

**Save Medicine Lake Coalition**  
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Sent via e-mail and US Postal Service

Mr. James Pedri, Assistant Executive Officer  
and Mr. Jim Rohrbach  
California Regional Water Quality Control Board  
Central Valley Region  
415 Knollcrest Drive, Suite 100  
Redding, CA. 96002

**Re: Revised WDR for the Telephone Flat Exploration/Development Project**

Dear Mr. Pedri, Mr. Rohrbach and Board Members,

On August 10, 2006 we received the next round of revisions regarding Calpine's Waste Discharge Requirement (WDR) permit for their Telephone Flat Geothermal Project. The new WDR revisions focus on four issues; financial assurances, use of steel tanks for containment of acidified geothermal fluids resulting from formation stimulation, placement of monitoring wells and elimination of possible use of subgrade piping used to convey geothermal fluid from wells to sumps.

The following comments are being submitting on behalf of the Save Medicine Lake Coalition (SMLC). The SMLC is comprised of a diverse group of local Medicine Lake property owners, recreation users, environmentalists Native Americans and concerned citizens who care about the Medicine Lake Highlands (MLH) and the potential harm geothermal industrial development will create within its forested environment. The WDR characterizes the MLH as an industrial use area, which at this time, it is NOT. The MLH lies within three national forests, the Shasta-Trinity, the Klamath and the Modoc National Forests. It is remote; it's a beautifully forested scenic recreation area with pure lakes and springs along with the clearest blue skies imaginable. The area is home to many unique plant and wildlife species that depend on clean water to survive; every day during the summer bald eagles and osprey can be seen diving into Medicine Lake for fish, deer pass through the campgrounds and occasionally an elk or black bear can be seen crossing one

of the roads leading to the lake. There are no freeways, no electricity, no phones, no stores, no gas stations, no schools, no power plants or transmission lines for nearly 30 miles in any direction. During the winter, which can last for over 6 months, the MLH 7,000+ foot elevations are snowbound, with weeks of bone chilling temperatures that cause the lakes to freeze. Countless Native Americans consider the MLH sacred as do many of the local cabin owners and others who visit the area. The pristine water quality of the MLH's is a valuable asset for all of California; it's the state Water Boards responsibility to insure that the utmost care and protection area used in maintaining and preserving its pure water qualities.

## **NEW WDR PERMIT CONDITIONS**

### **Financial Assurances:**

Weighed down by more than \$22 billion dollars of debt, Calpine Corporation filed for Chapter 11 protection from creditors last December 20<sup>th</sup>. Calpine's bankruptcy is one of the 10<sup>th</sup> largest in the history of the United States. Calpine's quarterly losses continue to grow (See Reuters article: Calpine Loss Widens on Bankruptcy Charges, Exhibit 1).

Calpine's proposal to issue financial assurances in the form of a CD to the State Water Board based on the sum cost of the two listed "worst case scenarios" is ridiculously inadequate. Both scenarios proposed by Calpine are simplistic "*pump-the-ump*" situations with minimal expense involved and should not be the basis for any financial assurances. There is too much at stake financially and environmentally to allow Calpine such an easy out.

The Water Board must require Calpine to base their financial assurances on a large scale environmental hazard such as a potential Enhanced Geothermal Systems (EGS) failure. The EGS process requires the use of large volumes of concentrated acid, spent acid and highly mineralized fluids which are produced during the acid injection and extraction to enhance fracturing. Accidental releases of the concentrated or spent acids, or the extracted geothermal fluids at the surface would easily and quickly percolate through the porous volcanic soil to the shallow water table below – the same water table that supplies Medicine Lake, the many springs and smaller lakes in the area and it's also the source for water wells that supply drinking water to the campgrounds and local cabins.

