



Meeting Minutes

Meeting of the California Water Commission

Tuesday, September 14, 2021

Remote Meeting

Beginning at 9:30 a.m.

1. Call to Order

Vice-chair Matt Swanson called the meeting to order at 9:31 a.m.

2. Roll Call

Assistant Executive Officer Laura Jensen called the roll. Commissioners Alvarado, Arthur, Gallagher, Makler, Solorio, Steiner, and Swanson were present, constituting a quorum.

3. Closed Session

The Commission did not hold a closed session.

4. Approval August 18, 2021 Meeting Minutes

Commissioner Makler asked if he could he partially approve minutes since he departed after Item 11. Commission Counsel Holly Stout said that was OK. Commissioner Solorio motioned to approve the August 18, 2021 meeting minutes. Commissioner Steiner seconded the motion. Commissioner Alvarado abstained. All other Commission members present voted in favor.

5. Executive Officer's Report

Executive Officer Joseph Yun discussed the fluidity with in-person vs. virtual meetings. He will inform the Commission of the status of the October meeting (virtual or in person) as soon as he can. Staff is working with Water Storage Investment Program (WSIP) applicants on items due for feasibility determinations and are still on track to bring two before the Commission in October, two more in November, and the final three in December. There may be a handful of screening projects but there are no submittals to review so far. During lunch break he and Brianna Shoemaker need to attend a different meeting, and should be back by 1 p.m.

6. Commission Member Reports

There were no Commission member reports. Commissioner Alvarado said she will be driving and have her video turned off temporarily. Commissioner Solorio said he will have his video turned off from 11:45 to noon, and will be unavailable from noon to 1 p.m.

7. Public Testimony

Dr. John Replogle of RSA Environmental said that California laws require large farms to meter and report their water use within plus/minus 5 percent to determine true water use and allow for equitable redistribution, but there are few accurate reliable and economical metering systems being used. His company has invented, designed, patented, installed and operated a well measurement system which can both monitor and control the flow of water with an

accuracy approaching plus/minus 2 percent. If installed it can reduce water delivery disputes because of its accurate measurements.

8. Director Karla Nemeth, Department of Water Resources

Department of Water Resources (DWR) Director Karla Nemeth provided introductory remarks about the day's presentations, discussing how the Sustainable Groundwater Management Act (SGMA), the State Water Project (SWP), and DWR's new Human Right to Water (HR2W) policy relate to agriculture and communities in the Central Valley. Director Nemeth discussed the various roles the SWP plays in supplying agriculture, urban areas, and ecosystems. When considering future needs in light of climate change, the SWP has a vital role in the larger watershed picture. The drought is highlighting water management challenges. To address HR2W issues SGMA, the Safe and Affordable Drinking Water Fund, the drought information on failing water wells, and infrastructure investments from the State and federal government need to be integrated. The current drought is severe and it has changed the way we plan. The speed of the dryness and acute water supply emergencies has changed our planning from one based on historical averages to planning that considers the worst-case scenario. The current focus is on human health and safety. Outside that focus, we are not meeting water supply needs south of the Delta. DWR is working with communities to identify significant water resource management challenges and agriculture partners on management plans. DWR needs to assess different watersheds, understand climate vulnerability and risk, so information can help inform how we approach surface water and how it is connected to groundwater management plans.

9. State Water Project Briefings: The State Water Project and the San Joaquin Valley

The Commission continued its 2021 State Water Project briefings with presentations on DWR's 2022 Drought Contingency Plan and subsidence in the San Joaquin Valley.

John Yarbrough, Assistant Deputy Director of the SWP, gave the Commission an update on DWR's 2022 Drought Contingency Plan. Northern Sierra watershed precipitation drives our water supply. Key storage reservoirs (Shasta, Oroville, and Folsom) are very low. Lake Oroville is at its lowest level since it was filled. This is the second driest two-year period since 1977. Only about 20% of our less than average snowpack materialized as runoff. Drought actions being taken include modified Delta salinity standards, installation of emergency drought barrier, delayed delivery of Central Valley Project (CVP) and SWP south-of-Delta water transfers to bolster storage, additional releases from New Melones, reduced CVP allocation to primarily public health and safety levels, limited rice-decomposition deliveries, and implementation of Sacramento Valley groundwater substitution program to protect the Pacific flyway and preserve storage. Current conditions and dry forecasts require aggressive planning to prepare for 2022. We started planning earlier with multi-agency coordination. Priorities with the limited water supply include HR2W, Delta water quality standards, cold water supply for fish, and storage for next year. Conservation remains important.

