Family Farm Alliance

Family Farm Alliance
P.O. Box 216
Klamath Falls, OR 97601

Ph. 541.892.6244
Fx. 541.850.9244
www.familyfarmalliance.org

Twenty Questions on Water Storage Projects

A White Paper That Provides Straightforward Answers to Questions and the Need to Prepare the Western U.S. for Future Droughts

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Shasta Dam and reservoir, Thinkstock.com

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TWENTY QUESTIONS ON WATER STORAGE PROJECTS

Executive Summary

With much of the West blanketed by moderate to severe drought conditions, there has been heightened recent interest expressed for the need for additional water storage facilities. The call for more water storage only makes sense when one considers the paradigm shift of more conservative water operations coupled with the added water supplies necessary to meet demands for water that, in many basins in the West, have simply outgrown the existing supply. The attached paper provides detailed answers to 20 frequently asked questions about new water storage projects. Here are just a few examples:

Q: Why are storage projects so important to Western water users?

A: Western family farms and ranches of the semi-arid and arid West – as well as the communities that they are intertwined with – owe their existence, in large part, to the certainty provided by water stored and delivered by Bureau of Reclamation (Reclamation) and other state and local water storage projects. A major reason many Western agricultural water users continue to push for improved water storage and conveyance infrastructure is not to support continued expansion of agricultural water demand (which is NOT happening in most places), but to mitigate for the water that has been reallocated away from agriculture toward growing urban, power, environmental and recreational demands in recent decades.

Q: Why has development of storage projects nearly halted in recent decades?

A: For many reasons – political, economic, social – the construction of traditional surface storage projects is undertaken on a much more limited basis than in decades past. The most frequent reasons center around economics or an inadequate potential water market associated with the given facilities. In other cases, environmental, safety or geologic challenges came to light during a project's development, and rendered its construction, completion or operation unfeasible. Political opposition often contributed, leaving the facilities "on the books" awaiting further action, but with external events and new priorities passing them by. Even if funding and authorization is secured for a new storage project, the existing procedures for developing additional water supplies can make project approval incredibly burdensome.

Q: Is there public support in the Western U.S. for new storage projects?

A: A 2009 survey released by Colorado State University (CSU) is remarkable for the strong support average citizens from the American West give agriculture, especially in times of drought. Among Western respondents to the CSU poll, the most popular strategies for meeting long-term needs were to build reservoirs and reuse water. The least popular alternative was to buy water from farmers.

Q: What options should be on the table to balance the need for water to move to urban uses and environmental purposes against the need for agricultural use of water?

A: Water conservation, water recycling, watershed management, conveyance, desalination, water transfers, groundwater storage, and surface storage are all needed in a diversified management portfolio. Water conservation, one of the most cost effective actions, needs to

continue to be aggressively pursued in conjunction with surface storage and other actions. However, surface storage provides a degree of operational flexibility and significant water supply volumes that cannot be provided by other management actions.

Q: Critics of proposed storage projects and existing dams often point to the environmental concerns associated with any new surface water storage projects. Is it possible to address those issues?

A: Individual surface storage proposals must be evaluated and the associated benefits and risks must be viewed in a net, comprehensive manner. While some critics of new storage projects focus on perceived negative impacts associated with new facility construction (e.g. loss of habitat, disruption of "natural" stream flow patterns, and potential evaporative losses), these perceived impacts must also be compared to the wide range of multi-purpose benefits that storage projects can provide. Properly designed and constructed surface storage projects provide additional water management flexibility to better meet downstream urban, industrial and agricultural water needs, improve flood control, generate clean hydropower, provide recreation opportunities, and create additional flows that can benefit downstream fish and wildlife species.

These are just a few of the questions and summarized answers included in the attached paper, which suggests that the time is right – now – to start planning for future droughts and avoid repeating the disaster we are seeing now in California and elsewhere in the West. We must start managing water across the Western U.S., – especially in California – during this unparalleled drought, to meet the future needs of humans and their communities, as well as protecting the environment. That includes better managing our current water supplies for multiple needs, and developing new water storage projects that will allow the greater flexibility we will need to meet today's demand for water, as well as the challenges of coming drought years in the future. We must begin to plan for that now, and not wait until we are forced to make decisions during a crisis, like the California drought of 2014.

It is possible for the West to find balanced solutions to these conflicts. The solutions will not come easily. They will require visionary leadership and a firm commitment to a balanced, workable policy. But opportunities exist, and if we are prepared to seize them, conflict will be reduced and certainty increased.

TWENTY QUESTIONS ON WATER STORAGE PROJECTS

A White Paper That Provides Straightforward Answers to Questions About Water Enhancement Projects and the Need to Prepare the Western U.S. for Future Droughts
March 2014

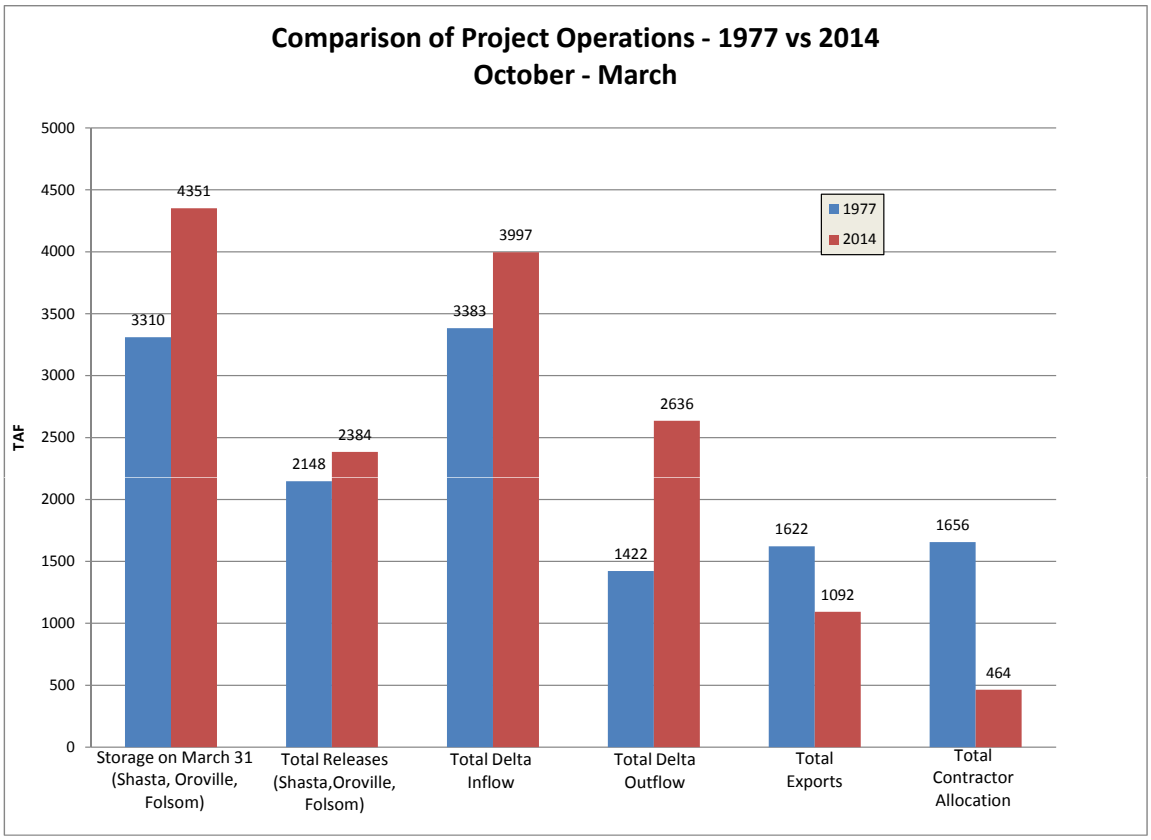
The absolute worst time to prepare for drought is during a drought. A large area of the West recently has been blanketed by moderate to severe drought conditions, with pockets of extreme to exceptional drought centered in north-central Nevada, Idaho's Snake River Valley, the Cascades in Washington State, parts of Colorado and New Mexico, and California's Central Valley. Southern, Eastern, and parts of Central Oregon are facing very dry conditions this year. While some of these extreme dry conditions have abated, the biggest news in the West continues to be the ongoing dry weather pattern across much of California that could have severe impacts on the national economy.

