



# Sacramento Valley Water-Sharing Investment Partnership

Spring 2017

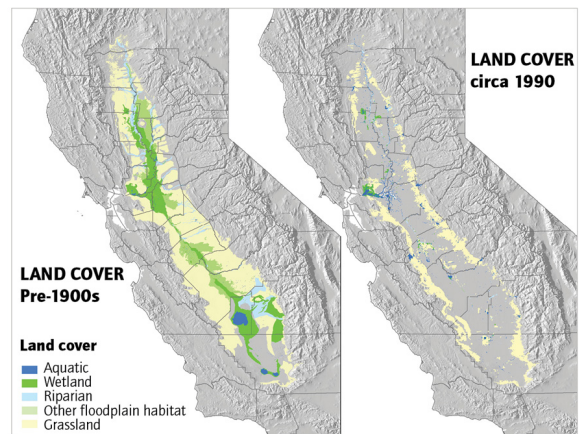


Andrew Hall | Cora Kammeyer | Justin Kroes | Jayme Ohlhaber | Leslie Regan  
Project Advisor: Jim Salzman

## ENVIRONMENTAL CHALLENGE

California’s Sacramento Valley (the northern half of the Central Valley) is a crucial rest stop for birds migrating along the Pacific Flyway, one of the longest migrations in the world. Historically, these birds have relied on wetlands created by seasonal flooding of the Sacramento River as a place to rest, feed, and breed.

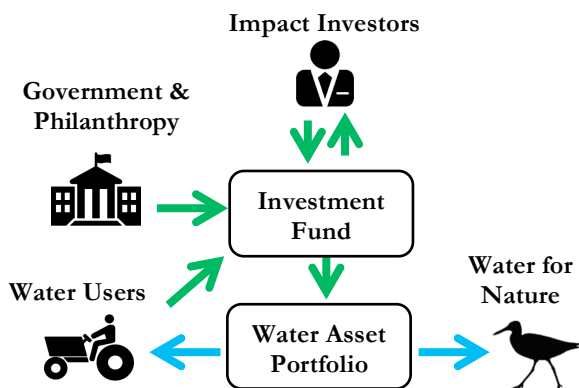
Ninety-five percent of the Central Valley’s historic wetlands have vanished, due to agricultural development and intensive management of the river, i.e. dams and levees. This habitat loss has caused bird populations to decline to less than a quarter of historic populations due to lack of food and increased disease from overcrowding. These birds need more habitat, but the region is also critical to humans, both the farmers whose livelihoods depend on their land, and the people like us who eat the crops they grow. The limiting factor is not just land but, more importantly, water.



How can we create more wetland habitat for migratory birds without permanently removing water and land from productive uses such as growing our food?

## BACKGROUND

The Nature Conservancy (TNC) has created a program to provide habitat for birds when and where they need it most, by paying rice farmers to flood their fields for just a few weeks in the spring and fall, when the majority of the birds are stopping to rest. However, a frequent obstacle is that rice farmers don’t have enough water to spare to flood their fields during non-growing times. To address this dilemma, our project team collaborated with TNC to explore an innovative approach to acquiring water for the environment. It’s called a water-sharing investment partnership (SIP). Here’s how it works:



TNC uses funding from investors and donors to purchase water rights, either directly through a water market or by working with farmers to improve irrigation efficiency. TNC then manages this portfolio of water rights to create temporary wetland habitat for birds during times of need, and to lease it out to other water users when environmental needs are relatively low. The revenue earned from leasing is used to pay back investors. Allocation of water to each purpose can vary year to year and season-to season, depending on shifting environmental and financial needs.

## RESEARCH OBJECTIVES

To assess the viability of using the SIP framework to create migratory bird habitat in the Sacramento Valley, this project was designed around three research objectives:

1. Evaluate mechanisms for acquiring water rights in the Sacramento Valley.
2. Identify mechanisms for transferring water to create habitat for birds and generate returns for investors.
3. Create a tool that TNC can use to assess discrete opportunities to acquire and transfer water.

