Spillway of the Big Sandy Reservoir

2015 M & E Progress Update Report

Big Sandy Salinity Control Area

This is the Monitoring and Evaluation Report for the Big Sandy Salinity Control Project located near Farson, Wyoming. Although we will continue to monitor the project in terms of operation and maintenance of the in-place systems, we will no longer monitor the deep and shallow wells, nor the river.

We will continue to provide an annual status report on the project in terms of systems and wildlife replacement practices as well as other activities that affect salt savings.

The purpose of this report is to continue the formal Monitoring and Evaluation protocols that were established in the Big Sandy Monitoring and Evaluation Plan published in 1988. However, the only protocol that is left to monitor is the wildlife replacement.

As proposed in the EIS, the objectives of the Big Sandy Unit of the Colorado River Salinity Control Program were:

- treatment of 15,700 acres with improved irrigation systems
- reduction of salt loads by 52,900 tons/year
- conservation of 20,470 acre-feet of water;
- hayland production increases from 1.6 tons/acre to 4 tons/acre
- replacement of any wetland wildlife values foregone estimated at 860 acres of Type 3, 4, and 10 wetlands (USFWS Circ. 39).

Hydro-salinity: (see 2006 M& E Report)

Irrigation Monitoring and Evaluation

As proposed in the EIS, the project would treat 15,700 acres and save a total of 52,700 tons of salt. The 2000 M & E report stated the project had treated 9,221 acres and reduced salt loading by 32,245 tons. The 2005 Mason report showed 11,220 treated acres and a total of 42,805 tons of salt saved. A half-pivot of 61 acres were added to the project in 2005, with no additional acreage in 2006.

Since the 2000 evaluation and 2000 report, there have been 1,999 acres added to the project, or about double what was expected. However, during 2005 and 2006, additional treated acreage have been negligible, and in fact the pivot in 2005 was funded from the Sweetwater County regular EQIP allocation. It is anticipated that this would continue as long as EQIP funding is kept at its current level within the state. Changes in land ownership or the implementation of the pipeline projects could increase the need for on-farm fundng.

As of March of 2014, there are approximately 13,077 acres treated or under an improved irrigation system. Using the new factor of 4.92 tons of salt/acre, an additional 242 tons have been saved with a total of 49,922 saved in the project area.

The 2006 Mason report indicated a total FA expenditure of $8,972,633, and associated 40% TA of $3,555,053 for a total of $12,527,686. Amortized at 5.375 for 25 years and using the 42,805 tons of salt saved, calculates a cost effectiveness of $21.55 per ton of salt saved.

A complete review of the Big Sandy Project was undertaken in an effort to reconcile treated acres and the salt savings as reported in previous M & E and Mason reports. However, due the logistics of assessing all previous payments by program, this attempt was ultimately abandoned.

The project was funded intially with CRSCP money with NRCS making the payments. In 1996 interim EQIP and Basin States “Parallel” Program funds were used, and in 1997 EQIP coupled with Forum Parrellel dollars were used on the same projects. Payments were made by FSA and by the State Engineers office. We have some accounting but not a complete accounting of these dollars and it is beyond the scope of the Monitoring and Evaluation Report to try and rectify those figures. We do have an accounting spread sheet for the Parallel dollars from the Basin States Program. There were a total of $761,325 dollars obligated in contracts, $540,425 paid out to producers. There are still $36,953 obligated in contracts with $183,947 of slippage. Slippage are dollars that were obligated to a contract and that remained unspent when the contract was completed.

The 2006 Mason report shows a sum of 11,222 acres of land under contract. This report is inaccurate. Early in the project their was 186 acres of improved flood. From 2001 to 2006 this acreage was added annually,

resulting in an error in the report. In an attempt to correct this error, two data sources were reviewed. One source was a geospatial layer originally completed to assist the Eden Valley Irrigation District in confirming their water rights. This GIS layer shows a total of 10,595 acres installed and 41 acres still under contract awaiting installation.

The second data source was a spread sheet that tracks the contracted acres and the acres under design. In addition, this spread sheet also showed the total cost and the cost-share obligated to the contract, but unfortunately, not the cost-share expended. The spread sheet tallies 10,879 acres of improved irrigation systems installed.

Sixty acres has been taken out of contract and the pivot sold with the water right. The new owner has installed this on new land but the same water and salt savings would be achieved so no adjustments are made. The design information is considered the best of the two sources. The difference in the two is 247 acres. The amount of error in digitizing these acres is plus or minus two acres per pivot because of scale and resolution of the photos. This would account for the diffence in the amount.

Historically, 1.4 acre-feet per acre has been used as the water savings figure for treated acres and 2.6 tons per acre-foot for the associated salt savings.

Therefore,

10,879 acres treated x 1.4 acre-feet per acre = 15,230 acre-feet of annual water savings

15,230 acre-feet of annual water savings x 2.6 tons of salt per acre-foot = 39,600 tons

If we consider the total funds expended (FA + TA) of $12,527,686 and amortize that at 5.375 for 25 years, we calculate a Total Annual Cost of $922,969. Dividing that by our Annual Salt Savings of 39,600, results in a project life cost of $23.60 per ton of salt saved.