Recently there has been much interest shown in the need for additional water storage facilities in drought affected Western states. There has also been much confusion as to what that would mean to these areas. In fact, even President Obama's top science advisor didn't understand how more storage could have helped these dry conditions when he said "the problem isn't lack of storage, it is lack of rainfall". While on the surface these comments have certain logic to them, the fact was lost that if we had more water storage we would have had more water supply during this dry time. Water storage facilities simply change the timing of water flows - they hold water when it is needed and then release it when it is not. The call for more water storage only makes sense when one considers the paradigm shift of more conservative water operations coupled with the added water supplies necessary to meet demands for water. Unfortunately, many basins in the West have simply outgrown the existing supply.

The farmers and ranchers in the San Joaquin Valley of California are facing a very difficult situation, and many people (including urban dwellers in California's cities and towns) do not even realize that the looming water crisis is due to a long-term trend in changing water allocation and management priorities, although Mother Nature is certainly contributing to the problem. The lack of water and resulting loss of productive farm land is already chipping away at rural communities throughout the Central Valley.

Agricultural water users and the rural communities built around them in California's Central Valley have disproportionately borne the costs associated with water management actions that reallocate water once intended for agriculture and municipal uses to satisfy water quality and fishery regulations imposed upon the Sacramento-San Joaquin River Delta. These costs are astounding, and they extend well beyond the farmer's gate into local communities – impacting the tax base, unemployment and social support programs – all the way to the consumer in the form of higher prices for food. However, some of the real costs of these decisions are felt mostly keenly by the people in rural farm communities: Schools are closing, vendors are going broke, tens-of-thousands of workers are unemployed, food lines are forming, and family relationships are strained. Thousands of farms in the Central Valley are suffering from chronic water supply shortages due in part to Mother Nature this year, but also due to regulatory decisions made by the federal agencies in previous years. In big cities, maybe these numbers are not considered important, but in small, rural, often disadvantaged communities, where one of four workers is left unemployed, they are vital. Towns, once thriving, are now shells of their former selves.

The California crisis, which has galvanized attention to the challenges we now face after decades of inaction towards developing critically needed water infrastructure in the West, will hopefully draw attention to other areas of the West, where water policy and elected officials have long been clamoring for the need to develop new water storage projects.



This figure, prepared by the San Luis Delta - Water Authority, disputes the claims about 2014 being the worst drought, or near it, in history. In terms of water supply, it does compare with 1977, the previous drought year of record. But when you look at storage and outflow, a different conclusion is reached. The difference is new and tighter regulation on irrigation diversions. T. Boardman, SLDMWA, 4-4-2014.

In an October 2013 Congressional hearing on water storage, Rep. Scott Tipton (Colorado), noted that, without new water storage and continued conservation, as many as 700,000 acres of agriculture land could dry up in Colorado by 2050 due to urbanization and urban water transfers.

In central Washington State, the Yakima Valley is a poster child that demonstrates the need for new surface storage. Conservation plays an important part of meeting water needs in the Valley, but farmers, communities and environmental needs demand that new water stored water supplies be created. Speaking to the Yakima challenges, Rep. Doc Hastings (Washington) recently stated, "Time and again, the numbers alone dictate the need for new storage."

In Wyoming, over a hundred years of use has taken its toll; physical wear and time have deteriorated many of the state's major water storage and delivery projects, leading to reduced water delivery efficiencies. The Wyoming Water Development Commission has recommended that the state "must remain committed" to the construction of new reservoirs[1].

What the drought in California's Central Valley and in other parts of the West demonstrates is the need to mitigate for the high costs associated with reallocating water to the environment and away from agriculture and municipal needs by restoring certainty to critical irrigation and city water supplies and meeting environmental needs in the process. And that certainty can be provided by building new water supply enhancement projects (water storage) that can help keep pace with growing Western water demands. And, if some predictions are true that droughts will become more prevalent and intense, we must begin preparations now – planning to adapt both our water allocation and management policies

1 "Wyoming Framework Water Plan, Volume II, Planning Recommendations," Wyoming Water Development Commission, 2007.

Mother Nature and the effects of environmental regulations have contributed to dry water delivery canals and no expected surface water irrigation supplies to over 800,000 acres of prime farmland in California's Central Valley. Source: USC, Dana and David Dornslife College of Letters, Arts and Sciences.

and our water supply infrastructure to meet these demands. The following provides answers to frequently asked questions about these types of projects, and suggests that the time is right – now – to start planning for future droughts and avoid repeating the disaster we are seeing now in California and elsewhere in the West.

QUESTION #1: What exactly is a "water supply enhancement project"?

Storage, or supply enhancement, is the infrastructure necessary to stretch the way Mother Nature supplies us with water to deliver it to what we perceive to be the necessary demands for use. Western rivers have an annual natural hydrograph that peaks with winter snow melt and is substantially less the balance of the year. It also has regular long term cycles of wet periods and drought cycles. Since demands do not follow those cycles, storage is created to meet the more consistent demands.

There are numerous potential water supply enhancement projects waiting to be developed throughout the West. While many of these supply enhancement proposals include projects like canal lining and piping, reconstruction of existing dams, conjunctive management of surface and groundwater, and regional integrated resource plans, there are also some potentially beneficial new multipurpose surface water storage projects. These types of projects include new, relatively smaller on-stream projects in headwater areas, off-stream storage projects, and raising and/or otherwise modifying existing dams. The benefits from these projects include providing certainty for rural family farms and ranches, flood control, dependable drinking water and industrial supplies, additional flows and habitat for fish and wildlife, and cleaner water and energy.

Supply enhancement projects include rehabilitation of existing facilities and construction of new infrastructure. Rehabilitation measures can maximize the conservation effort through increased delivery efficiencies. Construction of re-regulation reservoirs help to minimize operational waste and recycled water. Construction of new dams and reservoirs in watersheds with inadequate storage capacity can increase beneficial use and provide operational flexibility. Conjunctive management of surface and groundwater supplies can result in enhanced overall water yield in some areas, as well.

QUESTION #2: What would additional new storage projects have provided to help water users and the environment in this drought year?

Surface storage is particularly useful in providing drought protection, releasing water at specific times for water quality and environmental benefits, contributing to flood management, mitigating for lost snow pack due to climate change, and responding to other unforeseen circumstances.[2]

In California, significant additional surface storage would have provided flexibility to the state's constrained water management system, which is operated to contribute to the long-term sustainability of the Delta ecosystem, maintain water quality and supply reliability, and prevent and plan for catastrophic failure of the Delta system. Flexibility created within the water management and supply system will likely prove to be essential in developing solutions to Delta ecosystem challenges. With additional capacity and integrated operations, water diversion and deliveries can also be timed in ways that will allow for better response to the effects of earthquakes, floods and climate change.

