



Mount Shasta Bioregional Ecology Center

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Medicine Lake Citizens for Quality Environment

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Electronically submitted via: DeltaConveyanceScoping@water.ca.gov

April 16, 2020

Karla Nemeth, Director
Department of Water Resources

Attn: Renée Rodriguez

Re: Comments for Delta Tunnel Conveyance EIR Scoping

Dear Director Nemeth and Ms Rodriguez:

We appreciate this opportunity to comment on the scope and content for the EIR on the proposed single tunnel conveyance project.

Our area of concern comprises Mount Shasta and the surrounding bioregion, which includes the Upper Sacramento Watershed. For the past 22+ years, we have been intensively involved in the protection of the Medicine Lake Highlands, the upper reaches of Medicine Lake Volcano, and its underlying aquifer, which is the main source of the Fall River Springs, the largest spring system in California.

California's volcanic Cascades, including Medicine Lake Volcano, Mount Shasta and Mount Lassen are sources of immense unprotected and unrecognized groundwater recharge. These snow-capped mountains recharge extensive underlying volcanic aquifers, which store and release vast quantities of groundwater to spring-fed rivers that supply multiple human, wildlife and aquatic needs while providing drought resilience. These volcanoes are estimated to provide 25% of the State's water supply, or about 20% of the summer flow in the Sacramento River. In addition, the underlying volcanic aquifers discharge as spring fed rivers that generate up to 40% of the state's hydroelectric power, which plays an important role in fulfilling California's renewable energy needs.

The Upper Sacramento Watershed provides water to the Sacramento River where the proposed tunnel intake would be located. The water available at the water intake near Elk Grove would depend, in part, on the availability of water in Shasta Lake Reservoir and subsequently on the water coming into the reservoir.

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THE EIR MUST ANALYZE AND EVALUATE INPUTS FROM AND IMPACTS ON THE UPPER SACRAMENTO WATERSHED

The original twin tunnels could have dewatered the Sacramento River in some years and seasons prior to meeting the delta. Without inclusion of the entire Sacramento watershed in the analysis the state will be essentially leaving out critical information on downstream flows. Ultimately this would overestimate the available water for conveyance in the tunnel and could lead to increased interest in raising Shasta Dam, which would further impact the communities in our region.

For these reasons, the Delta Conveyance project EIR should evaluate the impacts of the proposed single tunnel project in the following areas of concern:

GROUNDWATER CONTRIBUTION TO SHASTA LAKE RESERVOIR AND DOWNSTREAM

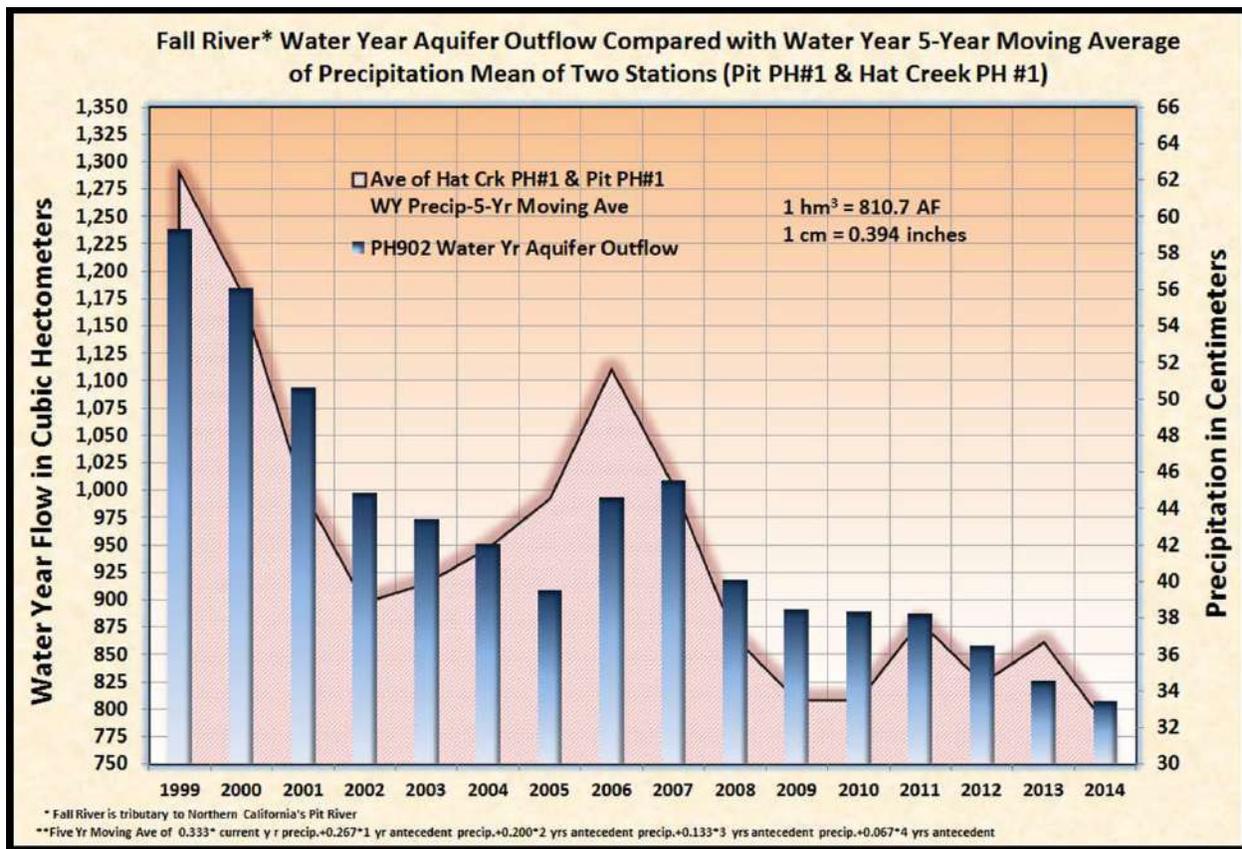
Please note that while our comments emphasize the Medicine Lake Highlands aquifer due to our intensive involvement in this watershed, these issues and concerns apply to all three Southern Cascade Volcanoes – Mount Shasta, Mount Lassen, and Medicine Lake Volcano.

- According to SGMA, a water budget requires “an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical, current and projected water budget conditions, and the change in the volume of water stored.”
- The Delta Conveyance project should include a full water budget to understand inputs into the Shasta Reservoir, which would include the Medicine Lake Highlands.

- Volcanic aquifers in northeastern California supply spring-fed rivers that contribute significantly to California's water supply and are resilient to drought. Despite their importance, these volcanic aquifers have never been systematically studied, and are not officially recognized as aquifers.
- The springs in northern California are the primary source of the Pit, McCloud, and Upper Sacramento rivers. The most significant water storage in the Upper Sacramento River is in the groundwater systems, including Medicine Lake Highlands. The total volume of water stored in the underlying aquifer of the Medicine Lake Volcano is thought to be 20 to 40 million acre-feet, which is the same order of magnitude as California's top 200 reservoirs (42 million acre-feet).
- The Fall River Springs, which are fed by the Medicine Lake Highlands, are some of the largest first order springs in the United States. The Fall River Springs system is an extremely valuable water resource for California's agriculture and hydropower industries, as well as ecologically and for downstream communities. The water from the Fall River Springs, and nearby hydrologically similar springs provide as much as half the storage capacity of the Shasta Lake Reservoir.
- The MLH surface runoff contributes to the Upper Sacramento River, but that area is also a significant recharge area for the Fall River Springs, which have an estimated output of approximately 869,000 to 1.4 million acre-feet per year. The Medicine Lake Highlands' surface flow contributes to the Upper Sacramento River via the Fall River Springs, up to 1.1 million acre feet of water. As much as 85% of the summer base flows in the Pit River actually originates in the Fall River. The Fall River can supply as much as 22% of the storage capacity of Shasta Lake Reservoir.
- As noted in the Upper Sacramento IRWM Plan, "Water security in the USR is directly related to the vast underground storage capacity of Mount Shasta and the Medicine Lake Highlands and reinforced by a historically abundant snowpack."
- Moving downstream, Shasta Lake Reservoir provides about 41% of the water supplied by the U.S. Bureau of Reclamation's Central Valley Project (CVP).