Total Treated Acres	Total Water Saved	Total Salt Reduction	Cost Effectiveness
10,879 Ac.	15,230 Ac.-Ft.	39,600 Tons	$23.60 per Ton

It should also be noted that producers in the area have treated an additional 1,000 acres (via the installation of center pivots) without program assistance. This brings the total treated acres to about 11,900 acres out of the average irrigated acreage of 15,700 or 75% treatment.

Evidently, one aspect of the project that has never been tracked are the numbers of acres that are no longer irrigated. This actual amount is not known exactly and is hard to determine. Each irrigator has a water right for X amount of acres. When converting to pivot some irrigators were able to exchange acres and irrigate their acres allotted. However, because of the use of pivots, some acres in the corners have been idled. In good water years, and where those acres are close to a ditch, some of these acres still flooded, although many are not. It is really impossible to tell exactly how many acres this effects, although NRCS' estimate puts this number between 500 and 750 acres. These acres are no longer flooded so a salt savings is being realized, but since there is no cost-share component, no attempt has been made to quantify the exact acreage nor report the salt savings. In the future, these acres might be pooled or the water rights transferred to other acres. These acres would mostly likely be sprinkled, so the water savings would be calculated based on the 1.4 acre-feet per acre, and the salt savings would be calculated using the 2.6 tons of salt per acre foot saved.

In 2007, revisions to the annual goal and salt loading were revised by the science team. The recommended annual goal was revised from 52,700 tons annualy saved tons, to 83,500 tons. 69,500 tons would result from installing improved irrigation systems on 15,700 acres and 14,000 tons would result from replacing on-farm delivery ditches. It was further recommended that the "before" load be adjusted to 4.92 tons per acre. Using this adjustment, 55,957 tons had been controlled through 2007 at a cost effectiveness of $20 per ton. **See Attached Letter to Wyoming NRCS STC, Xavier Montoya, Dated November 8, 2007.**

Monitoring Wells: (see 2006 M&E report)

- No monitoring is taking place and the deep wells have been sealed.

Wildlife Habitat and Wetlands: (see 2006 M&E report)

- The wetland replacement acres have been exceeded by 10+ acres and we have met our goals of replacement acres through voluntary measures. **See Attachments A and B.**

In summary, after extrapolating the data from the 2000 Monitoring and Evaluation Report, concluded that the project area's habitat replacement projects offset the impacts of the project and resulted a net gain of wetland acres. We estimated there to be 10.77 acres of additional wetlands in the project area that were replaced to offset the impacts of the flood to pivot irrigation contracts.

The 2000 Monitoring and Evaluation report was the most comprehensive of the evaluation reports and summarized everything up to that point. The NRCS supplemented this report in the following years through 2004. The last two years the Monitoring and Evaluation report has not been submitted. However, basically nothing had changed during these two years from the 2004 report.

During 2000 NRCS did an internal review of the program to try to answer the questions: "did we do what we said we were going to do and are we done"? At this time NRCS felt that the program was on schedule but winding down. We estimated at that time that if we were able to complete an additional 1,000 acres we would be doing well. Of course, this assumed not major land ownership changes. Our estimate was fairly accurate, as this was the approximate amount of acres treated between 2000 and 2006.

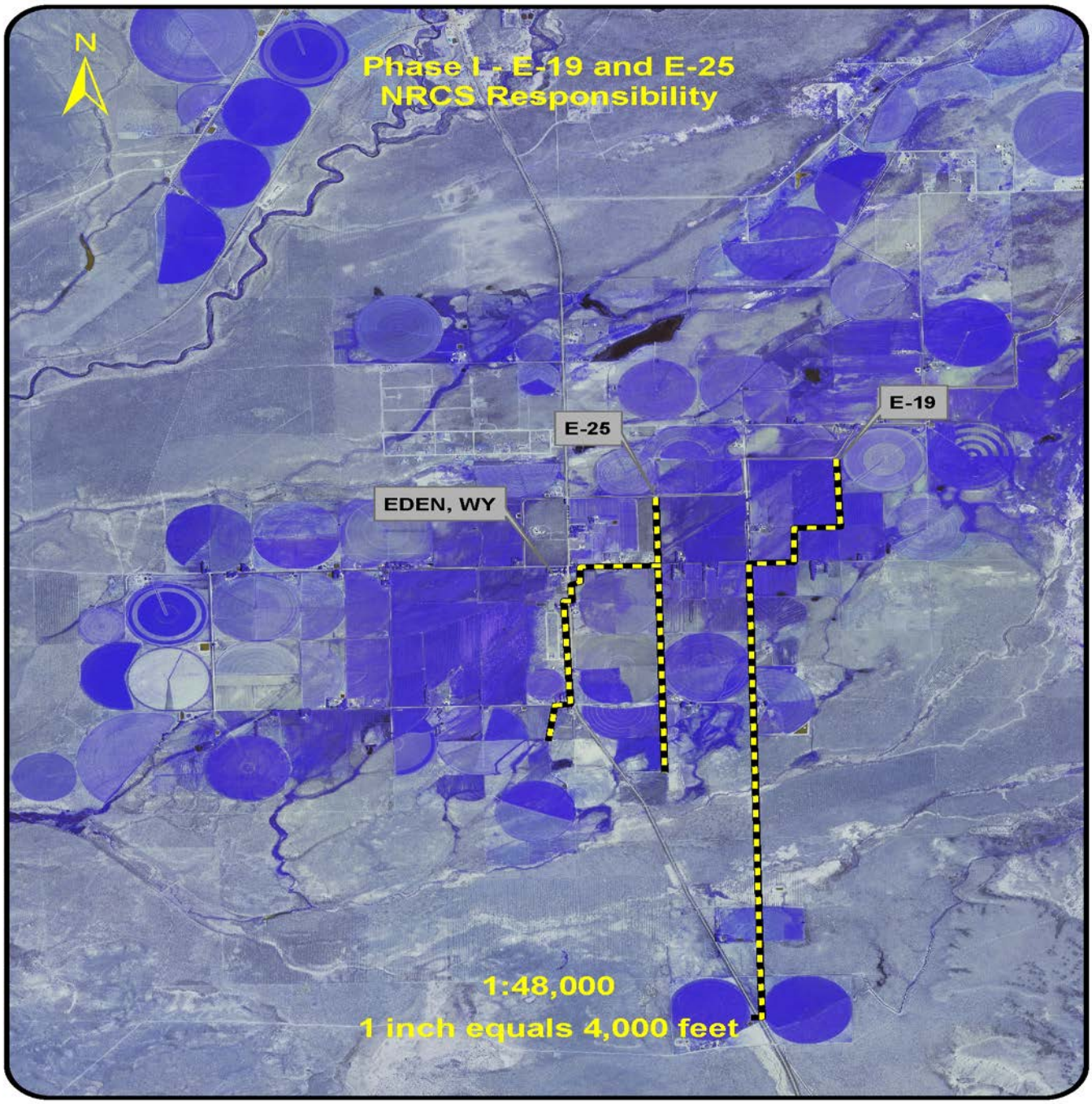
Project Status:

Land Treatment Contracts

Currently there are 6 active contracts, with practices to implement. These active contracts are for IWM record keeping, center pivots, and the installation of podlines in the existing corners and two new pivots.

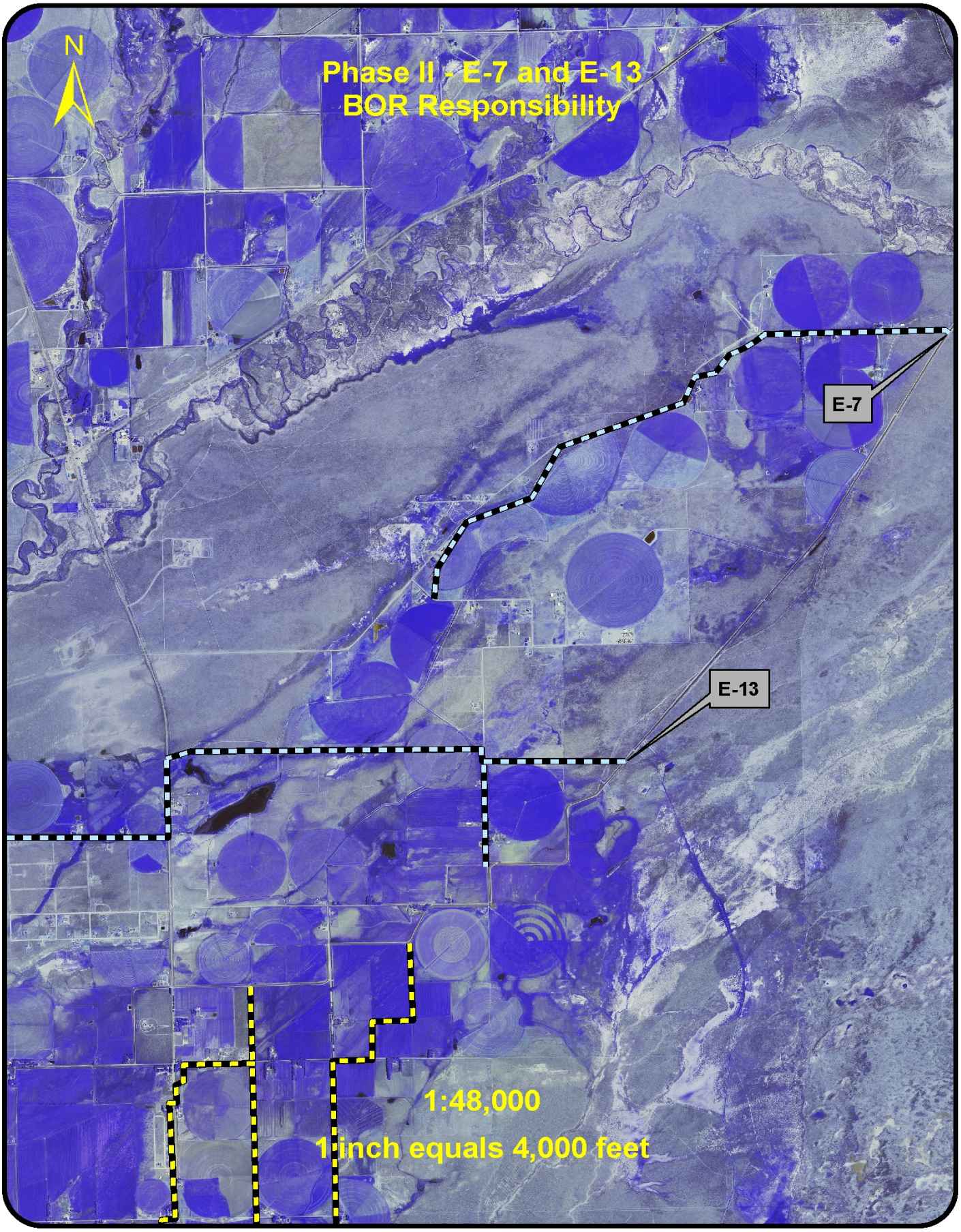
Eden Pipeline – Phase 1 – E-19 and E-25 (NRCS Responsibility)

- Phase 1 has been completed.
- These pipelines were NRCS's responsibility concerning the wetland replacement acres.
- The wetland replacement acres have been successfully implemented along the existing pipeline route of E-19.



