

**MONITORING & EVALUATION REPORT--2007**  
**SILT SALINITY AREA**  
**COLORADO RIVER SALINITY CONTROL PROJECT**  
**USDA-NRCS**



**IWM MONITORING & EVALUATION REPORT**

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**WILDLIFE MONITORING & EVALUATION**

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**M&E EXECUTIVE SUMMARY**  
**HYDROSALINITY**

**Project: Silt Salinity Area**

- The project plan is to treat **2,800** acres with improved irrigation systems.
- The project plan is to reduce salt loading to the Colorado River system by **3,990** tons of salt.
- To date, **496.1** acres have improved irrigation systems applied.
- In FY 2007, salt loading has been reduced by **183** tons/year.
- The cumulative salt load reduction so far is **732** tons/year.
- Current contracts once applied will reduce salt load by a total of **1,849** tons/year on a total of 1068 acres.

**Cost effectiveness –**

- The *planned* cost per ton of salt saved in 2007 year contracts is **\$61.62/ton**.
- The *planned* cost per ton of salt saved with prior year contracts is **\$138.14/ton**.

This is based on the following formula:

$$\text{FA} + \text{TA} = \text{Total Cost} \times \text{Amortization Factor} = \text{Total amortized cost}$$
$$\text{Total amortized cost divided by total annual tons salt saved} = \text{Cost/Ton}$$

FA is total dollars obligated in EQIP & Parallel Program (including wildlife).  
TA is 67% of the FA (This number includes education and monitoring).  
Amortization factor for 2007 is **.07007**

**M&E EXECUTIVE SUMMARY**  
**WILDLIFE – 2007**

Estimates of losses so far are as follows:

- **Wetlands – 0 acres.**
- **Riparian/Ditches – 15.4 acres**

Mitigation efforts so far have yielded one contract.

**Table 1: Items to be installed are in the following table.**

Practice	ac	ft	no	Grand Total
Dike		1610		1610
Field Border		27185		27185
Pond			1	1
Range Seeding	47.5			47.5
Tree/Shrub Establishment	6.5			6.5
Wetland Restoration	31.2			31.2

**Table 2: Funding for Wildlife Habitat Replacement Projects (All Salinity Programs)**

Funds obligated to wildlife projects 2005-2007	\$66,346
Funds spent on wildlife projects 2005-2007	\$0
% of total salinity obligated funds that are obligated to wildlife projects through 2005-2007	4%
% of total salinity obligated funds spent on wildlife projects through 2007	0%

**Hydro  
Salinity  
Monitor  
ing &  
Evaluat  
ion**

**Summary  
2007**

In the past various irrigation systems were monitored and evaluated with respect to their average seasonal efficiencies and overall average deep percolation reduction, which is one of the principle indicators of salinity.

The following is an analysis utilizing past summary base data to reflect overall deep percolation reduction, with respect to the various irrigation systems applied to date.

- **Irrigation Systems Planned (2007) = 659 Acres**
- **Irrigation water conveyance delivery/ gated pipe installed (2007)**  
Acres treated = **4.6 Acres**  
Average Efficiency **45%**
- **Sprinkler irrigation systems installed (2007) = 347Acres**  
(Includes Linear, Center Pivot, Side Roll, & Big Gun)  
Acres treated= **347 Acres**  
Average Efficiency= **86%**
- **Overall Average systems efficiency= 59%**

# **SILT SALINITY AREA IRRIGATION MONITORING & EVALUATION 2007 REPORT USDA & NRCS**

## **Introduction**

Since 2005, the Natural Resources Conservation Service (NRCS) has been applying improved irrigation systems and practices with cooperators in the Silt Salinity Area Salinity Control Area, through the Colorado River Salinity Control Program including both Environmental Quality Incentives Program (EQIP) and Basin States Parallel Program Funding. All EQIP and Basin applications go through a ranking process that yields the most cost-effective projects on cost per ton of salt saved.