For example, if Sites Reservoir and Temperance Flat projects were on-line in California, their addition-

2 "Sites Reservoir: Frequently Asked Questions", California Department of Water Resources, September 2007.

al yield and flexibility would have been utilized in the years preceding the 2014 drought. The estimated total average annual yield of Sites Reservoir, from 2007 operation studies, ranges from 470,000 to 640,000 acre-feet per year, depending on the benefit emphasis of the project. These yields include water supply benefits for urban, agricultural and environmental uses, as well as water quality and ecosystem restoration flow actions. The estimated average annual yield for the Temperance Flat RM 274 alternative, reported in the June 2005 Initial Alternatives Information Report, varies between 165,000 and 183,000 acre-feet per year, depending on the benefit emphasis of the project.[3]

QUESTION #3: Why are storage projects so important to Western water users?

Agricultural water users in the Western U.S. use a combination of surface and groundwater supplies, managed through a variety of local, state, and federal arrangements, to irrigate productive agricultural lands in the West. In many parts of the West, water users receive their primary irrigation water supplies from the Bureau of Reclamation (Reclamation). Western family farms and ranches of the semi-arid and arid West – as well as the communities that they are intertwined with – owe their existence, in large part, to the certainty provided by water stored and delivered by Reclamation projects.

Agricultural water organizations like the Family Farm Alliance have been advocating for new storage for over twenty years, and have provided specific recommendations to Congress and the White House on how to streamline restrictive federal regulations to allow for these projects to happen in a timely and affordable manner. Water conservation and water transfers are important tools for improving management of increasingly scarce water resources. However, our members believe these demand-management actions must be balanced with supply enhancement measures that provide the proper mix of solutions for the varying specific circumstances in the West.

A major reason many Western agricultural water users continue to push for improved water storage and conveyance infrastructure is not to support continued expansion of agricultural water demand (which is NOT happening in most places), but to mitigate for the water that has been reallocated away from agriculture toward growing urban, power, environmental and recreational demands in recent decades. If we don't find a way to restore water supply reliability for Western irrigated agriculture through a combination of new infrastructure, other supply enhancement efforts, and demand management – our country's ability to feed and clothe itself and the world will be jeopardized. Storage projects and the water reliability they provide are a necessary ingredient in the recipe for successfully restoring and retaining the vitality of Western rural communities.

QUESTION #4: Why has development of storage projects nearly halted in recent decades?

Historically, the Bureau of Reclamation has been the federal agency partner to step up and assist with the construction and initial financing of water projects that continue to serve agricultural water users in the Western United States. While Reclamation has built more than 600 dams over the last century, two-thirds of their facilities were constructed over 50 years ago. A recent Reclamation study found nearly one hundred potential sites for new surface storage, yet due to environmental regulations and other factors, it has been over a generation since Reclamation has built multiple use, large scale water storage facilities.

The language of the Reclamation Act of 1902, before subsequent amendments, provided wide discretion to the executive branch to withdraw land, study and construct projects. With an emphasis on rapid growth and development in the West, Reclamation labor and contractors built or modernized nearly half of Reclamation's current dam portfolio in the first 38 years of the bureau's existence, with 231 dams complete or under construction by 1940.

In Reclamation's early years, Congressional interest in water projects was intense and development proceeded briskly. However, with enactment of the Federal Water Project Recreation Act in 1965 (Public Law 89-72), the process of authorizing and constructing large Reclamation dams changed dramatically. With enactment of PL 89-72, projects required more Congressional action to advance

3 "Temperance Flat: Frequently Asked Questions", California Department of Resources, September 2007.

to construction; after 1966, all surface storage projects would require individual Congressional authorization before proceeding, a requirement that continues to remain in force.[4]

Today, with more than 100 years of additional Congressional direction on top of the 1902 Act, the current mission of the Bureau of Reclamation is "to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public". Reclamation still studies, (rarely) constructs and maintains large surface storage projects, when authorized by Congress. In fiscal year 2012, Reclamation had a construction budget of more than $180 million for a variety of projects. But surface storage in the construction budget has been joined by dam safety, and the modernization or repair of infrastructure built years ago.[5]

For many reasons – political, economic, social – the construction of traditional surface storage projects is undertaken on a much more limited basis than in decades past. There are roughly three dozen Reclamation dam projects[6], project features or other storage facilities across the West that were authorized by Congress but, for one reason or another, were never funded or constructed. The stories vary, but the most frequent reasons center around economics or an inadequate potential water market associated with the given facilities. In other cases, environmental, safety or geologic challenges came to light during a project's development, and rendered its construction, completion or operation unfeasible. Political opposition often contributed, leaving the facilities "on the books" awaiting further action, but with external events and new priorities passing them by.[7]

New Reclamation surface storage has come on line in Colorado with the recent completion of Ridges Basin Dam/Lake Nighthorse, built

4 Statement of Michael Gabaldon, Director of Technical Resources Bureau of Reclamation Denver Technical Center U.S. Department of the Interior before the Water and Power Subcommittee Committee on Natural Resources U.S. House of Representatives, February 7, 2012.
5 Id.
6 http://www.usbr.gov/WaterSMART/bsp/studies.html
7 Statement of Michael Gabaldon, Director of Technical Resources Bureau of Reclamation Denver Technical Center U.S. Department of the Interior before the Water and Power Subcommittee Committee on Natural Resources U.S. House of Representatives, February 7, 2012.

Ridges Basin Dam and Lake Nighthorse (Colorado) is one of the few new storage projects developed by the Bureau of Reclamation in the past 30 years. Source: Durango Daily

pursuant to Public Laws 100-585 and 106-554. These laws adapted the overall Animas - La Plata (ALP) project, envisioned years prior, into a negotiated settlement of water rights claims by the Southern Ute and Ute Mountain Ute Indian Tribes in southwest Colorado. The ALP is designed to supply an average of more than 111,000 acre-feet of water to four user entities including the tribes in Colorado, and three more in New Mexico[8] via a pipeline currently under construction that will supply water around Shiprock, New Mexico.

New Reclamation surface storage has also come on-line in southeastern California, with completion in 2010 of the Drop 2/Warren H. Brock surface storage reservoir about 30 miles east of El Centro. In 2005, in cooperation with Imperial Irrigation District, Coachella Valley Water District, San Diego County Water Authority and Metropolitan Water District of Southern California (MWDSC), Reclamation completed a study that identified several potential alternatives to improve system efficiency on the Lower Colorado River, and this project was the preferred option.[9] With funding provided by Southern Nevada Water Authority, MWDSC, and Central Arizona Water Conservation District, in exchange for water credits, work began in 2008 and was finished on time and under budget.

Finally, the Central Utah Project recently developed new storage through the Central Utah Project

8 http://www.usbr.gov/uc/progact/animas/faq.html
9 http://www.usbr.gov/lc/region/programs/drop2reservoir.html

Completion Act (CUPCA) office, funded through the Interior Department office of the Assistant Secretary of Water and Science. This project was not completed by Reclamation (the CUPCA office was authorized to take over Project construction for Reclamation by the same law that created the Central Valley Project Improvement Act), but as a result of the partnership with the Federal government that provides $30-$50 million of funding assistance per year.

Obviously, new storage projects proceed to completion on a much more limited basis than in decades past. In the last 30 years, only three storage projects have been built in partnership with the Bureau of Reclamation. As discussed above, one of those was principally funded by non-federal agencies; one was constructed with a local agency with funding assistance provided by the federal government; and the other was completed in large part due to the leadership and participation of the Ute Indian Tribes as project sponsors. And as explained above and below, Reclamation storage projects compete for funds with dozens of other Congressionally-mandated priorities.