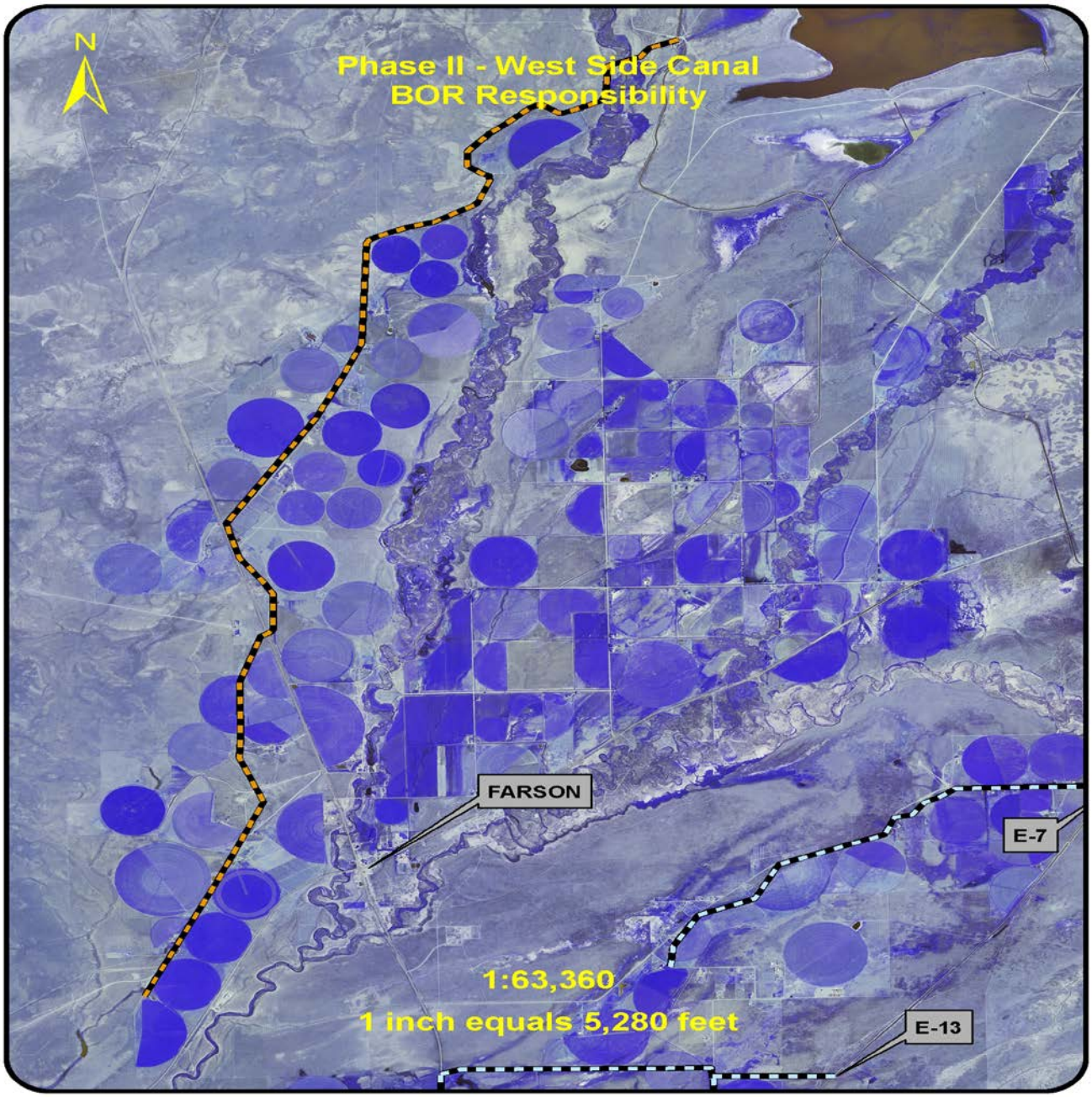
Eden Pipeline – Phase 2 – E-7 and E-13 (BOR Responsibility)

- Phase 2 has been completed on laterals E-7 and, E-13.
- These pipelines were BOR's responsibility concerning the wetland replacement acres.


N
Phase II - E-7 and E-13
BOR Responsibility
E-7
E-13
1:48,000
1 inch equals 4,000 feet

Eden Pipeline – Phase 2, West Side Lateral – BOR Responsibility

- Phase 2, West Side Lateral, was completed in the fall of 2013.
- This pipeline is the BOR's responsibility concerning the wetland replacement acres.



