ABSTRACTS

These descriptions are meant to serve as succinct, accurate descriptions of the proposed work when separated from the application.

TECHNICAL ABSTRACT

Hg from mercury mine tailings is a continuous source of contamination in many watersheds, in particular in the western U.S. The contamination can result in human exposure through the ingestion of contaminated fish, and it can also have an impact on sensitive, threatened species such as *Rana aurora draytonii* (California red-legged frog). To determine appropriate response actions, watershed managers (e.g. Regional Water Quality Control Board, U.S. Fish and Wildlife Service) need tools to assess human and ecological risk, and to evaluate the impact and cost-effectiveness of remediation strategies. A framework including a fate and transport model, an exposure assessment model, a population viability model and a management model is currently under development under separate funding. Data sets for model calibration and validation are necessary. This project will collect all the available data on Hg and aquatic organisms in the Nacimiento watershed in central California, and transfer it to a Geographical Information System (GIS). The GIS will then guide the development of a sediment and water sampling plan, to be implemented over a two-year period. A population survey of *Rana aurora draytonii* in the Nacimiento watershed will identify the location of sensitive receptors. This information will serve as direct input to the risk assessment/management framework, which is expected to have application in many watersheds, in California, the US and in other regions with high mercury contamination.

NON-CONFIDENTIAL, NON-TECHNICAL ABSTRACT FOR PUBLIC DISCLOSURE UPON FUNDING: State the application’s broad, long-term objectives and specific aims, making reference to the potential public benefits of the project relevant to California. Describe concisely the research design and methods for achieving these goals. Avoid summaries of past accomplishments and the use of the first person. Do not include proprietary or confidential information.

Mercury from mercury mine tailings is a continuous source of contamination in many watersheds, in particular in the western U.S. The contamination can result in human exposure through the ingestion of contaminated fish, and it can also have an impact on sensitive, threatened species such as the California red-legged frog. To determine appropriate response actions, watershed managers (e.g. Regional Water Quality Control Board, U.S. Fish and Wildlife Service) need tools to assess human and ecological risk, and to evaluate the impact and cost-effectiveness of remediation strategies. This study will collect water and sediment samples for analysis, and will produce a digital map of the extent and level of mercury contamination throughout the Lake Nacimiento Watershed. The populations of California red-legged frogs will also be surveyed. This data will serve to develop and test a model that can assess the risk of mercury contamination to humans and to other sensitive species, and evaluate the cost-effectiveness of different management strategies, including restricting human access to the watershed, dredging the sediments, placing treatment zones near the source of the contamination or taking no action.

PROJECT OBJECTIVE: Provide a one to two sentence, non-technical description of the project’s overall objectives and key milestones.

Characterize the level and extent of mercury contamination in the Lake Nacimiento Watershed, using sampling and a spatial database. The database will serve to develop, calibrate and test a human and ecological risk assessment/management framework that is applicable at many similar sites.