Even if funding and authorization is secured for a new storage project, the existing procedures for developing additional water supplies can make project approval incredibly burdensome. By the time project applicants approach federal agencies for permits to construct multi-million dollar projects; they have already invested extensive resources toward analyzing project alternatives to determine which project is best suited to their budgetary constraints. However, current procedure dictates that federal agencies formulate another list of project alternatives which the applicant must assess, comparing potential impacts with the preferred alternative. These alternatives often conflict with desired project purposes and even state law.

So, the Bureau of Reclamation's once active role in building new dams and reservoirs has diminished significantly over the last three decades. Construction of large dams, in general, has become virtually impossible in recent decades due to new societal environmental priorities, and related passage of numerous federal laws that create litigious uncertainty and tremendous regulatory obstacles for proponents of new dams.

As discussed further below, Reclamation did submit a report to Congress that identified nearly one thousand potential hydroelectric and water supply projects in the Western United States that have been studied, but not constructed. The report was required by the Energy Act of 2005. Storage project inventories developed in 2005 by the Family Farm Alliance and Reclamation showed that, in most areas of the West, water resources are available to be developed.

The present generation has had the luxury of being spoiled by the success of our forefathers who built enough storage to provide for significant increasing demands. Those increasing demands have now exceeded the storage capacities built, but more storage can be one tool to use as we continue to need to better manage and utilize this finite (but fluctuating) resource. Environmentally-safe and cost-effective projects of all shapes and sizes do exist. They simply await the vision, dedication and leadership needed to move them to implementation.

QUESTION #5: What options should be on the table to balance the need for water to move to urban uses and environmental purposes against the need for agricultural use of water?

It is possible to meet the needs of cities and the environment in a changing climate without sacrificing Western irrigated agriculture. To achieve that goal, the West needs to implement a full array of different water management actions. Each contributes in different ways to the overall reliability of the water management system. Water conservation, water recycling, watershed management, conveyance, desalination, water transfers, groundwater storage, and surface storage are all needed in a diversified management portfolio.

Water conservation, one of the most cost effective actions, needs to continue to be aggressively pursued in conjunction with surface storage and other actions. However, surface storage provides a degree of operational flexibility and significant

water supply volumes that cannot be provided by other management actions.[10]

One good example of this sort of approach is illustrated by the Willamette Basin Reservoir Study, which is examining the potential for reallocating water from the thirteen U.S. Army Corps of Engineers dams in Oregon's Willamette Valley Project to meet a broader range of beneficial uses, including municipal uses. In this area, there is a need to ensure enough water for current and future agricultural needs, as well as growing cities and fish species protected by the Endangered Species Act.

There must be more water stored and available to farms and cities – we must continue to "grow the pie" of available water quantities. Maintaining the status quo simply isn't sustainable in the face of unstoppable population growth, diminishing snow pack, increased water consumption to support domestic energy, and increased environmental demands in the West. Conservation measures, water reuse and recycling, desalination and temporary water transfer mechanisms must continue to be included in the suite of solutions, but it strains credibility to believe that these actions alone will supply enough water for the tens of millions of new residents expected to arrive in Western cities during the coming decades.

QUESTION #6: Have conservation efforts been effective in reducing water demand enough to make up for shortages or have increases in population or environmental demands in the West negated the savings from conservation?

A 2007 report[11] submitted to a congressional committee hearing provides several examples from throughout the West, where creative measures have been taken to develop and efficiently manage water resources for irrigation. These examples represent just a handful of the creative water management programs that Western irrigators are working on. Efforts to conserve water in urban areas have also been impressive, particularly in the Southwest.

10 "Sites Reservoir: Frequently Asked Questions", California Department of Water Resources, September 2007.
11 "Water Supply in a Changing Climate: The Perspective of Family Farmers and Ranchers in the Irrigated West", Family Farm Alliance, September 2007

Heavy flooding in Oregon's Willamette Valley. Source: Wikipedia.

In Las Vegas, the description of a specific experience may provide the best response to this question. The Southern Nevada Water Authority (Authority) has imposed dramatic conservation measures in the urban areas around Las Vegas. Consider the following:

- In March 2006, a program developed to pay customers $1 per square foot to remove lawns had already spent $56 million.
- New restrictions were imposed on landscaping.
- Use of recycled water was stepped up dramatically.
- Casino-hotels along the Las Vegas Strip had made significant investments in water features, capturing and treating grey water and using recycled water.

With conservation measures in place, southern Nevada reduced water use by 65,000 acre-feet in two years. However, despite these aggressive conservation actions, the Authority is moving with equal determination to develop new water supplies in other parts of the region, since probabilities of shortages on the Colorado River are likely going to increase over time. The Authority is already planning to take groundwater out of aquifers under the Utah-Nevada state line and pipe it to Las Vegas.

So, this particular example – which describes some of the most innovative and aggressive conservation measures undertaken in the West – suggests that even the highest level of conservation is insufficient to keep up with new demands caused by new residents moving to Las Vegas and changing hydrologic conditions.

Las Vegas, despite undertaking some of the most aggressive urban water conservation measures in the country, is still seeking new sources of water to offset potential impacts to its Colorado River supply. Source: Dan Keppen

QUESTION #7: Why don't farmers just tighten up their water use and transfer the water they save to help meet other water demands? Wouldn't this be cheaper than building new storage projects?

We often see bold general statements by water transfer proponents about the potential for agricultural water use efficiency to free up water that can be transferred for use in urban areas or to enhance in-stream flows for the environment. However, those statements are usually followed up by a list of the factors that make it a difficult proposition. Those include re-use deficiencies when water is removed upstream in the system, state water rights laws that protect water users from water being taken away, or forfeited, if they conserve water, and transactions that move water between presumably willing buyers and willing sellers, but have the effect of taking farmland out of production. All of those issues are dealt with directly in a major California report released by the Center for Irrigation Technology (CIT) at Fresno State. The report, "Agricultural Water Use in California: A 2011 Update", refutes some long-standing beliefs about agricultural water usage and confirms others. The full report is available at http://www.californiawater.org. The CIT report and others have reached a similar conclusion: the only large potential for moving water from agriculture to other uses will come from fallowing large swaths of farmland.

While there may be some financial savings gained using a "buy and dry" approach, there is another price that will be paid. The annual total household income impact derived from the Western irrigated agriculture industry - which is made up of direct irrigated crop production, agricultural services, and the food processing and packaging sectors - is estimated at $156 billion (based on 2011 commodity prices).[12] And, the affordability of U.S. household food purchases affecting discretionary income, over time, have contributed substantially to the national economy, since it allows more household income to be devoted to consumer goods and services (U.S. consumers spend less of their disposable income on food than any other country in the world).

These issues and other growing domestic and global food security and scarcity concerns must be considered as federal water policies are developed and implemented. We cannot continue to downplay or ignore the negative implications of reallocating more agricultural water supplies to meet new urban, energy, and environmental water demands. The Europeans, who have actually seen food shortages within memory, understand the importance of preserving their food producing capabilities to benefit their broader economy's well-being.

