Putting the Flood Back on Floodplains
(with a little help from El Niño)

by: Michael Cook, Northern California Regional Director

To attempt to calm the apocalyptic terror created by the fourth year of the worst drought in California history, those “in-the-know” focused our attention on the past, highlighting the fact that some of California’s driest periods ever recorded were also quenched with some of the wettest. As one farmer put it: “we’ve had more floods in the Central Valley than we’ve had droughts”. Finally, this water year is shaping up to deliver us from drought as the major deluges of 1986 and 1997 did.

Industry and politicians are calling for more water storage in the form of reservoirs, while the governor has set strict targets for state-wide water conservation. We need to use water more efficiently and capture this El Niño’s floodwater for future use. With rising global temperatures, our natural water storage in the snowpack of the Sierra Nevada is shrinking. With the construction of the nation’s largest water delivery system (the Central Valley Project and the California Aqueduct), our natural water storage in the below-ground aquifers of the Central Valley is collapsing. But perhaps there is a smarter way to buffer California’s drought-flood cycle than building more dams and diverting more streams. And perhaps we can simultaneously improve public safety from flooding, and recreate some of our lost ecological capital, while supporting our growing economy and way of life: by restoring flooding back to floodplains.

As we entered the summer of 2015, with the coronation of the current drought as the worst ever, everyone’s attention was focused on what little water we had and who should have the right to use it. Water allocations to major irrigation districts across the state were hammered, causing acreage of farmland to lie fallow or worse — expensive orchards

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Our mission is to create wildlife habitat for the benefit of people and the environment.

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info@riverpartners.org
www.riverpartners.org

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Flooding Loss and Groundwater Gain

By Irv Schiffman

The flooding expected as a result of El Nino threatens to cause both human and property losses. But such flooding also creates the opportunity to recharge the groundwater seriously depleted during California’s long-term drought.

According to the California Department of Water Resources (DWR), during an average year, California’s 515 alluvial groundwater basins and sub-basins contribute approximately 38 percent toward the State’s total water supply. During dry years, groundwater contributes up to 46 percent (or more) of the statewide annual supply, and serves as a critical buffer against the impacts of drought and climate change.

DWR further reports that due to excessive groundwater pumping sinking land - known as subsidence - is happening faster, putting infrastructure on the surface at growing risk.

Thus, the replenishment of groundwater throughout the state is crucial to California’s economic and environmental sustainability.

In an important new study, University of California scientists identified 3.6 million acres of California cropland suitable for replenishing the state’s groundwater reserves.

According to the study, using the existing irrigation network, it is possible to capture flood flows from California rivers onto suitable dormant or fallow agricultural fields, allowing the surplus water to infiltrate aquifers. During storms and flood-control releases, excess river water could be routed through irrigation canals onto farms, where the surplus would seep underground to replenish groundwater. This action could also mitigate downstream flood risks.

In line with the study, UC Davis has developed a Soil Agricultural Groundwater Banking Index based on five major factors deemed critical to successful agricultural groundwater banking: deep percolation, root zone residence time, topography, chemical limitations, and soil surface condition. [http://casoilresource.lawr.ucdavis.edu/sagbi/]

Researchers are presently test-flooding a number of vineyards, almond orchards and other cropland looking at infiltration rates, plant physiology, groundwater quality and costs.

There have been no comparative studies on River Partners restoration sites, although similar replenishment results may be likely: restoring riparian areas to a naturally vegetated condition is, in general, an effective way to ensure maximum infiltration of precipitation, stormwater runoff and flood water into the soil and to aquifers and other groundwater resources. And unlike agricultural lands, there is no risk of the leaching of residual pesticides or fertilizer in the soil.

Of course, our restoration sites also contribute to ground water sustainability in another way: by retiring crop or orchard lands we are retiring agricultural irrigation on that property. For example, on the 2,100 acres of property River Partners owns in the San Joaquin Valley, we will retire 10,500 acre-feet of water per year. This is a net water savings of 3,421,435,500 gallons per year. We irrigate our own plantings only in the first three years and then they are on their own.