Area Impacts:

Decrease in sediment

- Although the gauging stations that were once in place have now been removed or are no longer functioning, one interesting aspect is the decrease in sediment load from the Big Sandy to the Green River. According to the people working at the water treatment plant in the City of Green River, there has been substantial decreases in the amount of sediments being removed by the water treatment plant. Although in the original EIS, this concern was not addressed, it is interesting to see it as a positive effect from going from wild flood to sprinkler systems. One can speculate from the decrease in sediment, there is also a decrease in salt, which was the intent of the project.

Urban Sprawl in the Big Sandy Salinity Control Area

- Currently, there is some urban sprawl going on in the area. The majority of it has not affected any of the past installed practices with the exception of one pivot for 40 acres. The ground which the pivot was on, forfeited its water rights, so the outcome of salt savings is better than with the pivot on it.

- The majority of the new building in the Farson-Eden area is basically around the crossroads of the Farson area.

Energy Prices

- Current prices of diesel, gasoline, and propane have definitely affected agriculture.

- Due to the continued high prices of gasoline and diesel fuel, many of the older pivots that had gensets, have converted over to electric pumps.

Land Values

- Land values are rising in the Farson-Eden area just like all areas in the west. Ten years ago, the price per acre for irrigated hayland was around the $700.00 mark.

- Today, land prices are in the $1700.00 and higher category for irrigated ground in the Farson-Eden area.

Attachment A: Lucy Jordan Letter

Big Sandy, Eden Lateral, & Blacks ForkWyoming Salinity Control Program Areas
August/September 2005 Trip Report
Lucy A. Jordan, U.S. Fish & Wildlife Service
Prepared September 28 and October 18, 2005

The following trip report draws information from and largely concurs with the trip report prepared on September 7, 2005 by Robin Naeve, USDA-NRCS Contract Biologist, Rock Springs, Wyoming (copy attached).

At the invitation of Ralph Swift, NRCS Assistant State Conservationist, on September 1-2, 2005, I participated in a field review of implemented and proposed salinity control projects and associated wildlife habitat replacement measures in Wyoming. Participating in the field review were: various staff from the NRCS Wyoming State Office (state wildlife biologist, state engineer, etc.); local NRCS staff; Travis James, NRCS Salinity Control Program Coordinator; an aquatic and a terrestrial biologist from Wyoming Game and Fish Department; and the FWS Partners Program Coordinator for Wyoming.

Day 1: The trip began in Rock Springs with a presentation by NRCS on the status of project implementation, evaluation of wildlife habitat impacts, and wildlife habitat replacement measures. As explained, Habitat Evaluation Procedure (HEP) was used to evaluate impacts and success of replacement. Projects were planned and implemented through a shared wildlife biologist position using programs available from NRCS, FWS Partners Program, and Wyoming Game and Fish. Since 2001, when the position became vacant and was not able to be refilled, data gathering has lapsed. Unfortunately, the original data was housed in what is now an obsolete computer platform and is not retrievable. Recently, NRCS has made extensive efforts to recreate as much data as possible and update the habitat evaluation. The results were presented at the pre-field meeting and the presentation made available to all of us. Calculations show that there are 10.77 additional acres replaced than impacted.

However, since additional incentive programs beyond those ascribed strictly to the salinity control program (e.g., FWS Partners Program) were used to achieve replacement, we believe it is appropriate and equitable to simply consider the replacement complete and no further action needed for already implemented salinity control measures of the Big Sandy project.

During the morning field trip, we reviewed typical Big Sandy canal piping projects and several wildlife habitat replacement projects. There were areas where canals were deliberately left untreated in order to support wildlife habitat. In at least one area, the retained habitat was adjacent to a homestead and habitat value was compromised by grazing by domestic ducks and geese. Nevertheless, the shrubs and cottonwood trees still provide important bird habitat in that largely treeless part of Wyoming. We visited several large wetland enhancement projects on private lands created through the partnerships mentioned above. They were created by building low berms at the base of natural swales so that irrigation water return flows could be impounded. Native vegetation was planted and the areas fenced. Their size and wildlife habitat value were impressive. We noted, however, that non-native invasive species could be a problem (white top was observed) and that wildlife habitat value could be improved with increased upland buffer size in some cases. Maintenance will be necessary to ensure the high wildlife habitat value over the long term.

We also viewed the Eden Lateral proposed project and discussed current wildlife habitat value and potential habitat replacement opportunities. The Lateral canal banks are heavily vegetated primarily by non-native

grasses. We agreed that the term "riverine" should not be applied to these areas. We further agreed that the existing habitat value was minimal. However, we also observed both ducks and herons using the areas. We agreed that in general "on-site" habitat replacement might not be as valuable as other options available in the area (such as the bermed wetlands mentioned above). However, there are reaches of some canals that border native rangelands on public land. Retaining water in those reaches, or enlarging the canals in those areas, with agricultural land on one side and native rangeland on the other, could contribute valuable wildlife habitat replacement.

Over lunch, the group engaged in a discussion about the relative value to wildlife of the wetlands created through berming of swales, which are not natural to the landscape, as compared to restoration or enhancement of riparian and floodplain wetland habitat associated with natural drainages, particularly the Big Sandy River itself. The group was informed of an interagency public/private partnership effort to improve aquatic and riparian habitats on the Big Sandy River. The field tour was diverted to see and evaluate this project and its potential for salinity program wildlife habitat replacement. We were informed that there is currently some disagreement among the partners regarding the types of aquatic habitat improvements that are desirable and the relative priorities for native versus non-native sport fish. Upon review, the group agreed that there is potential for wildlife habitat improvement along the Big Sandy River. However, several important considerations need to be noted:

- The project as currently implemented focuses on in-stream aquatic habitat improvements, with the assumption that riparian habitats will also benefit. As mentioned, there is disagreement about the purpose and type of in-stream habitat improvement that should be installed. It is unclear whether instream measures alone would result in significant riparian vegetation improvement.