Decision-makers must better understand the importance of maintaining America's low-cost access to safe, high-quality food and fiber, made available in large part by Western irrigated agriculture. We can find solutions to water conflicts that protect our ability to feed ourselves, export food to others, and continue to lead the world in agricultural production, all the while finding ways to accommodate the water supply needs of contin-

12 "The Economic Importance of Western Irrigated Agriculture: Impacts, Water Values and Strategic Policy Questions", Pacific Northwest Project, prepared for Family Farm Alliance and Irrigation Association, August 2013.

ued urban growth, energy needs, recreational demands, and environmental requirements. But new water storage is a necessary component of that solution.

There is also growing recognition that states and local governments must consider the impacts of continued growth that relies on transfers from agriculture and rural areas and to identify feasible alternatives to those transfers. For example, a 2006 report released by the Western States Water Council (WSWC) and Western Governors Association (WGA) states "there is understandable support for the notion of allowing markets to operate to facilitate transfers from agricultural to municipal and urban use as a means to accommodate the needs of a growing population. While such transfers have much to commend them, third party impacts should be taken into account, including adverse effects on rural communities and environmental values. Alternatives that could reasonably avoid such adverse impacts should be identified."

QUESTION #8: Would new storage projects help address impacts brought about by climate change? Are existing reservoir storage capacities capable of handling hydrologic changes associated with climate change?

Regardless of cause, climate variability is one critical factor that underscores the need to develop new water storage projects in the Western U.S. There are several reports[13] that suggest existing reservoirs will not be capable of safely accepting the earlier, more intense snow melt that has been predicted for many Western watersheds. A report released in 2006 by the State of California predicted that climate change would result in a drastic drop in the state's drinking and farm water supplies, as well as more frequent winter flooding. The report suggested that warmer temperatures will raise the snow level in California's mountains, producing a smaller snow pack and more wintertime runoff. This means more floodwaters to manage in winter, followed by less snow melt to store behind dams for cities, agriculture, and fish. Water resources experts in other parts of the West also realize that new surface water storage projects may be necessary to capture more snow melt or more water from other sources. For example, in Oregon's Deschutes River Basin, a Bureau of Reclamation WaterSMART Study will evaluate water imbalances in the basin in the face of changing realities and will identify strategies to meet future water needs, including new storage.

Some Western water managers believe there will likely be a "rush" to re-operate existing multi-purpose water storage projects to restore some of the lost flood protection resulting from the changed hydrology associated with climate change. These projects were designed to provide a certain level of flood protection benefits that will be reduced because of more "rain-induced flood" events. There will be a call to reduce carryover storage and to operate the reservoirs with more flood control space and less storage space. If this is done, it will even further reduce the availability and reliability of agricultural and urban water supplies.

Water users located upstream of existing reservoirs face a different challenge. These users must rely on direct or natural that is primarily fueled by snow melt. In the Rocky Mountain West, snow melt traditionally occurs during the onset of the irrigation season. Since conveyance systems are never 100% efficient, water is diverted, conveyed and spread on the land in excess of the net irrigation demand. This surplus returns to the stream and recharges groundwater aquifers, which augments water supplies for all users located downstream from the original diversion. If more runoff were to occur during warm cycles in winter before the onset of the irrigation season, this would impact the utility associated with these return flows.

We need priority research leading to comprehensive validation of West-wide changes in climate change-driven stream flow. This should be followed by quantification of the amount of additional reservoir storage, conservation targets, etc. required to re-regulate this change in hydrology. To optimize beneficial use, storage should be spaced through the drainage and located at high and low elevations to regulate and subsequently re-regulate the water supply to maximize beneficial use.

13 Including: California Climate Change Center, 2006 - Our Changing Climate – Assessing the Risks to California, Summary Report. Tanaka et al. 2007, Climate Warming and Water Management Adaptation for California. Department of Civil and Environmental Engineering, Department of Agricultural and Resource Economics, University of California, Davis. May 3, 2007 Testimony Submitted on Behalf of The Western Governors' Association to U.S. House Committee on Science and Technology.

QUESTION #9: Do reservoirs also release methane and CO_2?

Yes. However, the quantities are considered to be relatively small. For example, Lake Oroville in California annually emits the same amount of CO_2 as one-half day of all passenger cars commuting in the Los Angeles basin. Reservoirs located in areas of grasslands that grow and decompose annually, produce a much smaller amount of methane or CO_2 due to inundation.[14]

QUESTION #10: Critics of proposed storage projects and existing dams often point to the environmental concerns associated with any new surface water storage projects. For example, they may claim that increasing temperatures means more reservoir evaporation, resulting in some loss of the water supply that storage might otherwise make available. Is it possible to address those issues?

Environmental Impacts

Individual surface storage proposals must be evaluated and the associated benefits and risks must be viewed in a net, comprehensive manner. While some critics of new storage projects focus on perceived negative impacts associated with new facility construction (e.g. loss of habitat, disruption of "natural" stream flow patterns, and potential evaporative losses), these perceived impacts must also be compared to the wide range of multi-purpose benefits that storage projects can provide. Properly designed and constructed surface storage projects provide additional water management flexibility to better meet downstream urban, industrial and agricultural water needs, improve flood control, generate clean hydropower, provide recreation opportunities, and – yes, create additional flows that can benefit downstream fish and wildlife species.

Evaporation

Potential increasing temperatures and associated increased evaporation must also be evaluated for new storage projects on a case-by-case basis. Evaporation for all reservoirs is accounted for in project operation studies. Evaporation is a function of several variables, including temperature, wind and the surface area of the reservoir. Sometimes, new reservoirs might actually result in lower evaporative losses than is the current case.

Consider, for example, Oregon's Long Lake basin, located just west of Upper Klamath Lake, the principal reservoir for the Klamath Irrigation Project. While there are many other considerations (including availability of water rights, high costs, and other challenges) that make the near-term feasibility of this project questionable, it does provide a useful example to demonstrate how evaporation loss must be assessed on a case-by-case basis.

In this example, putting in earthen dams in the mostly dry Long Lake could create a reservoir with about the same storage capacity as Upper Klamath, but with only about 10 percent of the surface area. It would be about 160 feet deep, compared to an average depth of just 8 feet for Upper Klamath Lake. Upper Klamath's annual water loss to evaporation is 290,000 acre-feet. The projected annual loss from a Long Lake Reservoir would be 8,000 acre-feet. That's a huge difference – and a huge benefit. So is the fact that the water from such a reservoir would be much colder than water from Upper Klamath Lake.

Preliminary operations studies for Sites Reservoir show the total average annual net evaporation ranges from 25,000 to 30,000 acre-feet per water year, which is 4 to 7 percent of the total average annual yield of the project. These loss rates are comparable to loss rates associated with groundwater storage projects.

QUESTION #11: Are there some specific examples of water supply enhancement projects that can provide flow augmentation for current stream flow losses?

Yes. The Western Water Supply Enhancement Study released in 2005 by the Family Farm Alliance was transmitted in the form of a CD-ROM. There are over 100 projects included in the Alliance data base, most of all which provide multiple benefits to water and power users and the environment. Some specific projects that would improve flows and habitat for fish and wildlife include:

14 "Sites Reservoir: Frequently Asked Questions", California Department of Water Resources, September 2007.