## **2007 Highlights & Accomplishments**

The 2007 highlights of IWM Projects included Irrigation Water Management activities on two Center Pivot Sprinkler irrigation systems with a third new system installed during the fall. Landowner interest in new irrigation technology presents a very exciting and challenging atmosphere. The efficiency in water savings and the reduction of farm energy requirements will become major benefits to those farmers and ranchers who want to have a future in agriculture.

### **IWM Accomplishments include the following:**

- Total Producer Contacts: 4 Basin States
- Total IWM Requests: 13
- Follow-up Contacts: 13
- IWM Contract Evaluations: 28
- Hydro-Salinity & Wildlife Evaluations: 13

## **2007 Value of Irrigation Practice's Reviewed**

**BASIN: \$423,195**

**EQIP: \$677,006**

**TOTAL: \$1,100,201 on 659 acres (Cost share dollars)**

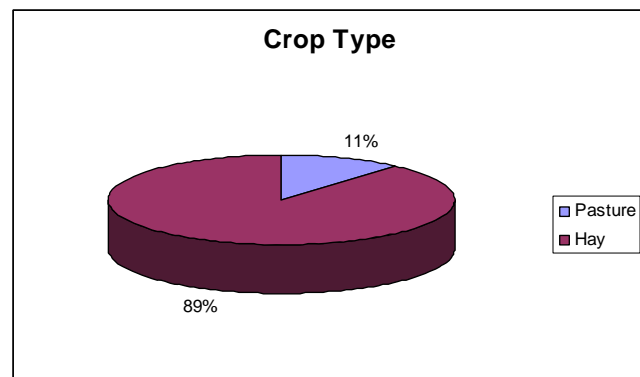
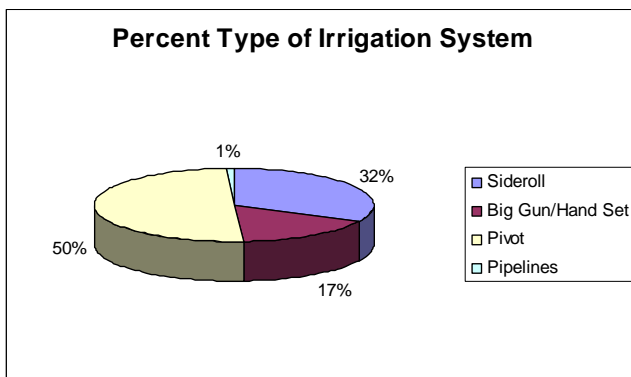
1. The Goal of IWM program is to provide the necessary assistance and information to help the Salinity Program achieve the level of salinity reduction above what the program originally planned for. This IWM activity will provide the lacking and much needed follow up assistance and public relations, with the landowners to help them maximize their irrigation efficiencies and over-all success.
2. 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.

## NRCS Irrigation Efficiency Standards for Evaluations

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%

### 2007 IWM STATUS REVIEW OF EVALUATED PRACTICES BY ACREAGE / CROP TYPE / PRACTICE Glenwood Springs Field Office

TYPE OF PRACTICE	HAY	PASTURE	TOTAL ACRES	% BY PRACTICE
UNDERGROUND DELIVERY & GATED PIPE	3.11	1.48	4.6	0.7%
SIDE ROLL SPRINKLER	212.8		212.8	32.3%
CENTER PIVOT SPRINKLER	331.8		331.8	50.3%
BIG GUN	38.6	71.4	110	16.7%
TOTAL ACRES REPRESENTED	586.3	72.9	659.2	100%



## 2007 OUTLOOK

The Implementation of the new IWM tool to 2007 contracts and the 3 year version of follow-up will be an added benefit to explore with producers. NRCS Planners will start the process by use of the new IWM Tool to develop a basic plan.

Advancement in sprinkler and drip type irrigation is happening at an accelerated pace. This innovative technology may very well prove to be the means of sustaining agriculture on developmentally priced land of the area, by linking technology to value added crops. IWM Specialists are an excellent means of transfer of this information from outside sources to the isolation of Western Colorado.