Daniel Whisman, Principal Engineer and Program Manager for the California Aqueduct Subsidence Program (CASP), gave the Commission an update on subsidence in the San Joaquin Valley, described the status of the early-implementation and long-term projects of the CASP,

their efforts to support the HR2W, and current work on remediating subsidence damage. Mr. Whisman described the SWP as the lynchpin to the state's water security and a key component of flood management and water conveyance. The SWP plays an integral role in the water delivery system in the San Joaquin Valley, as well as supporting Southern California. The aqueduct has been damaged by subsidence due to groundwater overdraft. CASP is one of several programs underway to help improve resiliency of water management systems while preparing for future needs. Power needs must also be considered. Subsidence causes a decrease in flow capacity and operational flexibility leading to higher energy costs, increased maintenance and repair costs, and reduces the operator's ability to take advantage of lower energy costs while moving water. Climate change magnifies these challenges. Extreme weather events degrade SWP and CVP performance and makes it costly to fulfill HR2W goals. Hydrology is changing; by mid-2050s there is a 50 percent chance in any year to experience conditions like the 2012–2016 drought or worse. Disadvantaged communities are disproportionately impacted, continuing overdraft in the Central Valley will increasingly disrupt their water supplies. CASP is working on both early implementation projects as well as longer term remedies. Early implementation projects include raising liner and embankment of multiple pools, reconstructing gate structures, relocating and raising bridges, and relocating utilities crossing the aqueduct. Long-term plan development includes outreach and coordination with communities of interest in San Joaquin Valley and beyond, and close coordination with the Reclamation Subsidence Recovery Plan. Non-structural actions are being considered to reduce or eliminate future subsidence as quickly as possible. 87% of the community water systems in the San Joaquin Valley are reliant on groundwater. While attempting to reduce subsidence along the aqueduct, we will work to avoid redirecting impacts elsewhere.

Commissioner Solorio said people view subsidence as a SWP problem, but there should be some level of local responsibility and accountability for communities adjacent to aqueduct. Mr. Whisman said this is substantially beyond the purview of CASP. Many adjacent communities are suffering from subsidence not of their own making. Funding is a primary concern, and they are exploring all avenues, not ruling out any parties and are looking at a broad spectrum to contribute to the solution, including actively seeking Federal funding.

Commissioner Makler asked if the impacts of subsidence to the efficiency of the SWP and the cost to stakeholders have been quantified, and to what extent would a capital program mitigate or recover those losses and over what time period. Mr. Whisman said they are engaged in engineering and economic evaluations. In years when there is less water moving through the aqueduct it works less efficiently. The problem is compounded because the SWP is also a major supplier to the state energy grid through hydroelectric operations, and since the power plant at Oroville is not operational, our ability to contribute to the power grid is truncated.

Commissioner Steiner asked, with more storage currently in the south, who decides how to balance the water supply, and how do extreme weather events affect water quality issues? Mr. Yarbrough said DWR facilitates water exchange conversations but are reluctant to do anything with the Southern California supply at this point. Extreme weather events do impact water quality. For example, 70% of watershed above Oroville has burned in recent years and during

wet years that will lead to more debris in the lake. Mr. Whisman added that while the aqueduct is not level, we still have the ability to move water upstream if necessary.

Commissioner Arthur asked about the impacts of a drought year on the Delta ecosystem, what do salinity standards mean, and how does the rock barrier affect aquatic species. Mr. Yarborough said they work with the State Water Resources Control Board (SWRCB) to minimize impacts to the ecosystem. Barriers are put in at a time of year when they will have minimal impacts, and they have an extensive monitoring plan. Commissioner Arthur asked how the repair of the canal system is benefitting disadvantaged communities lacking water supply. Mr. Whisman said restoring the original design intent of the aqueduct will result in less load on the electrical grid, thus resulting in a slower increase in energy and water rates.

Commissioner Makler asked how the current drought compares to the one in 1976. With better precipitation, but drier soil and less runoff, is the drought impact greater? Mr. Yarborough said those effects coupled together puts us in the same if not worse condition as 1976.

10. Panel Discussion on the Sustainable Groundwater Management Act

A panel of State agency representatives gave updates on the state of groundwater in California, the Groundwater Sustainability Plan (GSP) review process, interagency efforts to support local SGMA implementation, and a discussion of land use issues.