- There are many livestock grazing allotments along the river, each needing access to the river for water. Despite extensive efforts by the partnership, managing livestock to reduce or eliminate undesirable impacts to riparian vegetation has proven to be very difficult. Some fencing and modifications of allotment management plans have been implemented, but much more is needed before significant wildlife habitat improvements are evident. This would be the major mechanism through which salinity control program wildlife habitat replacement would occur. Although highly desirable, it is not clear that significant habitat gains are feasible in a reasonable period of time such that this should be considered for salinity wildlife habitat replacement.

- The BLM manages the stream-side areas (and adjacent upland areas). It is problematical whether or how NRCS habitat improvement programs can be applied to public lands to achieve salinity control program wildlife habitat replacement.

The group concluded with the following observations and action items:

1. The previously implemented Big Sandy Salinity Control Project has completed its wildlife habitat replacement responsibilities.

2. The Eden Lateral will result in some loss of wildlife habitat, however its value is such that acre per acre replacement would not be required. NRCS will provide to FWS for review and concurrence an estimate of the total acreage potentially affected and a rationale for the amount and type of wildlife habitat replacement that would be appropriate.

3. NRCS, Wyoming Game and Fish, and the FWS Partners Program will develop several conceptual options for wildlife habitat replacement for the Eden Lateral project. The options will include a mix of: damming and leaving water in open canals in selected areas adjacent to native rangelands; berming

swales and creating or enhancing wetlands; and measures that can be approved and implemented by the partners for Big Sandy River riparian and floodplain wildlife habitat restoration and enhancement.

4. FWS will meet with the Bureau of Reclamation (a partner in the Big Sandy River restoration project) to clarify issues and get a better understanding of the project and various partners roles and priorities.

5. FWS will assess the opportunity to contribute resources from other programs (such as the Central Utah Project 314(c) out-of-state mitigation program) to wildlife replacement projects, especially the Big Sandy River project, in order to increase the scope and value of salinity program wildlife habitat replacement measures.

6. FWS will review and provide comments and concurrence on the wildlife replacement program mutually developed by the agencies (number 3 above).

During the evening, as an extra curricular activity, we visited a very large wildlife habitat restoration and enhancement partnership project on private land on the floodplain of the Bear River outside of Evanston. The project was very impressive and the landowner was very enthusiastic and knowledgeable. The project has improved his livestock operation as well. These types of projects provide a showcase to demonstrate that productive agriculture and productive wildlife habitat are interdependent and mutually beneficial.

Day 2: The group met in Lyman to review the potential Blacks Fork Salinity Control Project. We were joined by local NRCS and Soil Conservation District representatives. The project was outlined on maps as were potential wildlife habitat replacement opportunities. We then toured the proposed project area to better understand the salt sources, irrigation system and potential improvements, and potentially affected habitat areas. The irrigated agricultural operations that would be affected by the salinity control measures are generally on benchlands through which run swales or drainages that sometimes have natural springs or seepage from return flow irrigation.

As an example of a potential approach to salinity program wildlife habitat replacement, we visited a planned wildlife habitat enhancement project (from the Wetlands Reserve Program, a non-salinity NRCS program) which involved berming or damming a natural swale in several places to capture spring and irrigation return flow water. The habitat types to be created are intended to replace and/or supplement habitat types reduced or eliminated by agricultural activities in the Blacks Fork and Smiths Fork floodplains and by dewatering of the streams for irrigation. The project has good potential, and it will be interesting to see it when it has been in place for awhile. We did note invasive species concerns. It was a pleasure to meet a landowner so enthusiastic about wildlife habitat improvement.

We then viewed several other areas, including a project of interest to Wyoming Game and Fish for improving Austin Reservoir for fish and waterfowl. Of most interest to FWS were opportunities to restore the Blacks Fork River. The river has a broad floodplain where thickets of willow, native shrubs, and some cottonwoods remain among severely overgrazed areas. Both riparian and aquatic habitats are significantly impacted by livestock grazing. The river is largely dewatered, but the floodplain appears to be sub-irrigated either from river flows or return flow irrigation. The livestock forage quantity and value in the floodplain does not seem large. We discussed the option of working with landowners to fence off significant portions of the floodplain to allow native vegetation to fill in, and potentially compensating landowners for the value of forage foregone. This option would provide high riparian and aquatic habitat value, would be self-maintaining (other than fence repair), and would likely not be expensive.

The Blacks Fork trip ended at noon with the following observations:

1. The Blacks Fork Salinity Control Project is still in the conceptual phase. The amount and location of land and associated wildlife habitat potentially included in the project cannot be determined at this time.

2. There will be ample opportunities for wildlife habitat replacement in the vicinity. Landowners involved in the project would likely be up on the benchlands. Although there are wildlife habitat replacement opportunities on the benchlands and associated swales, the most desirable habitat replacement opportunities are in the river floodplain and would likely involve different landowners.

