

EXECUTIVE SUMMARY [NON-CONFIDENTIAL, NON-TECHNICAL ABSTRACT FOR PUBLIC INFORMATION OR PROGRAM PROMOTION]: State the application's broad, long-term objectives and specific aims, making reference to the potential public benefits of the project relevant to California. Do not include proprietary or confidential information. This may be distributed before the funding decision has been finalized.

Hot Creek, a tributary of the Owens River in the Long Valley Caldera in California, contains naturally elevated concentrations of arsenic as a result of geothermal activity. This site is of particular interest because of its substantial impact on the quality of the drinking water supply for the City of Los Angeles. Previously, several arsenite (the reduced and more difficult to treat form of arsenic) oxidizing bacteria were isolated from this environment. Preliminary results suggest that these bacteria are not evenly distributed on the surfaces of plants in the creek. The current research would attempt to understand the spatial variability of the arsenite oxidizers in this creek. Novel bacteria with this ability would be isolated and characterized. These organisms would then be used to coat glass beads that would be used in flow-through column reactors for the treatment of arsenic. Undergraduate students at CSULA would conduct this research, from method development to field isolations of novel bacteria and finally to the application of their discoveries in biotechnology.

Ultimately, the goal is to establish a strong research component in my laboratory, dedicated to studying arsenic biogeochemistry at Hot Creek and other similar sites. This work would benefit the greater Los Angeles community by understanding the biogeochemistry leading to better treatment of arsenic in drinking water.