The Statewide Groundwater Management team lead by Deputy Director Paul Gosselin discussed how California's groundwater supports agriculture, drinking water, the environment, and businesses. In droughts there is a limitation on surface water and 60% of California's water supply comes from groundwater. Bulletin-118 Update 2020 is a statewide report giving a snapshot of groundwater conditions, CalGW Live is a web portal that will make large data sets easily accessible to the public. Critically over-drafted basins submitted GSPs in 2020. Two plans were approved in June 2021 and two others were notified of plan deficiencies. DWR will release determinations throughout the remainder of the year for other over-drafted basins per statutory deadline. Eliminating overdraft is central to SGMA but must be done while avoiding undesirable results. Sustainable Management Criteria (SMCs) need to consider all beneficial uses and users. These plans are not a final product, but on the path to sustainability. Mitigation strategies will address known impacts to drinking water users caused by groundwater management. The 2021 Executive Drought Proclamation tasked DWR and SWRCB to develop groundwater management principles and strategies to monitor, analyze, and minimize impacts to drinking water wells, anticipate and address potential drought impacts to communities who rely on them, and to develop strategies for the state, local entities, and community leaders to deploy and use for decision-making for drought management. The final product will be a shared policy framework capturing both principles and strategies. The public engagement process included three public listening sessions that drew 500 participants and more than 100 public comments. Draft principles and strategies, released last Wednesday, include achieving drinking water resilience, integrating equity, addressing underlying challenges, leading with best available data, building trusted relationships, and implementing lasting solutions. A final version is expected in early fall.

Nancy Vogel, Deputy Secretary for Water at the California Natural Resources Agency, gave an update on the SGMA Interagency Task Force, whose role is to work together to help locals identify tools and strategies they can use to address the economic, environmental and social effects of bringing their groundwater basins to sustainability. The interagency work is separate and apart from SGMA work. Three workgroups include representatives from the SWRCB, DWR, California Department of Fish and Wildlife, Department of Conservation, California Department of Food and Agriculture, Office of Planning and Research, Go-Biz, Labor Workforce Development Agency, and the Workforce Development Board. One workgroup investigated how the state can support groundwater recharge. There are a few ways to get water for recharge: buy it, capture urban runoff, build a recycling plant, use an existing water right that includes underground storage, or try to acquire a new water right. In the San Joaquin Valley, there is no new water available for re-appropriation. An analysis by DWR modelers showed that when water is physically available in wet years, it is not necessarily legally available for new water rights. Existing water rights may not be fully exercised, but it is difficult to track exact water use on a water right basis. The state has invested \$30 million to upgrade the water rights data system to better understand who is using water, where they are using it, and when that use occurs. The best way to maximize recharge is to work together with the other users in your watershed to share challenges and assets to overcome them and draft contingency plans that take care of everybody's needs. There is no easy pathway around the seniority water rights system in California, but SWRCB is trying to simplify and speed the process to getting access to high winter flows, including issuing 180-day temporary permit, five-year temporary water rights permits, and streamlining the administrative process in which diversions are permitted in flood emergencies.

Keali'i Bright, Division Director for Land Resource Protection at the California Department of Conservation (DOC), discussed state contributions to land use issues related to SGMA, and how groundwater sustainability and land use will be inextricably linked. Regional impacts include food and fiber production, jobs, local economic production, loss of tax revenue, air quality, habitat loss, and social well-being. It is important to support locals and regions to prepare for changes, support farmers and ranchers, minimize harm from land fallowing, advance opportunities to achieve other benefits, and help multi-disciplinary regional partners lead. The Multi-Benefit Land Repurposing Program supports regional plans for land use changes, helps farmers and ranchers stay with their land, repurposes lands for multiple benefits both short- and long-term, and provides drought response. It is regionally led, flexible, needs-driven, and includes regional block grant. It provides opportunities to pay landowners to deliver services and puts an emphasis on capacity and technical assistance. This program aligns well with DOC programs, such as farmland mapping and monitoring, the Williamson Act, SGMA watershed coordinator, and sustainable agricultural land conservation, and with government programs involving water, healthy soils, biodiversity, climate, and economic development.

Commissioner Gallagher asked if the Resource Conservation District is also a recipient of forest health grants and Mr. Bright said yes.

Commissioner Arthur asked whether there are plans at the state level to allow the public to see more comprehensively what the GSPs are proposing on CalGW Live. Mr. Gosselin said it will adapt over time as new data sets come in. Commissioner Arthur asked how this connects to what the Commission is working on concerning groundwater trading. Mr. Bright said those involved in trading can shape a land use strategy tied to their groundwater sustainability that reflects what they anticipate will come from their trading conversations. Ms. Vogel is thankful the Commission is looking at the mechanisms of a groundwater trading that can protect disadvantaged communities, the environment and small farms.