Following years of over pumping, achieving groundwater sustainability will take decades and can only be done through a collaborative approach by all agricultural, urban and environmental sectors. Through its restoration programs, River Partners is doing its part.
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to be ripped out. Our reservoirs drained to historic lows. The economic effect of lack of irrigation water for agriculture was estimated in the billions. And we turned to any means necessary to keep the farm fields in production. For large areas of the Central Valley that meant devastating increases in groundwater pumping which exacerbates an already massive problem: land subsidence in the San Joaquin Valley. The USGS calls the observed earth sinking driven by groundwater overdraft in California “one of the single largest alterations of the land surface attributed to humankind.” This groundwater pumping is even more alarming because once the water is removed from below the earth’s surface, it cannot be replenished. The subsidence is so severe that we are starting to see sinking and cracking of sections of the California Aqueduct.

It wasn’t until scientists took notice of increasing ocean temperatures building momentum in the middle of the Pacific that we became less focused on the drought and more on the promising potential of the upcoming winter being influenced by El Niño. The El Niño effect (large-scale climate interaction between ocean and atmosphere, connected to a periodic warming in sea surface temperatures across the central and east-central Equatorial Pacific Ocean influences weather patterns for North America bringing wetter-than-average winters to California) is named after the Spanish word for The Little Boy or Christ Child based on the time of year in which it normally occurs – some Christmas present!

After months of monitoring and analysis by the National Oceanic and Atmospheric Administration (NOAA), we believe the current El Niño could potentially match or rival that of 1997, the strongest El Niño on record and by which all others are measured. Past El Niño cycles have been responsible for billions of dollars in flood damages across California, and with our aging flood infrastructure, what looks like good news for thirsty California is also a public safety nightmare. In fact, experts studying this El Niño have indicated that the storms resulting from this current weather phenomenon could be so severe and destructive, that it’s aptly been named the Godzilla El Niño.

In the first ten days of the new year, southern California was hit with a torrential storm and high-intensity rainfall, overwhelming storm drains, causing hillsides to give way, with the quintessential urban stream, the Los Angeles River, roaring back to life. Although the flow only peaked at about a third of its capacity, it brought attention to the river that many Angelinos had all but forgotten. Less than two weeks later, a series of storms hit northern California one after another, bringing several inches of rain to the foothills and feet of snow to the Sierra Nevada. After a 72-hour period, a weather station located at the base of Shasta Dam had measured 7.56 inches of rain. The following day, six of the twelve stage and flow gages on the Sacramento River were near flood levels. One of these gages, located at the Tehama Bridge, crested at 212.8 feet, a mere 2½ inches below the level where the river’s considered flooding. Further downstream, two of the river’s flood control weirs were overtopped, spilling into the Butte Basin like it is designed to do.

Although these storms did not cause any major damage, they provided a quick reminder just how fast things can turn from bad to worse. Fortunately, the work that River Partners has been conducting for the past 17 years uses a multi-objective approach to address flood control and public safety, while creating habitat for...
Thank you to everyone who made it to the ground-breaking ceremony at our Riverbottom Park and Schneider Property Habitat Restoration Project! On Saturday, January 30th, River Partners kicked off the 147-acre project which straddles the San Joaquin River (SJR) in Fresno and Madera Counties. Project partners include The San Joaquin River Conservancy, the City of Fresno, River Tree, Tree Fresno, Valley LEAP, Revive the San Joaquin, the California Conservation Corps, the Sequoia Chapter of the Native Plant Society, California Central Valley Hikers, Girl Scout Troop 2864, and Tiger and Cub Scouts from St. Anthony’s Troop 223.

