

A large, stylized graphic of a water drop. The upper portion of the drop is a light blue outline, and the lower portion is a light green outline. The text is centered within the blue portion.

Scott Valley Irrigation District
Inventory and Evaluation
Phase 1
Summer 2009

Natural Resource Conservation Service
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NRCS

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I. INTRODUCTION

1. Background and Canal Operation

The Scott Valley Irrigation District, known as the SVID, is a legal special district in Scott Valley, California. It runs fourteen miles along the eastside of the Scott Valley, from Etna to Fort Jones. It serves 25 landowners and 3000 acres along the ditch. The ditch has been in place since the early 1920's, and a majority of the ranch original operations are still in place today.

Most of those who own property along the ditch line are members of the district, and are charged for the water by the amount of irrigated acres that are owned below the ditch. Water is delivered in a rotation; the owner gets an hour of water for every ten acres of property within the ditch.

The board of the SVID consists of a Director, elected by the membership and two Board Members also elected by the membership. Aside from the three board members there are two part time employees hired; a Ditch Manager, and a Secretary/ Treasurer.

Because of the more innovative and changing times upon the District and Scott Valley as a whole, it was requested that NRCS provide technical assistance, to assist the SVID with the problems they are facing.

2. NRCS Objectives

The Natural Resource Conservation Service (NRCS) Yreka Field Office has offered technical assistance to SVID for the evaluation of their district infrastructure. Summer intern and Student Ashley Parry of Cal Poly San Luis Obispo completed the tasks outlined below, with the assistance of Ayn Perry Soil Conservationist and Lorrie Bundy Field Office Engineer. The main objectives were to take a physical and visual inventory of the ditch, evaluate the findings and design a report to present the findings and evaluations to the SVID board. These objectives were determined by the SVID Board for the NRCS. The tasks included:

- Take flow measurements at cross sections along the ditch. Locations of high interest were determined by Stan Louden.
- Mapping and inventory of the SVID turnouts. This includes measurements, evaluations and recommendations.
- Work with Lynn Brown to create a trash grate at the culverts, and incorporate into the report with drawings and a cost estimate.
- Determine areas of interest for future projects. Including leaky portions, access roads, and the pump station.
- Determine cost estimates for improvements along the ditch, as well as alternatives for recommendations.
- Talk to irrigators along the ditch line to hear their opinions and suggestions for renovating the ditch.
- Complete research on the free structures or money that is available to irrigation districts, and see if any part of the district qualifies for NRCS funding requests.
- A written report will be compiled to present findings to the SVID board.

II. PROCESS AND PROJECT DESCRIPTION

1. Methods and Materials

There were two different procedures done during the evaluation and inventory of the ditch, therefore; this section will outline both methods, and clearly list all of the materials that were used in the process. The procedures include; flow measurements, and inventory of the turnouts and the ditches.

Flow measurements were performed to determine the amount of water leaking in a designated area. These areas included leaky portions of the ditch, turnouts, and the span of the ditch, designated by Ditch Manager Stan Louden. The areas of concern included; leaky turnouts on the Sweezy's, Hurlimann's, Piersall's, and

Hansen's properties, and leaky portions of the ditch at the Black Ranch and the Murphy Ranch. The measurements were taken using a propeller flow meter. The velocities found by the flow meter were recorded, and using that information the velocity was converted to cubic feet per second (cfs). Two cross sections were performed upstream of the leak, and the average of the two was recorded. Then, two cross sections were performed downstream of the leak, averaged, then compared to the number to the upstream measurement to calculate the loss. All of the information and data on the flow measurements can be found in Appendix A, photo's of the process and sites can be found it Appendix C, and a map of the areas measured is located in Appendix D.

For the inventory of the ditch, Ashley Parry and Ayn Perry walked the length of the ditch to find all structures and take outs. They used a GPS to mark the locations of all turnouts, road and drive way crossings, any other structures, and typical sections of the ditch. While walking the ditch, if a landowner was nearby, Ashley and Ayn took the opportunity to discuss with the land owners about their thoughts of the ditch. Turnouts were individually numbered, starting with one at the end of the ditch, and increasing toward the beginning of the ditch. Each turnout was measured, evaluated and ranked on a scale of one to ten. The information collected while walking the ditch for the turnouts can be found in Appendix B, with photos of them in Appendix C, and a map of the locations of the turnouts in Appendix D.