Vice-chair Swanson asked how big the data gap is between the best available and the best possible, and how do we close the gap and become the world leader. Mr. Gosselin said achieving sustainability has to be built on sound science and data. Additional monitor wells in GSA areas will help fill data gaps. We've launched a program to acquire geophysical data using the aeromagnetic method, an example of cutting-edge deployment of technology.

The Commission broke for lunch at 12:45 p.m.

11. Panel Discussion on San Joaquin Valley Water Issues

Representatives from San Joaquin Valley communities and the agricultural industry shared their perspectives on the region's most pressing water issues.

Raul Barraza, General Manager of the Arvin Community Services District, described his service district providing services to 25,000 people, most of them in agricultural labor. When basing water rates, you try to make correct changes using the financial availability of the community. Working in a smaller community, you really get to see the impacts of SGMA. Arvin Community Services District is just big enough that it can spread the costs throughout rate payers, but smaller community systems can be voiceless in this situation. SGMA has to bring everyone together to work out these plans. We are at the most intelligent peak of humanity and need to utilize it instead of playing political sides. With SGMA we are working alongside the bigger water districts in the area. They knew back in the 1940s that if they continued pumping the way they did without any import of water, levels would be 350 feet lower than what they were.

Additional imported water does help reduce our arsenic levels in groundwater. There are many moving parts and regulations coming down on us right now.

John Duarte, Chief Executive Officer, Duarte Nursery in Modesto, described Stanislaus County as ahead of the game so far. Modesto had drinking water quality problems in the 1990s, so we put in a surface water treatment facility that has worked well. We plan to reach out to our sub-basin groundwater management partners and irrigation districts in the area so our GSP has integrated resources. We want to be sure we can deliver water to out-of-district, in-basin farms during wet years to alleviate some reliance on groundwater. If we build long-term infrastructure to deliver surface water to places that are only served by groundwater, those investments need to be paid off over 20 years. The finance mechanisms are there, so long as we have water to put in the pipes. Secured water rights or flexibility in existing rights is needed. Mr. Duarte described how single species environmental regulation has diminished available

surface water that could be used for recharge. He also advocated for ensuring our flood management assets are ready to handle high flows. Mr. Duarte discussed a human right to work in a free market economy, provide for yourself and not be supported by state checks because the resources you needed were taken away and squandered on vague environmental ends that are someone else's priority.

Bill Mattos, President, California Poultry Federation, represents the growers, producers, processors and marketers of chickens, turkeys, ducks, squabs, game birds, and other fowl. Mr. Mattos described the size of the poultry industry in California: 300 million chickens a year, 12 million turkeys, one million squabs, and thousands of ducks and gamebirds. At any time there are at least 35 million chickens on the ground between Sacramento and Bakersfield. Mr. Mattos discussed the importance of water in the raising and processing of birds and the reliance on groundwater. Older facilities need to be updated to help with SGMA compliance. Many counties do not allow us to expand our older ranches into more sophisticated barns due to water issues. The past year our poultry facilities have saved more than 1.5 million gallon of water a day with recharge efforts. We have ponds to gather stormwater and put it back into agriculture that surrounds chicken farms and hatcheries. We also have flow meters in new facilities to keep track of our water use. Are we going to be able to provide food or rely on Arkansas to supply our state with chickens? We are changing all our trucks to electric, while out-of-state trucks are not required to be electric.

Michael Prado Sr., Board President, Sultana Community Services District was glad to see the HR2W brought up several times today and he looks forward to pursuing it. He was part of the group that laid the foundation for SGMA. With the SWP, everybody is going to have to come to the table because we all want and need the same thing: water. Agree or agree to disagree, but we need to get there now. The most pressing water issues impacting our community are infrastructure - which is pretty bad on our distribution side - water quality, and drought awareness. I see water being wasted every day. Farmers, growers, ranchers, everybody feels that the Federal government is sending water and exporting it for the dollar value. Senator Hurtado is trying to get something done to retain some of this water that is going out to ocean. We need it here, for our people, for our food. Without water nothing grows. Water is life.

Mr. Mattos asked if any thought was given to the animal part of it, be it chicken or cattle or other animals. It is an issue the industry would like to work on with the correct parties.