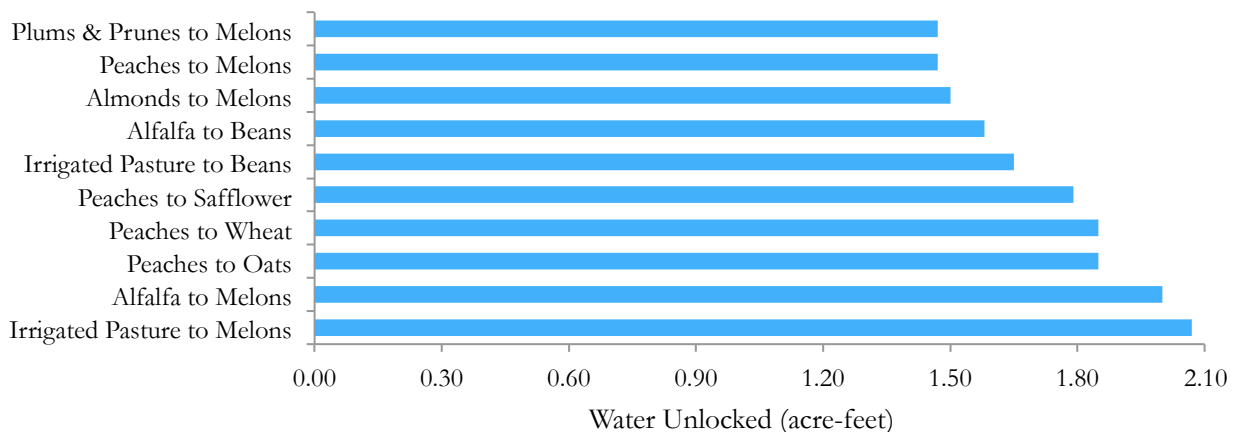
### 1. ACQUIRING WATER RIGHTS

We evaluated three different approaches for acquiring water rights, all three of which can be used in conjunction to develop the SIP water portfolio.

**Direct Water Right Purchase:** TNC can buy a water right directly from a willing seller on the market. As, water rights are often tied to land, this method may also entail acquisition of real estate. Good stewardship of the land after transferring the water right will be important, especially in light of cultural resistance to “buy and dry” deals where the buyer converts irrigated farm land into a dusty lot.

**On-Farm Water Savings:** Instead of directly purchasing water rights, TNC could engage in joint ventures with farmers, in which TNC would fund on-farm water-saving projects in exchange for rights to the saved water. This approach is likely to be more palatable to farming communities than direct purchases. There are two primary factors affecting water use on a farm - how you irrigate and what crops you grow.

Our research focused on the water-saving potential of switching crops. Different crops use different amounts of water, so by switching from a high-water-use crop to a low-water-use crop, water can be “unlocked” and transferred to another purpose. We developed a top-ten list of recommended switches, based on the water use, profitability, and market trends of crops grown in the region. These are shown in the graph below.

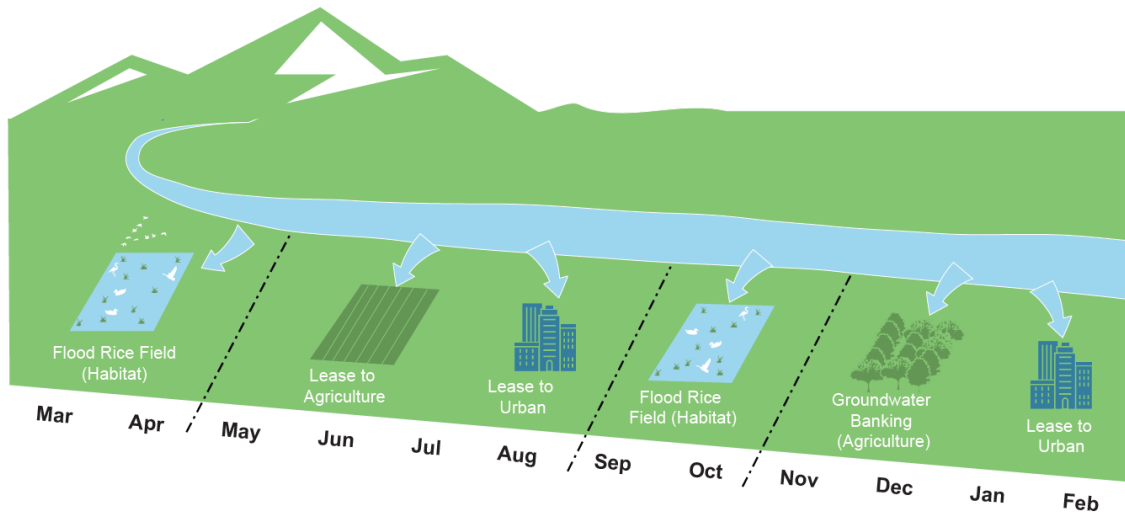


To provide a sense of scale, the volume water needed to meet TNC’s habitat goals (5,000 acre-feet per year) is just one percent of the volume of water used to grow almonds in the Sacramento Valley in each year.

**Central Valley Project Water Contract:** TNC can receive a contract for water from the U.S. Bureau of Reclamation through the Central Valley Project (CVP). The benefit to contract water is that it is very inexpensive compared to water rights. The downside is the contracts are owned by the government and therefore cannot be sold later on to recoup the initial funds spent.

## 2. TRANSFERRING WATER RIGHTS

Once water rights have been acquired, they can be transferred to create bird habitat or leased to other water users to generate returns for investors. The volume of water transacted on paper dictates how much physical water can be withdrawn at any given time. The birds come to rest in the Sacramento Valley in spring and fall, so for at least four months out of the year the acquired water would be diverted to flood rice fields to create habitat. During the other months, the water can be leased out to agricultural or urban users, or potentially stored for future years. The graphic below shows an example timeline of water uses for the SIP throughout the year.



