mancos River. This has led to six landowners protecting and enhancing riparian habitat that transects their property. It has also led to NRCS assisting those individuals in their efforts. Additionally the District has been obtaining grant money in order improve the Mancos River. This will stimulate more interest in enhancing and preserving the river bottom as it will lower the cost to the landowner.

Approximately 2.80 miles of river bottom and associated wetland habitat has been fenced to exclude or restrict grazing. Within some of those stretches re-vegetation and rehabilitation practices have being installed. Adjacent to the river almost 400 acres of upland habitat on one ranch/farm has been set aside and enhanced for wildlife. Further efforts to protect and enhance additional riparian acreage are being set in motion and similar results in future years are expected.

Several offsite wetland enhancement projects on higher elevation wet meadow habitat have been implemented. Additional upland habitat enhancement projects in mixed pinon/juniper and ponderosa communities have been completed to improve turkey habitat.

The majority of the properties with wildlife contracts have been placed into perpetual conservation easements providing long-term protection them from development. Due to the location, long-term easements, and landowner commitment, the values to wildlife habitat on these properties should be preserved and in many cases improved.

The on-going assessment of the wildlife habitat projects will determine the projects that are still in place and are being managed to promote good wildlife habitat. The assessment will also determine the acres that meet the requirement of a replacement value similar to the losses associated with water enhanced habitats impacted by the salinity control irrigation improvements.