



## ***SURFACE WATER MANAGEMENT AND EROSION CONTROL***

EMC<sup>2</sup> staff has a significant level of design experience involving surface water hydrology, hydraulics and other surface water management control systems. HEC-HMS/TR-55 hydrologic modeling software, Flow Master/HEC-RAS hydraulic modeling software, erosion control product design software and best management practices are utilized. These engineering disciplines are the cornerstone of our mine reclamation and landfill design/remediation projects located throughout the United States.

**Uranium Tailings Site Reclamation Design** – EMC<sup>2</sup> staff developed the reclamation designs for uranium mine tailings sites. A major design component of the cap systems involved managing surface water runoff from the Probable Maximum Flood (PMF), 1,000 year design storm event. Hydrology calculations were performed and surface water drainage channels were designed to handle the PMF event. Massive erosion protection was designed for the drainage channels and regrading plans focused on cap systems to prevent erosion on the impoundment surfaces during precipitation events.

**Miami Mine Reclamation Planning, Arizona** – EMC<sup>2</sup> staff developed a mine reclamation plan for this active copper facility. The mine reclamation plan's focus was capping/closure of 1,200 acres of tailings ponds. Hydrologic evaluations were performed to size surface water drainage channels and gabion armoring and individual tailings pond regrading plans were developed to minimize cap slopes and cap erosion.

**Blackwell Zinc Site Soil Remediation Unit, Oklahoma** – EMC<sup>2</sup> staff developed the final remedial design for a 188-acre former zinc smelter site to support commercial redevelopment under the Brownfields Program. Design work specified cap materials and erosion control measures and extensive hydrologic/hydraulic engineering designed surface water drainage erosion control structures.

**Brewer Gold Mine Site Closure, South Carolina** – EMC<sup>2</sup> staff developed a comprehensive mine closure design to backfill and cap three open pits and close six heap leach piles, a waste rock dump and several process and sediment ponds at this former gold mine. Design work focused on regrading plans, slope stability, cap infiltration reduction, revegetation and overall storm water management to obtain design approval for the first mine closed in the state. The cornerstone of this design work was a site-wide storm water management plan that used extensive hydrologic/hydraulic engineering to size sedimentation basins and specify reno mattress armoring for drainage channels to control the short duration, high intensity storm events that are common in this hurricane-prone region.

**Pecos Mine Reclamation, New Mexico** – EMC<sup>2</sup> staff managed preparation of a site-wide remedial design to reduce acid rock drainage impacts from several exposed waste rock dumps at this former lead/zinc mine. The remedial design included consolidating the waste rock piles, reclaiming a 1,000 foot reach of wilderness stream impacted by waste rock and sediment loading, restoring wetland areas impacted by historic seepage and sedimentation and developing extensive hydrologic/hydraulic engineering to set surface water controls in developing a site-wide storm water management plan.



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