Attachment B: NRCS Letter to Lucy Jordan

September 7, 2005

MEMORANDUM

TO: Lucy Jordan, U.S. Fish and Wildlife Service

FROM: Robin Naeve, USDA-NRCS Contract Biologist

COPY TO: Gerald Jasmer, Mark Opitz, Travis James, Ralph Swift, Jeff Lewis, Paul Obert, Adrian Hunolt, Corey Kallstrom, Kevin Spence, and Mark Hogan

SUBJECT: Salinity Tour and Discussion

The Big Sandy Salinity Project – The Farson/Eden Area

September 1, 2005

Began the meeting with a PowerPoint presentation (which is available upon request) to update the group on the Big Sandy Salinity Project in the Farson/Eden area in southwest Wyoming. The presentation summarized the overall project and covered; where we area now with the project contracts and habitat replacement projects. In summary, after extrapolating the data from the 2000 Monitoring and Evaluation Report, concluded that the project area's habitat replacement projects offset the impacts of the project and resulted a net gain of wetland acres. We estimated there to be 10.77 acres of additional wetlands in the project area that were replaced to offset the impacts of the flood to pivot irrigation contracts.

Jennifer Hayward and I also performed a supervised classification using the image analysis on ArcMap on the color infra-red photography to get some very general estimates of the overall project cover type acres. We wanted to obtain a general estimate of acres of each type in 1989 and then again in 2004. There are many limitations to this method, but it did provide some rough estimates for cover type changes between the 2 years compared. The following are important points that preface our comparison:

- Pixel Size of Landsat Data = 30 meters
- One Pixel of Data = 900 m2 = 9,688ft2 = 1/6 of a foot ball field
- Landsat Data from 1989 and a Landsat scene from 2004 were compared
- Why Landsata data? Data available for the year prior to the project ensuing and inexpensive.
- Have procured mid June 2005 ICONOS 1 meter imagery but did not use for analysis because it is much more detailed data and can not be compared to coarser data for 1989.

Factors affecting comparison:

- Type of water year - drought vs wet will not provide accurate comparison
- Timing of water for crops – when water is released or when crops are harvested
- Pixel size – 1989 – Landsat which is 28.5 meters; 2004 – Landsat data which is 30 meters.
- We did not resample the images to reduce pixel size as we thought it wouldn't increase accuracy.
- Training data was completed for each year based on that year's imagery. All training data was digitized on the computer screen and not ground truthed.

What this classification can not show:

- Irrigated acres separated from wetland or riparian acres –spectral signature is too similar.
    - However we can remove know irrigation areas and account for this acreage in this removal.
- Saline areas influenced by dry or wet conditions.
- Can not classify smaller linear features like roads, rivers or ditches.
- Unsupervised classification analysis did not result in more refined classes either.

General Definitions:

Training Areas: An area of known vegetation which can "train" the Landsat image as to what to code those areas it encounters. The use of training areas allows a classification to be supervised – which allows us to set the number of classes and also the digital numbers associated with each of those classes.

Spectral signature or digital number – the combination of the bands of data to define the pixel information
e.g. – Red value – 121, Green value – 83, Blue value – 48

With all of the above information in mind the following tables are the estimated acreages for the Big Sandy Salinity Project area.

Land Type	**1989**	**2004**
Wetland	4,938	6,904
Riparian	5,906	6,866
Saline	5,657	5,427
Upland	34,268	31,809
Water	744	742
Bare Ground	1,052	833

After the presentation the group traveled to Eden to observe some of the habitat replacement projects in the area. We visited the wildlife pond/PEM of Steve Tomich's and the large pond that was enlarged of Bob McMurray's.

After looking at the two projects, the group discussed various aspects of the project and began discussing possible replacement options for the upcoming project – the Eden Pipeline Project.

From the initial inventory the project would potentially impact approximately 6.0 acres of canal "wetland" area. After looking at the wetlands along the canal, the group decided replacement efforts should concentrated on improvements to the Big Sandy River riparian area, and look at improving/maintaining the wetland area near the northern end of the E-9 lateral.

One of the projects brought to the groups' attention from the Game and Fish was their project which includes improvements and maintenance of stream structures in the Big Sandy River. The Game and Fish already has designated some funds for this project. In addition the BOR and Trout Unlimited are also on board with the project. This was discussed at length and would be revisited later in the tour.

Next the group looked at one of the canals that may be preserved after the pipeline is in place. After seeing the quality of the wetlands along the canals, the group decided that it was important to describe the wetland areas along the canal differently than before and not group these acres into the riverine classification as was done in the past project. The group then decided to look at the structures in the Big Sandy that the Game and Fish and other Partners are planning to replace/maintain.

After seeing the structures and discussing them, the group decided that the benefits of the structures would provide not only improve fish habitat but habitat for migratory birds and provide other benefits to the riparian zone. The group then decided that this project would be appropriate as replacement for the possible impacts to the canal wetland areas. We also discussed maintaining flow to the northern portion of the E-9 lateral to sustain the wetlands currently on this portion of the canal and maybe enhance this area for additional acres of wetland – because this area has a variety of wetland types (saline influenced PEM, POW with fringe PEM vegetation, PEM wetlands and linear wetlands).