- **Atterberry Irrigation Reservoir** (Washington) is a small proposed project that involves construction of an irrigation water reservoir (500 acre-feet) which would reduce irrigation water withdrawal from the Dungeness River during periods of low stream flow. The project will provide substantial increases in available side channel spawning/ rearing habitat as well as reduced water temperature benefits.
- **Plateau Reservoir** (Colorado) would be operated in conjunction with McPhee Reservoir to improve downstream fishery habitat. The Dolores Water Conservancy District (DWCD), Bureau of Reclamation, State of Colorado and Federal fishery agencies have identified the need to provide at least 3,300 acre-feet per year of additional water for the fishery flow downstream of McPhee Reservoir. McPhee Reservoir and related delivery facilities are part of the Dolores Project, a multi-purpose water storage project that supplies water for irrigation, municipal, fishery below the dam, and other uses. The fishery downstream of McPhee Dam is an excellent cold water trout fishery. DWCD has been studying methods to provide the additional fishery water and has identified the construction of Plateau Reservoir as an option to supply additional fishery water.
- **Viva Naughton Reservoir** (Wyoming) is one of several alternative storage sites under investigation on the Hams Fork River above Kemmerer. Drought has greatly changed the water agreement between downstream irrigators and PacifiCorp, the owner of Viva Naughton Reservoir. Investigations completed for the Green River Groundwater Recharge and Alternate Storage Study published in late 2001 indicate enlarging Viva Naughton Reservoir is one of the more efficient water development projects in the state. The permitted enlargement of Viva Naughton Reservoir would provide a much needed source of late season water for users below the dam.
- **Sites Reservoir** (California) has been identified by the Department of Water Resources and the CALFED Program as one of the most cost-effective and environmentally beneficial new facilities under consideration in California. The Sites project would enhance water supply reliability for environmental, urban and agricultural uses throughout the state. It would provide water supplies in average and dry years for urban, agricultural and environmental purposes, increase San Francisco Bay-Sacramento / San Joaquin Delta outflows during critical times, improve flood control, enhance groundwater recharge, bolster fish flows, and improve flexibility for existing projects, such as Shasta Reservoir. Sites reservoir can greatly increase reliability of water supplies by reducing water diversions on the Sacramento River during critical fish migration periods.

Wallowa Lake Dam, in Oregon, has been recommended for repair by the Columbia River - Umatilla Solutions Taskforce. Source: Rocky Wilson, Wallowa County Chieftain.

- **The Columbia River - Umatilla Solutions Taskforce** (Oregon) has identified options to increase the utilization of Columbia River water for in-stream and out-of-stream water users in the Umatilla Basin without negatively impacting in-stream flows needed for fish species. Recommendations that the Taskforce developed included repairing Wallowa Lake Dam and constructing Juniper Canyon Reservoir.

QUESTION #12: Are there existing studies which point to storage projects that could be developed in the Western U.S.? If so, what are some specific examples?

Yes. At least two studies conducted in the past decade support this answer.

As previously mentioned, the Board of Directors of the Family Farm Alliance in 2005 launched a project that pulled together a master data base of potential Western water supply enhancement projects. The goal was to gather together ideas from around the West and put them into one master data base. The types of projects contained in the resulting Western Water Supply Enhancement Study database are not monstrous dams like China's Three Gorges project. Instead, they include a wide range of supply enhancement projects, including some very feasible new surface storage projects.

Shortly after the Alliance's data base was released (and submitted to the Congressional record in April 2005), the Bureau of Reclamation seven months later submitted a report to Congress that identified nearly one thousand potential hydroelectric and water supply projects in the Western United States that have been studied, but not constructed. The report was required by the Energy Act of 2005.

There are over 100 projects included in the Alliance data base. Some specific projects include:

- **Water for Irrigation, Streams, and Economy Project** (WISE), a collaborative effort in Oregon to improve the health of the Little Butte Creek and Bear Creek systems and increase the effectiveness and efficiency of local irrigation districts. The WISE Project utilizes a combination of strategies including: piping and lining canals, increasing the storage capacity of selected reservoirs, and installing a pumping system that will provide access to water that has been allocated for agricultural purposes. Collectively, more water will be available for management for irrigation and environmental instream purposes.
- **Temperance Flat Dam** (California) would be a new structure constructed on the San Joaquin River, above Friant Dam, which would provide much needed water supplies and hydroelectric power. The Upper San Joaquin River Basin Storage Investigation was completed by the U.S. Bureau of Reclamation, in cooperation with the California Department of Water Resources, consistent with recommendations in the CALFED Bay Delta Program Record of Decision.
- **Strawberry Valley Rehabilitation and Betterment Projects** (Utah) are proposed to decrease the water seepage and losses in the Strawberry Valley Project, as well as provide gravity pressure for the continued migration toward sprinkler irrigation systems, which would then provide additional water savings. These projects could save approximately 15,000 to 20,000 acre-feet of water per year in an agricultural area that is rapidly urbanizing.
- **Farmington Groundwater Recharge Program.** This $33.5 million effort is led by Stockton East Water District (California) in partnership with the U.S. Army Corps of Engineers to contribute to restoration of local aquifers and to repel saline water intrusion. The Program seeks to rotate water with other land-uses via short- and long-term agreements with landowners, and develop permanent recharge facilities. The recharge facilities also provide seasonal habitat for migratory waterfowl. This will provide an additional water supply yield to the region of approximately 17,000 acre-feet annually.

QUESTION #13: Why are policy makers suddenly starting to talk about new water storage projects?

For the farmer or rancher, the current federal water allocation and reallocation schemes in some areas of the West often create chaotic economic conditions, a sense of disillusionment and resignation, and uncertainty. The current drought in California has highlighted the dire need for long-term water solutions, especially increasing the state's storage capacity. Nowhere is the uncertainty of water supplies greater than in California's San Joaquin Valley from the federal Central Valley Project (CVP).

In California, conditions are deteriorating and farmers and ranchers are scrambling, with the state in its worst drought in the state's 160 years of record-keeping. In February 2014, the U.S. Bureau of Reclamation announced an initial zero water allocation for all CVP agricultural water service contractors. Reclamation also announced 40% allocations to Sacramento River Settlement Contractors and the San Joaquin River Exchange contractors, something that has never

happened before. This comes as no surprise due to the record dry conditions experienced over the last twelve months, coupled with water supply reductions related to federal regulatory actions.

"Every region and political interest in the state agree that we must expand our storage capacity," said Rep. Jim Costa (D-California) in February 2014. "After three dry years, the case for this is being made every day as our reservoirs statewide are turning into mud pits during this drought. Our grandparents' foresight has carried us for decades, but the bill has come due for our state to again invest in storage."[15] The call for new storage extends beyond California.

"Simply saying 'no' and believing in the status quo are not answers to meet the growing needs of the West," Rep. Doc Hastings (R-Washington) said at a February 2014 House Water and Power Subcommittee hearing on the need for new storage projects. "We need to create more storage capacity in the Yakima River Basin, California and other areas throughout the West – not divvy up ever-increasing scarce resources in times of changing weather patterns and growing human and species needs."

Mr. Hastings in February 2014 introduced two bills out of a total of four storage bills introduced that month by House Democrats and Republicans. Clearly, as noted in a recent Sacramento Bee news story, the California drought is "stoking a congressional appetite for additional water storage, with new or larger dams back on competing menus."[16]

QUESTION #14: How much investment is necessary to upgrade irrigation infrastructure to accommodate present and future water management issues?

Cost-sharing assistance from the state and federal government will likely not be available to support new storage projects in the Western United States. Shrinking federal budgets due to efforts to reduce the national debt have and will continue to all but eliminate the traditional federally-constructed water storage project. And, significantly, the nation and individual states face an enormous and likely higher-priority challenge: the need to undertake expensive rehabilitation of existing dams that are quickly falling into a state of disrepair. Many dams are determined to be deficient as a result of aging, deterioration, and a lack of maintenance. Often dams are deemed unsafe or deficient as a result of increased scientific and engineering knowledge about large flood events and earthquakes, and the ability to predict a dam's structural response to such extreme events, which pose a significant safety threat.[17]

Federal agencies own or regulate a very small percentage of the 85,000 dams in the U.S. but they face significant challenges in terms of oversight.[18]

As the country's dams age, downstream development increases, and better engineering methods are developed, more significant rehabilitation will be needed. One example includes the major improvements to California's Folsom Dam, which were jointly undertaken by the U.S. Army Corps of Engineers and the Bureau of Reclamation at an estimated cost of $1.5 billion through 2019.

