

# Mine Wastewater Management and Treatment Services

When prevention of mine wastewater is not possible, CEC develops a plan to minimize volume using various water control techniques or treat flows with a cost-effective water treatment system.

Mine wastewater is often variable in nature and difficult to treat, as it can come from multiple sources with different flow and quality characteristics. These sources include surface water runoff, acid mine drainage, deep mine dewatering, and wastewater from processing and refuse/tailings facilities.

CEC's wastewater services for the mining industry include:

- Feasibility studies
- Stream modeling and assimilative capacity studies
- Compliance monitoring for NPDES permits
- Compliance with new TMDL-related effluent limits
- Section 308 assistance
- Active and passive water treatment system design

CEC is experienced in GIS-based data management, which provides real-time compliance information for monitoring and submittals. In addition, CEC's ecological services can be combined with the GIS data system to create a real-time picture that allows local, state, or federal agencies to see the actual effects of discharges on receiving streams and watersheds.

## Treatment Systems

Successful mine water treatment systems often involve more than one technology or approach for multiple pollutants. CEC assists clients with determining appropriate treatment technologies by conducting bench-scale and/or pilot-scale tests. CEC offers both active and passive technologies as options for treating mining wastewater.



### Active Technologies

- Chemical precipitation
- Solids separation and removal
- Ion exchange adsorption
- Membrane technology (ultrafiltration, reverse osmosis)
- Advanced oxidation processes treatment (AOP)
- Accelerated Remediation Catalysis (ARC)

### Passive Systems

- Surface, subsurface, and vertical flow wetlands
- Bioreactors for selenium treatment
- Vertical biochemical reactors
- Sulfite reducing reactors

CEC also provides treatment facility project design and bid-ready documents, as well as complete design-build services on various wastewater treatment projects.

## PRACTICES

- Air Quality*
- Civil Engineering*
- Ecological Sciences*
- Environmental Engineering and Sciences*
- Planning*
- Survey*
- Waste Management*
- Water Resources*

## INDUSTRIES

- Manufacturing*
- Mining*
- Oil & Gas*
- Power*
- Public Sector*
- Real Estate*
- Solid Waste*