Main Outcome of the Meeting:

- **The habitat replacement projects have offset the impacted acres of wildlife habitat and added an additional 10.77 acres of wetland through the voluntary programs. Since the conversion from flood irrigation to sprinklers has mostly been completed there is no anticipated need to add more habitat replacement projects for the Big Sandy Salinity Project.**
- **Concentrate habitat replacement efforts for the upcoming Eden Pipeline Project on improvements to the Big Sandy River (working with the Wyoming Game and Fish and Partners on there project – replace/maintain/add wiers) and the northern portion of E-9.**

Possible Salinity Project Area – West Blacks Fork (Lyman, Wyoming)

September 2, 2005

The meeting began with an overview of the proposed project area and background information provided by Ralph Swift (NRCS). The grouped discussed different issues that came up about the project, but the project is still in the developmental stage so it was difficult to discuss the issues too extensively until a more developed plan is formed. We discussed the areas that might meet the wetland criteria and it would be difficult to discuss replacement options until later in the planning process. Lucy thinks that one way to begin this project would developing plans with some of the land owners in the area to do fairly large scale wildlife habitat development and land management plans before the project continues.

The group went to the one large WRP contract (80 acres) where the NRCS is providing assistance for wetland development and wildlife habitat improvements (Mark Powers' project). The only problem that surfaced during the visit to the project was the Perennial Pepperweed (*Lepidium latifolium*) problem, spraying was suggested for treatment.

Then we drove through some of the most representative land of the potential project area and went to the Austin Reservoir. There we discussed how different options would affect the reservoir differently and showed the area that is affected by the dike seepage. Also discussed was a project between the Game and Fish and land owners on the reservoir could agree to leave and maintain a minimum pool in the reservoir, the Game and Fish would help fix the dike of the reservoir and maintain it along with stocking the reservoir with fish – that will be discussed at a later date also.

Lastly we stopped at a bridge crossing of the Blacks Fork River to give everyone an idea of the condition of the downstream section of the river. Overall thought is if the grazing were decreased or managed differently, the river would be improved.

Main Outcome of the Meeting:
Need to have a more firm idea of what areas will be impacted by the project and try to get some large scale wetland wildlife projects started before the projects comes online.

United States Department of Agriculture

NRCS
Natural Resources Conservation Service
125 South State Street, Room 4402
Salt Lake City, UT 84138-1100
(801) 524-4550
FAX (801) 524-4403

SUBJECT: Salt Load Review of Big Sandy Salinity Control Project

DATE: November 8, 2007

TO: J. Xavier Montoya
State Conservationist
Casper, Wyoming

File Code: 460 WQP

As part of our continuing effort to improve the quantification of the impacts of implementing salinity control measures in the Colorado River basin, NRCS and the Bureau of Reclamation are reviewing the documentation and available data for all ten project areas.

In October, NRCS staff (including Jeff Lewis, DC, Lyman and Rock Springs) and Reclamation staff met in Salt Lake City, Utah, to undertake a review of the Big Sandy River project. This was timely as the Eden Valley Pipeline Phase I Project (funded by the Basin Parallel Program) is imminent. Further, the results of the reconciliation will, in large part, determine if Phase II of the project proceeds. In total, if Phase I and II are implemented, Reclamation will commit over $12M to construction of the Eden Valley improvements. It is also anticipated that additional NRCS EQIP contracts will be enabled in the area upon completion of the pipeline improvements.

I have attached a summary of the review conducted by the group at the Salt Lake City meeting. The group recommends that you consider the following revisions in implementing salinity control measures with EQIP or Parallel funds in the Big Sandy River Project area:

(1) Increase the goal of annual tons to be controlled to 83,500. Of this amount, 69,500 tons would result from installing improved irrigation systems on 15,700 acres and 14,000 tons would result from replacing on-farm delivery ditches.

The group advises that the original goal was very conservative and that a high rate of landowner participation and the great proportion of high-efficiency center pivot systems provide more potential salt control.

(2) We recommend that, in the Big Sandy River Project area, Wyoming adopt a value of 4.92 tons per acre "before" project implementation to be reduced by an appropriate amount relative to the improved irrigation system that is designed and installed. The appropriate calculations can be made using the accompanying Excel spreadsheet. We also recommend that a value of 200 tons per mile be used as the loading value to be eliminated when earthen ditches are replaced with pipelines. (The spreadsheet also contains factors for use in the Manila-Washam Salinity Project area on the Wyoming-Utah border.)

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Previously, all the project areas had used a ton per acre foot loading value, but the results of an analysis of proportionality between tons claimed and acres treated shows that many of the ten projects were on a trajectory to claim more tons controlled than exist according to the planning reports.

(3) Based on a review of all previous progress reports and consistent with the "ton per acre" approach, we recommend that tons controlled through 2007 be adjusted to 55,957 tons. This will result in improving the cost effectiveness (cost per ton) to a figure of $20 per ton making the Big Sandy Project area the most cost effective of all the projects. (This value had previously been reported as $29 per ton.)

We anticipate that all NRCS project areas will be using a corrected tons per acre value for 2008 EQIP and Basin Parallel contract applications. I have attached the document "Calculating Salt Load Reduction. July, 2007" that describes the methodology incorporated into the Excel spreadsheet.

In addition to the spreadsheet and the "Calculating Salt Load Reduction" document, I am enclosing a paper recording the findings of the review group used to formulate the recommendations.

The group appreciates the participation of Jeff Lewis in the review.

Please contact me if I can provide further clarification or information.

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Salinity Coordinator

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