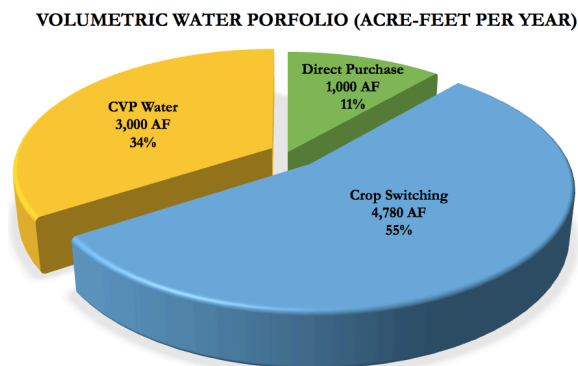
The exact volume and timing of these water transfers to habitat, other users, or storage can change year to year, but the legal ease of doing this varies. Water transfers in California are subject to a myriad of regulations depending on the type of water asset, the length of transfer, and potential impacts to other water users. These regulations are summarized in the table below. Our research identified two transfer mechanisms, short-term water rights leases and accelerated transfers of federal water contracts, as the two best approaches for balancing ease of transfer and security. They are the only two mechanisms that do not require environmental review, which is cost-prohibitive, but still offer protection from diversion by others, which ensures that the transferred water will be available for withdrawal at the intended destination.

Regulatory provision applies to transfer type     Regulatory provision does not apply to transfer type

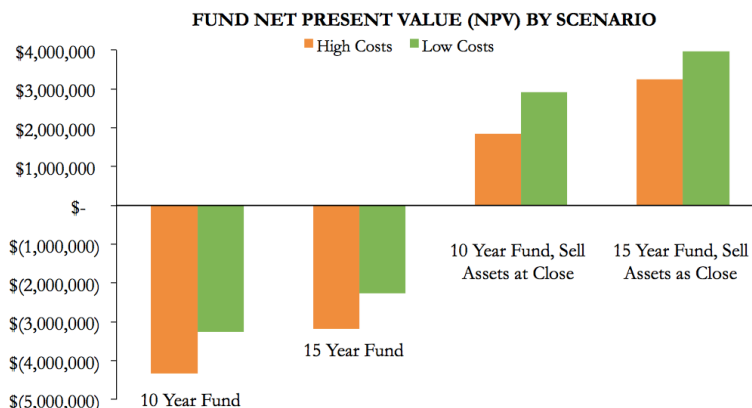
| Transfer Type                    | Regulatory Provision                                 |                      |  |                          |                            |                       |
|----------------------------------|--|----------------------|--|--------------------------|----------------------------|-----------------------|
|                                  | Protection from diversion by others                  | Environmental review | Prove no 3rd-party harm                    | Public notice            | State Water Board approval | Other agency approval |
| Short-Term Water Right Transfer  | ✓  | ✗                    |  |                          |                            |                       |
| Federal Water Contract Transfer  | ✓  | ✗                    |  | <i>Depends on volume</i> |                            |                       |
| Long-Term Water Right Transfer   |  |                      |  |                          |                            |                       |
| Pre-1914 Water Right Transfer    |  |                      | <i>If buyer or seller is public agency</i> |                          |                            |                       |
| Adjudicated Water Right Transfer | <i>Depends on the provisions of the adjudication</i> |                      |  |                          |                            |                       |

### 3. FINANCIAL MODEL

As part of this feasibility assessment, we built a financial model tool for TNC to evaluate SIP implementation. The model allows TNC to explore all viable acquisition and transfer strategies under multiple fund scenarios, and accounts for possible variability in costs and revenues. The model was built to be simple, user-friendly, and easily updated so that TNC can continue to use the model as new information or opportunities arise. The graphic on the right shows a snapshot from the summary sheet of the financial model, displaying net present values for each of the four fund scenarios.



Running the financial model through a sensitivity analysis gave us some key insights into the financial viability of the SIP model. First, we learned that positive net present value can only be achieved if the acquired water rights are sold at fund closing. Second, we identified the three most influential variables in the model, which were the discount rate, the rate of water right appreciation, and the price at which water can be leased to other users.



### KEY INSIGHTS & CONCLUSION

Based on the past year of research into the legal, financial, and logistical details of acquiring and transacting water in California, we conclude that the Sacramento Valley Water-Sharing Investment Partnership is financially feasible (defined as positive net present value) under specific scenarios in which acquired water rights are sold when the fund closes. The water transfers necessary for operation of the SIP are legally possible, but due to the complexity of California water law, transactions are likely to be costly and time-intensive. New policy needs to be enacted to improve the process, expediting it and reducing costs. Policy advocacy for these changes will be an important part of implementing the SIP.

### ACKNOWLEDGEMENTS

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To learn more about our project, you can visit [www.flowforfeathers.weebly.com](http://www.flowforfeathers.weebly.com) or send an email to [flowforfeathers@gmail.com](mailto:flowforfeathers@gmail.com).