CLIMATE CHANGE ANALYSIS SHOULD ACCOUNT FOR THE FULL RANGE OF POTENTIAL IMPACTS, INCLUDING THE NORTHERNMOST PART OF THE UPPER SACRAMENTO WATERSHEDS

- The availability of water downstream and from Shasta Reservoir depends greatly on the water from the Medicine Lake Highlands Aquifer. This aquifer is highly sensitive to changes in climate, especially droughts and declining snowpack. As climate changes, this water source will be impacted, greatly affecting water availability downstream. DWR needs to account for these dry periods as a new normal, something that has been repeatedly stated by multiple state agencies. Avoiding a full assessment of climate change impacts is inconsistent with a range of California regulations.
- Water availability can change with warmer temperatures. One climate change model for the region found that the decrease in total annual precipitation is highest by 2100 in upper elevations (as much as 0.15 inch/yr decline) and decreases towards lower elevations (0.07 inch/yr decline). This study found that with climate change, significantly more water is leaving the watershed as evapotranspiration rather than groundwater recharge. This study found that by 2100 precipitation would decrease by 5%, recharge would decrease by 12% and April 1st snowpack would decrease by 62%. The amount of average total groundwater recharge at the basin scale then decreases from the historic to projected time period from 17.4 inches/yr to 15.4 inches/yr.
- Sustained drought is likely the Medicine Lake Highlands' primary vulnerability. The 2014 drought and lowered precipitation before that period caused volcanic aquifer storage to decline from high mid-1990s.
- As reflected in late summer base flow river discharge, up to 50% decrease in spring output in Hat Creek Valley was observed in the 1987-1992 drought
- Even though impacted, compared to other surface and groundwater systems in California, the volcanic aquifers protected downstream fisheries and agricultural producers from what could have been much worse conditions.
- Although storage levels in Shasta Lake Reservoir fell well below their historical averages during 2014 drought, inflows from the Upper Sacramento, McCloud, and Pit Rivers were sufficient and supplied about 10% percent of total year's storage behind Shasta Dam. During the 1987-1993 drought spring discharge supplied a similar proportion of Shasta's storage during that period, whereas in the 1976-1977 drought spring flow accounted for up to 30% of the needed supply in Shasta.
- The system also responds quickly to a break in drought. The period from 1965 through 2006 produced a nine percent increase in precipitation, and a 19 percent increase in Fall River's base flow. Protecting the Medicine Lake Highlands will likely need to be a solution the State takes on to prepare the water supply system for future climate are rising populations in the south that depend on this water.
- However, as noted by Gary Freeman, Principal Hydrologist for PG&E, aquifer outflows to the Fall and Pit Rivers from volcanic aquifers such as the MLH have declined significantly²²¹, indicating an impact to the groundwater system that warrants attention from the state and other land use agencies. From 1999 to 2014, the flow was reduced by a total of 2.4 million acre-feet or 782 billion gallons.



THE EIR SHOULD INCLUDE CULTURAL AND COMMUNITY VALUES AND NEEDS FOR NORTHERN CALIFORNIANS. ENGAGEMENT OF TRIBES AND DISADVANTAGED COMMUNITIES IN NORTHERN CALIFORNIA HAS BEEN INSUFFICIENT

- The State of California, through law, legislation and funding sources has prioritized tribal and disadvantaged communities throughout the state. According to the Upper Sacramento IRWM Plan, the entire region qualifies as a disadvantaged community (DAC) under DWR guidelines.
- However, the communities and cultural resources in the MLH have continued to struggle for protection of sacred waters. The State has a responsibility to partner with tribal communities. California tribes and tribal communities, whether federally recognized or not, have distinct cultural, spiritual, environmental, economic, and public health interests and valuable traditional cultural knowledge about California resources. According to your own policy, “DWR is committed to open, inclusive, and regular communication with tribal governments and communities to recognize and understand their needs and interests.”