Folsom Dam, on the American River, upstream of Sacramento, California. Source: U.S. Bureau of Reclamation.

15 "Costa Introduces Bills to Increase CA Water Storage", Press release from the office of Rep. Jim Costa, February 28, 2014.
16 "Drought be damned, Calif. lawmakers look to storing water", Michael Doyle, McClatchy Washington Bureau, February 27, 2014.
17 "Report Card for America's Infrastructure", American Society of Civil Engineers, 2012.
18 Federal Emergency Management Agency. Federal Guidelines for Dam Safety, 2004.

Responsibility for ensuring the safety of the rest of the nation's dams falls to state dam safety programs. Many state dam safety programs do not have sufficient resources, funding, or staff to conduct dam safety inspections, to take appropriate enforcement actions, or to ensure proper construction by reviewing plans and performing construction inspections. The task for the states is "an enormous challenge", according to recent study released by the American Society of Civil Engineers (ASCE).

In 2009, the Association of State Dam Safety Officials (ASDSO) estimated that the total cost to repair the nation's dams totaled $50 billion and the needed investment to repair high hazard potential dams totaled $16 billion. These estimates have increased significantly since ASDSO's 2003 report, when the needed investment for all dams was $36 billion and the needed investment for high hazard potential dams was $10.1 billion.[19] The 2009 report noted an additional investment of $12 billion over 10 years will be needed to eliminate the existing backlog of 4,095 deficient dams. That means the number of high hazard potential dams repaired must be increased by 270 dams per year above the number now being repaired, at an additional annual cost of $850 million a year. To address the additional 2,276 deficient – but not high hazard – dams, an additional $335 million per year is required, totaling $3.4 billion over the next 10 years.[20]

According to the ASCE "Report Card for America's Infrastructure", in order to make significant improvements in the nation's dams, Congress, the administration, state dam safety programs, and dam owners will have to develop an effective inspection, enforcement and funding strategy to reverse the trend of increasingly deteriorating dam infrastructure. It is very likely that this matter of critical importance to public health, safety and welfare could put future state and federal funding for new storage projects on the back burner.

QUESTION #15: In this time of intense financial and budgetary challenges, why should the federal government participate in cost-sharing of potentially expensive new water storage projects?

Those who benefit from new water supply infrastructure should help pay for that infrastructure. For the most part, new water supplies are not being proposed to meet the expanding needs of agriculture. On the contrary, we are seeing a move in the opposite direction, where agricultural lands are going out of production and being lost to expanding urban development. And, environmental demands now compete for existing stored water supplies originally developed to meet agricultural needs. Water that was originally established for agriculture and the communities it supports is now being reallocated to meet other new growing urban and environmental water demands. The growing numbers of urban water users in the West and the public interest served through improved environmental water supplies should naturally be part of equitable financing and repayment schemes. If the public (sometimes through government regulation) wants agricultural storage water to supplement urban growth and river flows, then they must be willing to pay for it.

The President and Congress will prioritize whatever federal funds are available to meet existing and future needs. As for the rest of the capital, it must come either from state and local governments or from the private sector. If the federal government cannot fund the required investments, it should take meaningful steps to provide incentives for non-federal entities to fill the void, and remove barriers to the new ways of doing business that will be required. We believe the federal government, including Reclamation, needs to seriously consider adopting a policy of supporting new projects to enhance water supplies while encouraging state and local interests to take the lead in the planning and implementation of those projects. Local and state interests have shown enormous creativity in designing creative water development projects. Water agencies have at times obtained additional federal funding through the appropriations process; however, Reclamation could also supplement this effort by providing funding for local partnership agreements, especially where Reclamation and its water contractors are identified as potential beneficiaries.

19 Association of State Dam Safety Officials. The Cost of Rehabilitating Our Nation's Dams: A Methodology, Estimate and Funding Mechanisms (2002; rev. ed., 2008)
20 Id.

QUESTION #16: Is it possible to move forward with storage projects that will ultimately have broad support from a number of different stakeholders?

Some people and organizations oppose dams as a matter of dogma. They have no flexibility when it comes to surface storage. But experience teaches us that solving complex problems requires a great deal of flexibility. It also requires the collective efforts of reasonable, well intentioned people who may come at the problem from entirely difference perspectives. Surface storage isn't the solution in all cases, but dismissing it out of hand serves no good purpose.

Creative, successful solutions can be found by motivated, unthreatened parties. The holders of water rights approach the Western water supply problem with much at risk, and with much to offer in the form of practical experience managing the resource on a daily basis. Incentives that create reasons to succeed will do more good for the environment in a shorter period of time than actions that rely on threats of government intervention.

One case in point is the Yakima River Basin in Central Washington State. A group of stakeholders, including irrigated agriculture, the Yakama Nation, environmental groups, local and regional governments, and the State of Washington have come together to create an integrated plan for the Basin that includes new, creative water storage solutions that integrate with water conservation, improved water management, fish passage and habitat conservation. The Yakima Basin Integrated Plan is now in its implementation phase which will span over 30-years.

In Oregon, the state's Integrated Water Resources Strategy recently recommended "improving access to built storage" and a newly legislated program has been designed to fund projects with economic, environmental, and social benefits.

QUESTIONS #17: Is there public support in the Western U.S. for new storage projects?

Despite the incredible pressure applied by certain environmental groups and their allies in urban media outlets, our elected officials are on solid ground when they stand up for farmers and their water. A 2009 survey released by Colorado State University (CSU) is remarkable for the strong support average citizens from the American West give agriculture, especially in times of drought.[21] The report provides very interesting findings that underscore Western householders support for water storage projects and irrigation over environmental and recreational water needs in times of shortage. Three focus groups were used to develop a multi-faceted questionnaire. An E-mail invitation to an Internet survey yielded 6,250 municipal household respondents in 17 Western states.

Respondents were keenly aware of the potential for long-term water scarcity and how that could impact farmers and ranchers.

Among Western respondents to the CSU poll, the most popular strategies for meeting long-term needs were to build reservoirs and reuse water, whether it is on private lawns or public landscapes. The least popular alternative was to buy water from farmers.

The survey demonstrated broad support in the Western United States for keeping water in agriculture. The survey also demonstrated that the "average Joe" recognizes water scarcity issues in the West, but on the whole, is not well educated on the details of water management.

QUESTION #18: What are some of the regulatory hurdles that Western water users face as they seek to pursue development of new surface storage projects?

The often slow and cumbersome federal regulatory process is a major obstacle to realization of projects and actions that could enhance Western water supplies. The list below contains the regulatory impediments most frequently encountered by Western water users.

Problem #1: Rigid application of Clean Water Act alternatives analysis requires potential solutions to be viewed not as possible components of an

21 Pritchett, J. , A. Bright, A. Shortsleeve, J. Thorvaldson, T. Bauder, and R. Waskom. 2009. "Public Perceptions, Preferences and Values for Water in the West: A Survey of Western and Colorado Residents." Special Report No. 17. Colorado Water Institute. Fort Collins, CO.

integrated whole, but rather as alternatives to each other.