Also as part of this project, Lynn Brown designed trash screens for culvert crossings, so debris doesn't clog up the system. The trash grates are similar to those that are on the fish screen at the diversion. The typical drawings and cost estimates provided by Lynn Brown are shown in Appendix E.

2. Economics

The purpose of this section is to evaluate the cost of alternatives for the district, and also to see the future economic stand point, and will also discuss current economics of the district currently. Currently the SVID is funded by the irrigators along the ditch line, whom are charged by the amount of acres they have. This is the main source of income for the district.

Later in the report, there is a list of recommendations and modernization options for the Board to review. In Appendix F, a spread sheet with all cost estimates for the recommendations can be found.

3. Interviews and Correspondence

Throughout the process of this project, Ayn and Ashley have made an effort to speak to as many irrigators as possible. We were able to contact a majority of the irrigators in the course of our inventory field work, as well as the Board members during a meeting. The irrigators were asked their opinions on the ditch, and also

if, how and why they would like to modernize the system.

Among the irrigators most came to nearly the same conclusions. One thing they were most passionate about was that they wanted the ditch company to carry on; they think it's good for the 'eastside neighborhood', the wildlife areas and crops, and ground water recharge. With this said, they were also concerned what the future might hold for the ditch company. All seemed to want the ditch to be viable for future generations. Among users, landowners, and the general public there is not a consensus about how to achieve this goal.

The irrigators made some very positive comments about the ditch. Such as the recharge to the water table and the Scott River. The ditch is a great benefit to the eastside of Scott Valley, for both the domestic and agricultural wells in the area. The ditch provides stock water to many ranches during times when water is scarce. Another benefit that is widely acknowledged is the phenomenal wildlife habitat that the ditch provides. The ditch also provides a level of flood protection to many homes in the area.

III. CONCLUSION

1. Goals for the District

There are existing proven strategies that can be investigated, if the board desires for short term and long term structural and administrative improvements. Before these ideas can be fleshed out, it is suggested that the Board spend time developing short term and long term goals. Many of the ideas mentioned here are taken from publically available documents and studies.

The SVID is burdened with an antiquated structure and fee schedule that may not suite the next hundred years. There are irrigation districts throughout the western US that have grappled with these same issues. How do we keep our water right? How do we pay for new fees, rising maintenance costs? How do we compete with other claims on a limited water supply? How can we best assist our membership to stay economically viable?

Many of these ideas are simple and are designed to help see where the SVID Board is now and where the path of least resistance is for future development and growth. They should be seen as steps to a discussion and a clearer focus on the future direction of the SVID for future generations.

Short Term Goals:

- Set goals for the next five years
- Develop and distribute a questionnaire similar to the one that was done a few years ago by Sari Sommarstrom. This might give the board a sense of changes in attitude by the membership over time, as well as other pertinent information.

- Inventory the historical documents that exist for SVID. Commit some time and effort to archiving valuable documents, maps and pictures for future generations to use.
- Find and update the existing Operations and Maintenance Plan.
- Complete the inventory of the infrastructure.
- Budget for long term improvements.

Longer Term Goals:

Cost Structures: One of the benefit/limitations of the SVID is the inexpensive cost of water. This has both positive and negative impacts on the district. There may be reasons to look at how to restructure the fees to allow for structural improvements, increased management which would require increased staff salary, improved system and water supply reliability and long term viability. There are economic models and guidebooks available to help restructure the fees/costs assessed by irrigation districts. A feasibility study may allow for some good suggestions regarding the cost of delivering water and doing business.

Canal/Structural Maintenance Plan: Analyze the existing efforts to keep up with maintenance on fourteen miles of the canal, 30+ turnouts, a large diversion/dam, and other appurtenances. Is the effort adequate? If so or if not, what is and what is not working?

Water Management Plan: Commission a study of existing management. How is the water managed now? Is it fair? Is it cost effective? Ask for some economically feasible improvement based on irrigators and Board issues and suggestions. How can the system be improved?

Water Conservation: A feasibility study, a blue-print for structural improvements would detail the scope, strategy and timing of capital improvements. There are a lot of ideas floating around, and which one does the district want to pursue? In order to receive grant money, a plan must be in place that is adopted by the SVID board and membership.