The project, on land owned by the City of Fresno and the San Joaquin River Conservancy (part of the San Joaquin River Parkway), increases and improves riparian habitat and connectivity several rare wildlife species, enhances connectivity of an important wildlife corridor along the SJR, and improves recreational opportunities for local residents. Over the course of the project, River Partners will plant and maintain over 19,000 native plants. These plants will grow into a self-sustaining forest over a 3-year period and expand potential habitat for bald eagles, the valley elderberry longhorn beetle, least Bell’s vireo, western yellow-billed cuckoo, Swainson's hawk, and Chinook salmon, amongst many other species. The project is also creating additional habitat for migrating and local wildlife as well such as songbirds, shorebirds, waterfowl, raptors, bobcats and deer. Along with providing wildlife habitat, riverfront forests and floodplains also serve as filters for storm water and urban run-off, improve groundwater recharge, and offer flood protection by reducing erosion while also spreading our flood waters without causing damage to infrastructure or agricultural commodities.

In addition to all of the ecological benefits, the restoration project will also provide low-impact recreational opportunities along the river within the San Joaquin River Parkway. The Riverbottom Park area is included in the San Joaquin River Parkway Master Plan which has a goal of extending the Eaton Trail – a multiuse trail – from Friant Dam to Highway 99. Currently, the Riverbottom Park area is informally used for hiking, biking, dog-walking, bird watching, and swimming. We have designed our project to keep these recreational opportunities available for the local community while still providing the needed ecological benefits.

With only 6% of the riparian forests left in the San Joaquin basin, the need for ecological restoration couldn’t be more important. Native forests which can buffer the effects of urban development, agricultural conversion, and long-term drought – not to mention the potential flooding caused by this year’s El Nino – are a crucial part to keeping our community healthy, vibrant, and beautiful. This couldn’t be more pronounced than it is on this stretch on of the SJR which is centered between the growing metropolis of Fresno and the expansive agricultural production of Madera County.

As a recent transplant to the City of Fresno, I am personally looking forward to watching this project grow and flourish. As I put my “roots down” into Fresno, I am excited to be part of a community which has amazing local support and advocacy for our river, our trees, and environmental stewardship. If you missed out on our kick-off ceremony, I highly recommend that you check out any (or all!) of the organizations that made this event possible. There are always opportunities to volunteer or get involved. A special “thank you” to the San Joaquin River Conservancy who funded this project and made it all possible.

I look forward to seeing you on the River!
We are all proud River Partners has continued to grow and develop its expertise, skill and reputation in the field of environmental restoration on a scale equaled by few, if any, others. One of the interesting approaches we have used to facilitate large, farm-scale environmental restoration has been to balance financial loss from non-profit grants with financial gain derived from contract work that also falls within our mission.

As we have grown, our desired balance of profit (contract) to non-profit (grant) work has shifted markedly toward the non-profit opportunities. Such grant work is often more complicated and difficult to get to the shovel stage. Due to grant funding restrictions, these grants often do not cover all of our project costs. It is frustrating and discouraging to pass up a grant that would make a key improvement in our environment because we cannot afford it. A few years back we realized that we have a “grant habit” that the organization can no longer afford.

In 2015, the Board of Directors decided to establish our first endowment fund, which will grow so that annual returns will be used to make up for the losses associated with grant work. Their intention is for the endowment fund proceeds to provide an 85% return in environmental restoration work by covering the 15% unfunded cost of the grants. Through this fund, donors can make contributions to River Partners future with a variety of financial assets and instruments. Donated stocks or property could have a significant tax advantage for the donor, and donors would know their contribution would not be depleted but continue to build and support important environmental work for years, as only the annual returns would be spent. If you are interested in joining the effort and learning more, please contact Gerald Dion at gdion@riverpartners.org.

Our New Endowment Fund

From the Board of Directors Point of View

by: Monroe Sprague, Chairman, Development Committee

Contributions to River Partners’ new endowment fund would enable the organization to take on more grant-funded habitat restoration work across California.

Partnership for Climate-Smart Restoration Planning in Reno

by: Michael Rogner, Associate Restoration Biologist

With funding from the Bureau of Reclamation’s Desert Terminal Lakes Program, River Partners has been evaluating restoration potential on 500 acres of the Stillwater National Wildlife Refuge, located an hour east of Reno, NV.

When implemented (Phase II funding has not yet been secured), the project will include riparian and upland plant communities, and improvements for native fish. River Partners and the US Fish and Wildlife Service have partnered with FISHBIO, MBK Engineers, and the US Geological Survey on the habitat design.

