

CHLORIDE (FORMALLY EMERALD ISLE MINE) COPPER PROJECT PLANNING AND DEVELOPMENT KINGMAN, ARIZONA		YEAR COMPLETED
		PROFESSIONAL SERVICES January 2012 – July 2012
PROJECT OWNER'S INFORMATION		
PROJECT SPONSOR Sierra Resource Group	POINT OF CONTACT NAME J. Rod Martin	TELEPHONE NUMBER (305) 439-7416

RIZZO Associates was retained by a Sierra Resource Group (SIERRA) to assist in the planning and development of the Chloride Copper Project (Project) near Kingman Arizona. The Project was formally known as the Emerald Isle Copper Mine that produced copper from underground and open pit operations sporadically between 1915 and 1993. The most recent operation was that of mining copper oxide ore from an open pit and processing the ore using heap leach and solvent extraction-electrowinning (SX/EW) technologies. SIERRA retained RIZZO to:



- Develop a Project cost estimate and schedule for SIERRA to bring the mine back into operation
- Provide necessary permitting support including preparation of a Mine Plan of Operation and Draft Environmental Assessment for acceptance by the U. S. Bureau of Land Management
- 30% design report providing line diagrams and specifications for refurbishing the SX/EW plant
- 30% drawings for constructing a new heap leach system including a pad and associated ponds
- 30% drawings for expanding the upper portion of the open pit and reclamation of the pit and other facilities.
- Assessment of reserves and resources and a detailed assessment of “readily available ore” for initial mining (next 3 years) while expanding the resource base and preparing for expansion from 13,600 pounds of copper per day to 18,000 pounds per day
- In addition, RIZZO has provided considerable documentation to support SIERRA in securing financing for the Project

Background

SIERRA, a Nevada Corporation, owns the Emerald Isle Mine (now Chloride Copper Project). It is located within the Wallapai mining district, a 4 miles wide and 11 miles long historic mining district defined by the occurrence of both base and precious metal economic resources. The Wallapai district is located in Mohave Co., Arizona. The mine property consists of 37 unpatented lode claims and 14 mill-site claims. The total area held by SIERRA amounts to approximately 154 acres. SIERRA, as the owner operator, intends to occupy the claims and develop the mine to extract copper from a defined “exotic” oxide copper ore deposit. The mine was previously owned and operated by TSC Enterprises (TSC), Redstone Resources, Inc., and SGV Resources Inc. (SGV) prior to being acquired by SIERRA. SIERRA intends to expand the resource base, refurbish the existing SX/EW plant, and construct a new heap leach system to process and recover elemental copper from existing copper oxide ore. During initial operation SIERRA will



process the copper from previously mined stockpiles, upper portion of the open pit, and portions of the existing old mill tailings. The mine is planned to operate within the footprint of past mining activities.

1. SIERRA is intending to conduct concurrent reclamation activities during mining operations. A key concern of the community is the issue of fugitive dust from an existing old mill tailings area. SIERRA have committed to treat the old mill tailings in two ways; Processing a portion of the old mill tailings by blending the tailing into the heap leach system
2. Covering the exposed tailings with overburden from open pit operations.

RIZZO has worked closely with both SIERRA and the USBLM to develop approaches to ensuring environmentally sustainable development.

RIZZO Project Number: 12-4740