The Water Board should also consider the following "worst case scenario" when determining Calpine's financial assurance base. As acknowledged by experts in the field (see publication by Geothermal Technologies Program: "Open Meeting on Enhanced Geothermal Systems", September 2002, Exhibit 2) there are many potential hazards associated with formation stimulation, including water loss, uncontrolled and/or unpredicted fracturing and short circuiting... In the words of one expert (John Garnish, European Commission, Exhibit 3) "*It must also be remembered that any changes made to the reservoir are irreversible, so every step must be analyzed carefully*" and "*The*

*application of high pressure, high volume hydrofracturing to these systems leads to runaway growth, short circuits and massive water losses*". It has even been recognized that the acid injection and/or formation stimulation can lead to increased seismicity (See recent studies from the Coso Geothermal Field in China Lake, California, Exhibit 4). The concern for the Medicine Lake Highlands is much more critical: this experimental technology should not be allowed in a pristine area valued for its Native American heritage and its unique recreational opportunities. Increased seismicity due to acid injection could lead to uncontrolled fracturing that ultimately could damage or penetrate the existing low permeability zone which separates this geothermal resource from the overlying groundwater aquifers.

As a Medicine Lake cabin owner, who depends on the shallow groundwater aquifer for clean drinking water, Calpine's meager financial assurances based on the two proposed "worst case scenarios" are an affront. The entire north state benefits from the MLH's pure waters. The Water Board has the responsibility to require Calpine to provide more adequate and realistic financial assurances that are necessary in protecting the Medicine Lake Highlands pure water qualities.

#### **Use of Steel Tanks for Acidified Geothermal Fluids:**

The use of steel tanks for the containment of the acidified geothermal fluids makes more sense than allowing the spent acids to be held in lined sumps that could potentially leak and leach acids into the permeable volcanic soils. However, the use of storage tanks to hold acidified geothermal fluids has never been reviewed, mitigated, discussed or analyzed in any of the Project's environmental documents. The use of steel tanks must not be allowed until the environmental review process is completed.

#### **Placement of Monitoring Wells:**

The Save Medicine Lake Coalition (SMLC) is pleased to see that the Pit River Tribe and the Mount Shasta Bioregional Ecology Center will be part of the consulting team regarding the placement of the monitoring well locations. The SMLC represents the vast majority of concerned Medicine Lake cabin/property owners and recreation users who would be directly impacted by the Telephone Flat Geothermal Project. Being very familiar with the area, our organization would appreciate inclusion during the monitoring well consultations.

#### **Elimination of Possible Use of Subgrade Piping:**

Again because the environmental impacts of sub-grade pipeline usage have never been reviewed mitigated, discussed or analyzed in any of the Projects environmental documents we agree that the use of the pipeline should be eliminated. However, the elimination of the sub-grade pipeline still does not address the adverse environmental impacts regarding the geothermal fluid leaks that occurred along the clamp-flange

pipeline that Calpine used when transporting geothermal production fluids from Fourmile Hill to the Telephone Flat injection well. A reliable leak-proof pipeline must replace the previously used leaky clamp-flange pipeline in order to insure and maintain the areas pure water quality standards. The WDR permit should not be issued until the environmental review process regarding the pipeline burial are fully addressed and the geothermal fluid clamp-flange pipeline leaks are resolved.

We would like to thank the Water Board for the continued opportunity to comment on these important issues that affect the pure water quality of the Medicine Lake Highlands. We would also like to incorporate by reference any and all past and present WDR comments made by our organization, the Mount Shasta Bioregional Ecology Center, the Pit River Tribe and Dr. Robert Curry on this important water quality issue.

At this point in time, the geothermal experts agree (see results of recent forums established by the Geothermal Technologies Program, the Geothermal Resources Council, and ENGINE-Enhanced Geothermal Innovative Network for Europe, Exhibit 5) EGS is not a tested technology, it is not currently able to produce economically viable power sources and significant additional study and technology improvement is needed to make it a safe, economic, and reliable approach for energy generation in the future. Medicine Lake is not the appropriate place for Calpine's EGS experiments when the possibility for significant and irreversible damage to water resources of the state is the likely result.

Sincerely,  
Janie Painter

Janie Painter, chair

All exhibits have been mailed to the Central Valley Water Board

Cc:  
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Peggy Risch, MSBEC  
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