We are also partnering with the John Muir Institute (UC Davis) and the Desert Research Institute to incorporate down-scaled climate models and projections as part of our Climate Smart Restoration planning. The goal is to use the best available science to ensure that restoration projects are more resilient to the potential impacts of future climate change.

This phase, which includes planning and permitting, wraps up in May 2016.
Looking now at the field of mostly leafless dormant vegetation, it is hard to believe the explosive growth that took place during the first growing season. The second phase (129 acre) restoration was planted between December 2014 and November 2015. Over 17,000 native woody plants were installed by Regional and State Conservation Corps members. Tree species, including cottonwood, black willow, and western sycamore, were over 20 feet tall in August, only eight months after they were planted! Shrubby species (quailbush, elderberry, and honey mesquite) that derive their biomass from area coverage rather than height also saw explosive growth, spilling into maintenance aisle in one growing season.

Bakersfield has a long, hot growing season that aids in fast plant growth, but adaptive field management was the primary driver of the project’s initial success. Treatment of invasive weeds through spot spraying, hand removal and disking at opportune moments reduced resource competition, while adaptive operation of the irrigation system provided frequent, short waterings which supported early plant establishment. To get a firsthand look at the growth, please consider registering for the 2nd Annual Field and Dale Run March 12: http://panoramavista.org/events2016.html

fish and wildlife species at the same time. Through the restoration of natural river processes, we are helping ensure reliable water resources during dry years and assisting in flood control during the wet ones.

Many fingers have been pointed at Central Valley agriculture during this drought, accusing farmers of cultivating lucrative crops in an historic desert, the ultimate example of water waste for individual gain. While it is true that agriculture accounts for a large percentage of California’s water use, the Central Valley has never been a desert. Before the gold rush, the Central Valley resembled more of a swamp, not a desert, for a good part of the year. Before dams and levees altered the natural hydrology of the State, winter rains and spring snowmelt would pour out of the mountains, overwhelming the rivers and tributaries on the valley floor, causing them to overtop their banks and spill onto their floodplains on a regular basis. This water would remain there, creating a complex system of wetlands and riparian habitat that would cover much of the valley well into summer. This water would percolate into the aquifer providing prolonged water supply for native trees and shrubs.

The wetlands and forests provided stopover habitat for waterfowl to rest and forage for food as they migrated up and down the Pacific Flyway. Inundated floodplains provided ideal conditions for rearing juvenile salmon and steelhead. As the water spread out, it slowed down and warmed up, creating a smorgasbord of zooplankton and other aquatic invertebrates for the young fish to feast on for months. Their increased size allowed them to swim faster and avoid predators, giving them a much greater chance of reaching the Golden Gate on their journey out to sea.

Just as it is for fish and wildlife, reconnecting our rivers back to their floodplains is also critical for water supply and flood control. When our rivers are given more room to spread out, they will put less pressure on our aging levees and flood control structures, especially during future unpredictable storms that may be influenced by El Niño and our changing climate. When our rivers are given more room to spread out, they are also able to provide the crucial function of groundwater recharge. By recreating multi-benefit floodplains, we can allow rivers to flood where we need them to, thus protecting the folks downstream from flood damages and stocking water away in aquifers and surface storage for use during the inevitable lean times. As John Muir put it in 1869 “when we try to pick out anything by itself, we find it hitched to everything else.”

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Adopt a Tree!

Join us in our mission to create wildlife habitat for the benefit of people and the environment. Your contribution will support our work to restore and protect the rivers of California, and you will also receive invitations to special tours and events.

☐ Yes! I’ll give the gift of nature and adopt a tree to support River Partners.

Adopt A Tree Options:

☐ $150 10 Trees ☐ $ 60 4 Trees
☐ $135 9 Trees ☐ $ 45 3 Trees
☐ $120 8 Trees ☐ $ 30 2 Trees
☐ $105 7 Trees ☐ $ 15 1 Tree
☐ $ 90 6 Trees ☐ $____ Other
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Please send this form and your check made out to: “River Partners” 580 Vallombrosa Ave., Chico CA 95926.

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