Mr. Duarte said the land west of Interstate 5 does not have surface water resources and should give us a clear picture of land use without water in the Central Valley. The western U.S. has lots of desert, and if you pull the surface water there will be a lot more. We can't expect local areas to come up with great integrated GSPs that use surface water that is necessary to sustain groundwater while we have state water grabs going on. Flexibility is needed to have some of the out-of-district but in-basin farms able to take water deliveries in wet years to avoid using groundwater. We can all look at recharge efforts, but using surface water whenever possible is the most proven way to sustain groundwater and that will require flexibility within our water rights. What flexibility can the state give us on our water rights to allow us to integrate

sustainable groundwater management strategies with our local surface water suppliers? Ms. Vogel said the folks at SWRCB would urge you to come in, come early, and talk to them about what is possible. Start thinking through and planning now for the wet winters to come.

Mr. Duarte said conversion from irrigated agriculture to unirrigated anything will not be an economic resource to the state, it will be a disaster that will make more desert. Surface water deliveries are the most important part of the puzzle. We are down to a third of where we were before 1990. When we started diverting our water resources out to the Delta for vague and unsuccessful environmental goals, the SWP quit delivering water to farmers on the west side and that is when subsidence started. We need to revisit some of the environmental choices we have made. Ms. Vogel said overdraft in the valley is a longstanding problem that dates back to the 1940s and '50s, and it is not fair to blame environmental protection laws.

Mr. Barazza asked what might come down from the state if we have no rain this winter. He made an analogy between back-to-back droughts and a boxer getting sucker-punched as he walked to his car. Ms. Vogel said DWR is planning for a worst-case scenario, in which providing water for health and public safety is prioritized.

Mr. Prado said the Friant-Kern Canal is leaking in several places, evident when viewed from overhead, wasting water in time of drought.

Public comment from Davis Consulting, who said the data on groundwater in the San Joaquin Basin from 1950-1990 shows the groundwater tails out. In the big wet years of 1982-83 it rebounded. It wasn't until 1990 with the court's decision to divert water through the Delta that the groundwater levels really started to tank. The levels tried to rebound in 1997, but it was too late, there was too much drafting of the groundwater table to recover. If deliveries got back to pre-1990 you would see the groundwater return.

Public comment from Christina Beckstead, Executive Director of the Madera County Farm Bureau, who said that from an agricultural perspective, the regulatory requirements created have added to the drought. We are not seeing the reason behind those regulatory burdens. We need to address the flexibility of diversions, especially in a wet year, and create something that allows for diversion should the water come. Health and public safety comes first, that's understandable, but food also falls into that, and California produces a significant amount of food, and we have set a standard to provide some of the safest food in the world.

Commissioner Solorio said that while collaboration is increasing, how do individual community leaders or smaller systems get the attention of some of the larger water districts so they feel like they are part of the vision and planning and not completely left out. Mr. Barazza said at the beginning there was some hesitation but once we started working together there was a lot of collaboration. Some smaller districts do not have the resources and technical support to help them alleviate some of the issues they have. Commissioner Solorio liked the idea of not looking at water rights like we always have, but in flexible ways so we can do other forms of recharge.

Commissioner Makler said agriculture in California is a \$50 billion industry, employs many people and is critical to communities. He asked if transparency in price setting mechanisms would be helpful in SGMA implementation and if making water rights more uniform would make for more efficient transactions. Mr. Duarte said water is not a commodity, it is a local natural resource. Communities rely on the economies that rely on these water rights. You have to place value on scarce resources to have them efficiently used. He is OK with transactions within a water basin once it has met all of its needs and sustainability. He is not in favor of farmers selling water out of their community and shutting down farms to monetize it to the highest bidder. A lot of times water rights were awarded to create an economic community. Commissioner Makler asked if there should be greater uniformity of water rights or further reforms in order to facilitate a more effective use. Mr. Duarte said water rights are part of common law governance. You cannot manipulate them without upsetting a lot of stability within communities that were built around water. It is a dangerous road to go down.

Vice-chair Swanson said California leads the world in producing food. We are the highest regulated but also the highest quality.

Public comment from Cindy Ward, a farmer in Orland, who said Tehama County is severely stricken by this drought. She has been involved in agriculture since the 1970s. Most of the agriculture around here was developed due to surface water. In 1994 they took 880,000 acre-feet of water for fish and the Delta, and have taken much more since then. Where do you go to see the figures that show how much input of water there has been and where has the output gone. The two have to be addressed together, you cannot fix the groundwater problem without fixing the surface water problem. We have all gone to drip irrigation because that is what the government wanted but it does not recharge groundwater. Now our water rights will be taken away after we have done everything you have asked us to do for the last 40 to 50 years.