Water Use Efficiency: Conduct a study of effective acre feet used by irrigation, by crop, by season, by user, to get a feel for the over all effectiveness.

Revenue Enhancement: The SVID provides many benefits to Scott Valley as a whole and to the Eastside neighborhood specifically. These could be investigated for possible revenue sources. A cost/benefit study could be undertaken to look at these and other ideas: new users, flood control district, garden users, trails, split rates for stand by users, non-users, stock water users and small parcels, and wildlife benefits. Could a wildlife easement but put into place and be funded?

Long Term Sustainability of the District: In order to protect the water rights and the beneficial use to Scott Valley, it may be necessary to investigate the

conjunctive use of surface/groundwater, which is currently undocumented. In plain English: Prove the groundwater recharge is a beneficial use.

2. Modernization Options

There are many options for modernizing the current SVID system. In this report, we attempted to offer a wide variety of options for modernizing the structures, management, and the ditch itself. The options below are just recommendations on how to improve the current system and any can be pursued or disregarded as the Board and members decide.

One option that should be highly considered is the trash screens that Lynn Brown has designed to cover culverts and road crossings and rid the system of debris. They will make management and cleaning of the ditch a much simpler job. Drawings and cost estimates are already compiled for this option and can be found in Appendix E.

There are many turnouts along the ditch that need updating and up keeping due to poor infrastructure and large leaks along the ditch line. These turnouts either need to be replaced or repaired. The concrete can be repaired using Epoxy as a sealant in the cracks. The structures themselves can be replaced using Briggs pre-manufactured boxes (photos shown in Appendix C). The boards and tarps can be replaced using flashboards and foam. Cost estimates for these products can be found in Appendix F.

There are portions of the ditch where water leaks, either due to burrowing animals, alluvial fans, or leaky soils. To fix this, the SVID has been rolling the ditch using clay to seal the leaks. This method works well, but only lasts for three to five years. A more permanent fix may be more cost effective for the district. Some options include; lining the ditch with plastic liner in areas of trouble, or lining the ditch with concrete in leaky areas. The cost estimates of these alternatives are found in Appendix F.

The fee structure for the ditch is fairly antiquated. Evaluation of the structure and feasibility of applying a new one should be discussed among the Board. Some suggestions include; stand by fee's, charging by amount of water (not acreage), small fee for houses for lawns and gardens, and try to get funding for providing a wildlife buffer strip throughout Scott Valley.

3. Opportunities for Further Assessment

While there were many findings and useful observations this summer, the opportunity for continuing this project into the future would benefit the district even more. Not only would it benefit the district, but Ashley Parry would benefit by using this project as a senior project if it continues, and if the board and irrigators are in agreement.

Considering that the leaky portions of the ditch were just rolled in the winter of 2009, taking flow measurements next summer at the same spots could show how well the method works after a year of being installed. This assessment could help to determine the lifespan of rolling the ditch to seal the leaks.

Continued evaluation of the turnouts can be performed, possibly assisting in determining a priority for replacement schedule and a funding strategy.

The NRCS did not complete evaluations of the slope of the ditch over certain sections. Nor was there a focus in creating typical sections (i.e. bed rock, forest soils, tilled soils) that could be looked at to help diagnose problems. Next summer, those two items could be a focus for evaluation.

NRCS did not have time to complete the request for technical assistance with evaluation of a new access road or a new pump station. These could be done in the summer of 2010.

SUMMARY: The SVID has already taken steps to keep and protect their water rights by improving the infrastructure at Young's Dam, as well as working with the Scott River Water Trust. Other projects may already be planned. We hope this report will be used to continue that good work. Thank you for allowing us to help by providing this inventory, and recommendations. Please let us know how we can be of further service in the coming months and years.

IV. ADDITIONAL RESOURCES

1. Achieving Efficient Water Management, A Guidebook to Preparing Agricultural Water Conservation Plans Second Edition 2000 BOR
2. Incentive Pricing Handbook for Agricultural Water Districts, April 1997
Prepared by Hydrosphere Resource Consultants for the BOR

V. APPENDICES

- 1. APPENDIX A – Flow Field Sheets**
- 2. APPENDIX B – Inventory Field Sheets**
- 3. APPENDIX C - Photos**
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