Effect: The ability to maximize benefits through integrated water management is lost.

Problem #2: "Purpose and need" requirements related to potential benefits or uses of future water supplies are dismissed by agency regulators in the National Environmental Policy Act (NEPA) process.

Effect: Planning opportunities and purposes for which a project may be permitted are restricted, which narrows the planning horizon, and makes it impossible to plan for projects with long-term benefits.

Problem #3: The alternatives proposed for assessment by NEPA regulators are frequently inappropriate, unrealistic, difficult-to-implement, and often in conflict with state law.

Effect: The permitting process stalls, and costs increase to the project applicant.

Problem #4: Federal regulators take a long time making decisions on projects, and at times they seem unable to even make decisions.

Effect: Projects are postponed and money is wasted as additional studies and analyses are conducted.

Problem #5: Federal agencies tend to use the most severe mitigation requirements from existing projects as the baseline for mitigation for proposed projects, and then adding additional burdens.

Effect: Applicants end up spending tremendous amounts of money for potentially uncertain mitigation.

Problem #6: USFWS is not compelled to consult with other agencies in a timely fashion, and frequently does not begin work on ESA biological opinions until after the NEPA process has been completed.

Effect: Rather than doing things concurrently, this adds time to the process and increases greatly the potential for last-minute surprises that could endanger the proposal or require significant additional work.

In addition, there exists with some agencies a defeatist attitude that no dams or water supply projects will be built. So, there is little apparent commitment to earnestly begin and engage the difficult problems described above.

QUESTION #19: How would streamlining regulatory hurdles assist in developing water management policy?

By the time project applicants approach federal agencies for authorization to construct multi-million dollar projects, they have already invested extensive resources toward analyzing project alternatives to determine which project is best suited to their budgetary constraints. However, current procedure dictates that federal agencies formulate another list of project alternatives which the applicant must assess, comparing potential impacts with the preferred alternative. These alternatives often conflict with state law. The federal government should adopt a policy of supporting new efforts to enhance water supplies and encouraging state and local interests to take the lead in the formulation of those efforts. The existing regulatory procedures for developing additional supplies should also be revised to make project approval less burdensome. Opportunities should be explored to expedite this process and reduce the costs to the project applicant.

QUESTION #20: What are some tools or laws that could be employed to develop new environmentally-sensitive storage projects?

There are several bills under consideration in the House of Representatives intended to facilitate the construction of new surface storage facilities. Congress should work to quickly pass all of these bills, given the brief window of opportunity the drought-related political attention has provided this year.

H.R. 3980, introduced by Water and Power Subcommittee Chairman Tom McClintock (R-California), would make it easier to construct additional storage by streamlining the current multi-agency permitting process for new storage projects and creating a "one-stop-shop" permitting process through the Bureau of Reclamation. The "Water Supply Permitting Coordination Act" authorizes the Secretary of the Interior to coordinate federal permitting processes related to the construction

of new surface water storage projects on Department of Interior and Department of Agriculture lands and to designate the Bureau of Reclamation as the lead agency for permit processing. This "one-stop shop" bill is a concept many Western water users have long advocated for. This bill includes provisions that ensure the "cooperating" federal agencies, some with very different mission statements from the Bureau of Reclamation, must actually buy into the process and work with the lead agency to accomplish the goals and purpose of the legislation by directing strict adherence to the project schedule established by the lead agency (Reclamation), including the coordination of all federal agency reviews. The bill also provides broad authority and responsibility to the lead federal agency to coordinate all federal reviews related to a project.

Creative ways to finance new water storage projects are also needed.

Rep. Doc Hastings earlier this year introduced H.R. 3981, which would allow irrigation districts to voluntarily prepay contracts with the federal government. The funding that is generated by these payments would be placed in an account to fund either the construction of new water storage projects or the expansion of current water storage reservoirs. A second proposal, which is a discussion draft proposed by Rep. Hastings, would authorize the U.S. Bureau of Reclamation to implement a surface storage enhancement program to fund new or expanded water storage construction for purposes including increased municipal supply, agricultural irrigation, and to reduce impacts to fish and wildlife.

Title II of the Rural Water Supply Act of 2006 (PL 109-451) authorized a loan guarantee program for rebuilding and replacement costs of aging water infrastructure within Reclamation's ownership that would leverage a small amount of appropriated dollars into a large amount of private lender financing available to qualified Reclamation-contractor water districts with good credit. In other words, the Congress has given the authority to Reclamation to co-sign a loan to help their water contractors meet their contract-required, mandatory share of rebuilding and replacement costs of federally-owned facilities. Given this scenario, it is incredible that Reclamation loan guarantees, a long-awaited critical financing tool for water users across the West, are now being held up because of incorrect interpretations of federal policy by the Office of Management and Budget (OMB). Efforts must continue to compel Reclamation and OMB to implement this program and to investigate opportunities to develop similar loan guarantee programs that can help fund new water infrastructure projects. And, we must continue to find ways to leverage funding to meet even more needs for both aging and new water infrastructure projects.

Congressmen John Garamendi and Doug LaMalfa detail their legislation that would authorize construction of Sites Reservoir. Source: Marysville Appeal-Democrat.

Several members of the California delegation have introduced bills to authorize and fund new storage projects. In February 2014, Rep. Jim Costa introduced a package of legislation that would invest in California's water infrastructure and expedite construction on existing storage projects to improve water reliability across the state. Costa's legislation would authorize construction at Shasta Dam, San Luis Reservoir, and Temperance Flat. In March 2018, Congressmen John Garamendi (D-California) and Doug LaMalfa (R-California) announced the bipartisan Sacramento Valley Water Storage and Restoration Act of 2014. It would authorize a feasibility study and construction of Sites Reservoir in Colusa County, California.

All of these laws would provide tools that would help project proponents actually build new water storage projects in California and the rest of West.

CONCLUSION

We must start managing water across the Western U.S., and especially in California during this unparalleled drought, to meet the future needs of humans and their communities, as well as protecting the environment. That includes better managing our current water supplies for multiple needs, and by developing new water storage projects that will allow the greater flexibility we will need to meet today's demand for water as well as the challenges of coming drought years in the future.

As the West has grown, water issues have become increasingly polarized. We face a number of challenges in the Western water arena, but they can be addressed by thoughtful, motivated and reasonable parties. Growing urbanization and new environmental priorities in the West have placed heavy demands on water, the key ingredient in the production of agricultural products.

This conflict can be characterized in simple terms. Some argue that irrigated agriculture in the West uses too much water; that our rivers are over-committed; and that the environment is suffering. Others insist that a healthy rural economy is driven by farmers and their production of food. Taking water from farms and giving it to cities and the environment will do lasting harm to the fabric of the rural West.

Inaction in this regard really is action. By not seeking creative ways to streamline the regulatory process associated with repairing existing and creating new water infrastructure, the action that will follow is a continuation of the status quo. That action will push water-short cities and new environmental water demands to pursue taking water supplies from agriculture. In addition to adverse socio-economic impacts for rural communities, that action will significantly diminish domestic food production at exactly the same time climate change is predicted to have a severely adverse impact on food production worldwide.

We must begin to plan for that now, and not wait until we are forced to make decisions during a crisis, like the California drought of 2014. It is possible for the West to find balanced solutions to these conflicts. The solutions will not come easily. They will require visionary leadership and a firm commitment to a balanced, workable policy. But opportunities exist, and if we are prepared to seize them, conflict will be reduced and certainty increased.