13. Groundwater Trading: Panel Discussion on the Future of Groundwater Trading

This item was taken out of order. A panel of experts and practitioners discussed the future of groundwater trading, including likely participants, beneficiaries and impacts, how to protect vulnerable stakeholders, and how to structure stakeholder inclusion, governance, and oversight.

Dr. Andrew Ayers, Research Fellow at the Water Policy Center at the Public Policy Institute of California, talked about how to improve groundwater markets in California to facilitate SGMA implementation. SGMA focuses on recharge, but pumping reductions are unavoidable in many basins. Market institutions can reduce costs of reaching sustainability, clarify who has the right to pump, facilitate drought adaptation, and incentivize banking. There is opportunity for trade in over-drafted basins. SGMA will drive expanded interest. Markets require several enabling conditions, such as securing well-defined property rights; an accounting, measurement and reporting system; hydrologic connections; transparent market information; and a mechanism to address third-party impacts. We must establish stronger systems for anticipating and addressing undesirable impacts of pumping; pay special attention to drinking water impacts in small, low-income, well-dependent communities; establish specific rules to address impacts

from trading and banking; and streamline transfer reviews while maintaining protections. He recommends developing more equitable local rules for groundwater substitution transfers, promoting within and cross-basin collaboration, and encouraging collaborative approaches to capturing water for banking. Groundwater market development rests with GSAs and interested parties. Well-designed markets will reduce the costs of SGMA and enable easier adaptation in the future.

Dr. Nell Green Nylen, Senior Research Fellow with the Wheeler Water Institute at the Center for Law, Energy & the Environment at the UC Berkeley School of Law, talked about how to ensure groundwater trading programs are effective and equitable, with an emphasis on programs allowed as part of SGMA. They need to have clear objectives and be proactively designed to meet them, with a good information base to be effective. The state has the responsibility—and tools—to provide effective oversight to ensure that trading programs are effective and equitable. SGMA allows a GSA to limit pumping by establishing groundwater extraction allocations and authorize transfers within the GSA's boundaries under certain circumstances. SGMA is not the only source of law that imposes constraints on groundwater trading. There are also groundwater rights law, area-of-origin statutes, local ordinances, public trust doctrine, human-right-to-water statute, water quality requirements, wildlife and ecosystem protections, and environmental review requirements. There is a need to further sustainability and not cause or contribute to undesirable results. Groundwater is not fungible. Trading changes where, when, and how groundwater is pumped and used. This changes the impacts experienced by people and ecosystems. The state should conduct a robust review of GSPs and intervene in a timely and effective way when GSPs, or their implementation, are inadequate. The stakes are high for California water management—especially for vulnerable stakeholders.

Stephanie Anagnoson, Director of Water and Natural Resources for Madera County, where there are three critically over-drafted sub-basins. The county GSA has adopted an allocation, and is completing a rate study for recharge, water supplies, resting and repurposing land, and domestic well mitigation. A Bureau of Reclamation WaterSMART Water Market Strategy Grant was used for stakeholder interviews, workshops, and the creation of rules. There was support from growers since groundwater markets provide some flexibility and could be a key tool, as well as conditional support when it came to transparency, equity issues, and enforcement matters. Nobody wanted the county to manage the market and there were many concerns regarding water for natural resources, impacts to drinking water, impacts to permanent crops, and resources to design and implement a market. Three workshops covered water rights, market overview and examples, mapping of opportunities and constraints, allocations, market exchange structures, confidentiality and transparency, market structure options, trading zones, buffer areas, carryover, and matching buyers and sellers. Highlights included discussions on confidentiality and transparency, as well as small farmers, and confusion between SGMA and the water market. A pilot project simulated a groundwater market, with 25 participants trading sustainable yield allocations each month and providing feedback, which will result in a white paper.