Energy efficiency is the one of the hottest topics in the national spotlight. The energy savings resulting from utilization of higher water application efficient systems needs to be advocated, publicized, and incorporated in to project ranking considerations.

**WILDLIFE**  
**2007 MONITORING & EVALUATION REPORT**  
**SILT SALINITY AREA EQIP PRIORITY AREA**

**History and background:**

The Silt Salinity Area is located in west central Colorado on the Silt Mesa just north of the Colorado River between the towns of Silt and Rifle. Irrigation water comes from the Colorado River via the Pump Ditch, the Rifle Gap Reservoir via multiple ditches and Grass Valley Reservoir at Harvey Gap via the Farmers Irrigation Canals. The area was added to the Basin States and EQIP salinity programs in 2006. The Silt Area is characteristic of arid, cold desert ecosystems common to western Colorado. Historically, the Silt Area was dominated by desert sagebrush vegetation communities. Narrow wetlands and riparian zones were located along the Colorado River 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 pastures, and crops. Crops grown are alfalfa, corn and small grains. All crops are entirely dependent upon irrigation for production. Urban and commercial development over the last 20 years has reduced the agricultural area to more small (<40 acres) ranches and farms. 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. 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 Silt Area are addressed in the Silt Salinity Control Project Plan and Environmental Assessment, prepared jointly by the Bookcliff Conservation District and the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS). The Environmental Assessment determined that 50 acres of grassy/brushy riparian type vegetation along ditches would be lost due to improvement of on-farm and off-farm irrigation systems. It also states that about 33 acres of irrigation induced wetlands may be lost by the actions. NRCS is responsible for the tracking and mitigation of these acres.

**Table 1. Salinity Control Programs in the Silt Area**

Environmental Quality Incentives Program (EQIP)	2005 – 2007
Colorado River Basin States Parallel Program (BSPP)	2005 – 2007

Since the start of this program money from EQIP and BSPP have been made available to offset any wildlife habitat acres lost through the program.

Since the start of the program NRCS has been tracking riparian/ditch habitat loss along with wetland losses due to improved irrigation systems.

**Current methods**

In the Silt Area wildlife habitat replacement progress is tracked by acres. The process of reporting and field verification of program results and records will continue for the remainder of the program.

For the duration of the salinity program, the type of wildlife improvement practices has remained consistent. Practices include ponds, fencing, grass and forbs establishment, brush (tamarisk control) management, and tree and shrub establishment. To address Colorado River endangered fish concerns, all ponds are constructed with fish screens on outlet structures (unless the pond will be drained 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 Glenwood Springs Field Office. This data represents the final audit and update for all wildlife projects in the Salinity Area, and are verified from field visits performed by a wildlife biologist.

Estimates of losses so far are as follows:

- Wetlands – 0 acres.
- Riparian/Ditches – 15.4 acres

Mitigation efforts so far have yielded one contract that if fully applied would be credited for up to 38 acres of habitat replacement.

**Table 1: Items to be installed are in the following table.**

Practice	ac	ft	no	Grand Total
Dike		1610		1610
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**Discussion of Results**

In the last 2 years

only one landowner has signed up to use the salinity program to install wildlife habitat. This one contract will mitigate many acres of wildlife habitat lost to the installation of irrigation systems. As the program grows and operators see the benefits of these practices we expect the demand to increase. The operator has begun installation of these practices and should have them completed by October of 2008. This one contract is with NRCS under the EQIP program. No signups have been taken to do wildlife work under the BSPP.

**Conclusion**

Replacement effort for wildlife acres is dynamic as urban development impacts areas that once were managed for wildlife under the salinity programs. Effort must be placed upon increasing the interest of landowners to establish and maintain wildlife habitat. Direct contact with landowners that 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 smaller areas. NRCS can utilize these opportunities by showing the benefits of improving small open space parcels for wildlife habitat.

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.