- The Medicine Lake Highlands have also been identified as being sacred to the Pit River, Klamath, Modoc, Shasta, Karuk and Wintu tribes. By not taking action to support the need to fill critical groundwater data gaps and to protect the sacred waters in the Medicine Lake Highlands, the state is doing the tribal communities and state-designated DACs a disservice.
- DWR recognizes that California tribes and tribal communities, whether federally recognized or not, have distinct cultural, spiritual, environmental, economic, and public health interests and valuable traditional cultural knowledge about California resources. Through their tribal policy, DWR aims to support collaboration and informed decision-making with tribal communities, with a specific focus on:
 - Working to restore, protect, and manage the State’s natural resources for current and future generations;
 - Using creative approaches and solutions based on science and tribal ecological knowledge;
 - Developing strategies for preserving California Native American tribes’ water rights and providing for the sustainable management of California’s sacred waters;
 - Demonstrating a respect for all communities, resources, and interests and an open and free exchange of information.
- Lastly, DWR should include northern California tribal and DAC representation on the Delta Conveyance Design and Construction Authority

OTHER STATE AGENCIES REQUIRE INCLUSION OF MEDICINE LAKE VOLCANO IN LARGE SCALE, WATERSHED STUDIES THAT INCLUDE THE SACRAMENTO RIVER.

- A recently passed bill, AB 2528 identifies climate resilient habitat areas that offer the best opportunity to remain ecologically productive and amends the Climate Adaptation Strategy to include definitions of four watershed zones: salmon and steelhead strongholds, spring-fed source watersheds, mountain meadows, and estuaries. Source waters are defined as any system in the Cascade Mountains, Modoc Plateau, and Feather River headwaters that provides groundwater recharge to extensive volcanic aquifers that store and release large quantities of groundwater to spring-fed rivers. By adding these zones, the bill requires the Natural Resources Agency to research the importance of these resilient watershed areas in its next Climate Adaptation Strategy. These stronghold source watersheds include groundwater in the Medicine Lake Highlands, within the Modoc Plateau that acts as source water for downstream fisheries systems. The State has developed the justification below as rationale for supporting the Modoc Plateau stronghold.
- In the 2018 IRWM update, Medicine Lake Highlands were included in the Upper Sacramento River (USR) boundaries because of the surface water flow contributions to Shasta Lake. The Plan notes that most of the water storage in USR is in the groundwater basins, including Medicine Lake Highlands. According to the USR IRWM plan, “It is hoped that the IRWM implementation process will result in further gathering of baseline hydrologic data on the Medicine Lake Volcano and the Fall River Springs. Because the recharge area is located in the USR and the discharge is in the Upper Pit IRWM Region,

projects would be inter-regional in their implementation and results.” Unfortunately, the UPR IRWM plan, while referenced above, provides little detail or guidance regarding groundwater from the MLH. Regardless, the USR watershed includes the Medicine Lake Highlands and thus should be part of the Delta Conveyance study.

Thank you for your consideration of our input. We speak for many in our region who have made their views known to us, for the communities downstream who benefit from our immense pristine water sources, for the wildlife and aquatic species to whom we lend our voice, and for future generations that will benefit from the drought resilience our region provides.

Respectfully,

Michelle Berditshevsky

Michelle Berditshevsky
Founder / Senior Conservation Consultant, MOUNT SHASTA BIOREGIONAL ECOLOGY CENTER

Janie Painter

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Director, MEDICINE LAKE CITIZENS FOR QUALITY ENVIRONMENT

cc: Stanford Environmental Law Clinic
Pit River Tribe
Native Coalition for Medicine Lake Highlands Defense