Sarah Heard, Market Lab Director with The Nature Conservancy, said more than 90% of the Central Valley's groundwater dependent ecosystems (GDEs) have disappeared. The remaining hotspots are essential, and host threatened or endangered species. Where groundwater markets arise under SGMA, careful design is essential to ensure they protect nature, disadvantaged communities, and other important resources. Carefully designed markets have sound GSPs, an open public process, and mitigation of third-party impacts. GSPs should provide adequate water for nature; buying water should not be essential for their survival. GSPs in critical basins removed 76,000 acres of GDEs. A fair, functioning market requires an open process. Environmental stakeholders should be included in market design. Federal wetlands require special consideration and should be included in GSPs and their water budgets, which can be complex as many cross basin boundaries. Trading can exacerbate pumping and impact sensitive resources. Special Management Areas (SMA) are a tool to mitigate this risk. Fox Canyon Groundwater Market is an example of an SMA that protects natural resources. If a groundwater market does not identify a GDE in its GSP, environmental stakeholders will likely be excluded. A standardized framework is needed to guide the development of sound groundwater markets as they arise under SGMA. GSAs should be held accountable for the outcomes since sound markets do not end at design. They need regular evaluations and adaptation to make sure they are functioning well without adverse impacts.

Dr. Ruth Dahlquist-Willard, Small Farms and Specialty Crops Advisor for Fresno and Tulare Counties, University of California Agriculture and Natural Resources, said groundwater markets might affect small-scale, socially disadvantaged farmers due to the high transaction costs to participate, possibility of exclusion from trades within existing networks, and a lack of flexibility that larger farms and owners of multiple parcels have. Small farms' shallower wells are more vulnerable to local decreases in groundwater levels. Across-the-board allocations are good for small farms, who are often not involved in the decision-making. Avoid models in which small farms must purchase water to remain viable. A third party could manage groundwater trades for groups of farmers. Public access to data is important, not just availability to those trading in the market. You should enable third-party analysis of the effects of water trading decisions. Partnerships are needed to engage farmers with cultural and language barriers and limited resources. Rules should be adapted to avoid undesirable and unintended consequences. Best practices from the Fox Canyon model that could help protect small farms include neutral third-party administration, anonymous users and trades, and adaptive management. Limit trading to ag-to-ag only, and only include urban areas if the model is already working for agriculture, limit to within GSA or sub-basin, limit the direction of trading, and define SMAs based on hydrology, locations of shallow wells, etc. Create exceptions by identifying vulnerable populations and low-risk characteristics. A well-defined exception with multiple criteria is hard to take advantage of.

Amanda Monaco, Water Policy Coordinator for the Leadership Counsel for Justice and Accountability, talked about disadvantaged unincorporated communities and groundwater markets in the San Joaquin Valley. Falling groundwater levels continue to cause a human rights crisis in the valley. During the 2012-2016 drought, the state received more than 2,500 reports of domestic well failures, the majority of which were in the valley. Falling groundwater levels are likely to leave up to 12,000 more wells dry, impacting up to 127,000 people's primary

source of water. Drinking water issues disproportionately impact low income communities and communities of color, and they are the most vulnerable to falling groundwater levels since they depend on shallow domestic wells and small community water systems. She relayed a personal story of a Tombstone Territory resident whose family lost water in their home in 2016, and it took four months to get funding to deepen their well. Residents' concerns with groundwater markets include exacerbating existing inequities in water management and use, as water will likely to go to biggest buyer, not the most critical use, and theoretical "set-asides" would not stop large pumpers from pumping water out from under a community. Many GSAs will continue to allow wells to go dry without mitigation. Water should be managed as a public trust, not a commodity. To protect the HR2W, residents ask that GSAs prioritize complete information about vulnerable drinking water users, require tight monitoring, demand reduction that prevent dry wells and contamination, and establish drinking water mitigation programs that support long-term solutions. DWR and SWRCB should provide resources and guidance.

Public comment from Tom who read the University of California study on the Fox Canyon Project that judged it to be an effective and equitable project, and said it could not have been so without all the wells in that area being metered and telemetrically connected to a central data system. Satellites are not accurate enough for groundwater trading. Ms. Heard agreed that they benefitted from the wells being metered and they share concerns about the use of satellites for monitoring. It is important to know who is trading what and how much.

Commissioner Gallagher asked how adaptation works in an online live market. Ms. Heard said we do not think of adaptation as happening at the moment of the trade. Run a pilot for enough time so you have enough data points, then determine if you have any problems or something needs to be improved. Dr. Nylen said to build in the expectation of adaptation and explain to stakeholders how that could work. Dr. Ayers agreed it is important to build those expectations in up front. Ms. Monaco pointed out the Fox Canyon Project has no disadvantaged communities in it so it cannot be looked on as an example for drinking water protection. Commissioner Gallagher asked if it is possible for a person who is not on a well to be impacted by a neighbor's groundwater trading. Dr. Nylen said yes, if you depend on surface water and your neighbor's pumping affects your ability to draw that surface water.

Commissioner Makler asked Ms. Anagnoson if their workshops included any discussions of whether water trading would result in a price and how transparent the price would be, were environmental needs and the HR2W addressed, and did any comments about market power mitigation come up. Ms. Anagnoson said they reported out average prices at the end of each round, not individual trades. As for set-asides for environmental and domestic needs, the main tool they used were buffer zones where they set aside an area where more water cannot be pumped out. Regarding market power, there is a lot of grower concern about the data the trades have. They include a lot of business information so there was a great desire from growers to remain anonymous. There was certainly a desire by community members to know who was buying a lot of water and where it was going to be pumped.

Commissioner Steiner asked about oversight and who could stop a trade, and said adaptive management should be built into any program to see if it is working. Ms. Anagnoson said in Madera County they contemplated rules with triggers and would have a third-party administrator. Dr. Ayers said that adjudicated basin throughout history have adopted similar review procedures, usually undertaken by a third party, and it is best if these reviews are measurable, objective, and as closely tied to pumping impasse as possible. Dr. Nylen said it should work more like of a screening process where only ones that are appropriate and consistent with the rules would be matched up. Adaptive management is critical because you do not know at the beginning what kind of challenges you will be running into.

Commissioner Solorio complimented all presenters and remarked that Ms. Monaco's story about the Tombstone Territory family really made it sink in.

Commissioner Arthur said you cannot move to functional trading without functional GSPs.

12. Groundwater Trading: Small Group Discussion Synthesis

As part of the Commission's consideration of well-managed groundwater trading programs to support Water Resilience Portfolio Action 3.6, Lisa Beutler, Executive Facilitator with Stantec, presented a short synthesis of the feedback received during small group discussions with stakeholders on methods to shape well-managed groundwater trading programs, issues or concerns, and the potential roles of state government. 86 participants included tribal representatives, environmental interests, water associations, GSAs, agricultural interests, state and Federal agencies, academia, economists, utilities, water banks, wholesalers, community-based organizations, wildlife managers, and landowners. Cross-cutting themes were heard in all presentations. Groundwater trading should be part of a portfolio and part of a broader SGMA conversation. It is not a silver bullet. It starts with a good GSP, water budget, accounting, and allocations. Water rights was a big concern. What exactly is being traded, and how does this work legally? Data is key, good technology is critical, transparency and access to data is important, and there has to be accountability as to where the data is pulled from. Concerns include data manipulation, covert use, and cropping behaviors. Trust in institutions is a necessary precursor to any groundwater trading. Historical views and relationships may present a barrier and trust building may extend anticipated project timelines. Groundwater trading is a continual learning process which requires flexibility. A smaller scale allows for flexibility geographically and temporally. Requests included a centralized information hub and process for education. The state has a role to play, possibly as convener, provider of guidance, technical and financial assistance, compiler of data, and oversight. An overview of responses revealed that no centralized source of information created concerns and fears and a question of trust. There were questions about water rights, surface and groundwater interface, driving use to access markets, consistency with SMCs and thresholds, and a lack of participation and representation from certain areas, such as Tribal entities. Start small, it is dependent on hydrology, boundaries do not always match realities, cross boundary coordination is necessary, and it may be limited by other ordinances. The most pressing considerations related to ecosystems, farms, and communities included water quality and air pollution, unintended consequences and undesirable results, crop value economics dependent upon surface water

availability, mistrust of government, absentee owners, and accessibility to technical support. An economist group was asked different questions, but their answers validated what was heard from the other groups, including the importance of governance, oversight and rules, safeguards, rules for changing rules, and what to expect with the scale of trading.

Dr. Dahlquist-Willard said we can develop a list of best practices or guidelines but are those required to be followed and are they enforced? Has any thought been given to oversight by DWR or other state agencies? Ms. Beutler said best practice and guidance documents may be issued so that if people move forward, the programs should be managed locally, but the bookend pieces would come from the state.

14. Consideration of Items for Next California Water Commission Meeting

The next meeting of the Water Commission is scheduled for Wednesday, October 20, 2021, when the Commission will take action on enforcement regulations for the Division of Safety of Dams, hear a recap of out-of-state conversations regarding groundwater trading, receive a presentation on the California Water Plan, and make feasibility determinations for two of the projects in the Water Storage Investment Program – the Harvest Water Program and Los Vaqueros Reservoir Expansion Project.

Commissioner Solorio asked about legislative action regarding in person meetings and was told we will remain open to meeting virtually for now but will remain fluid.

15. Adjourn

The Commission adjourned at 4:52 p.m.