

## **BACKGROUND**

Date: March 2, 2006

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## **About The Southwest Jordan Valley Groundwater Project**

### **Project Overview**

The Southwest Jordan Valley Groundwater Project is one of the nation's largest and most unique groundwater cleanup projects. The Project, which includes the remediation of contaminated plumes that encompass 50 square miles, is a joint effort between Jordan Valley Water Conservancy District (JVWCD), the Department of Environmental Quality (DEQ) and Kennecott Utah Copper Corporation (KUCC) that blends the cleaning up of groundwater with a water supply project.

The purpose of the project is to contain contaminated groundwater plumes, located in the southwestern Salt Lake Valley, from further expanding, to remediate the aquifer and remove the contamination in the long term and to produce municipal quality water for the public in the affected areas.

The project includes extracting water from the contaminated plumes and treating it through a reverse osmosis process to produce high-quality drinking water for the impacted cities of West Jordan, South Jordan, Riverton and Herriman.

The proposed cleanup plan divides the project into two parts, corresponding to the two contaminated plumes, called Zone A and Zone B. The project includes two sets of deep extraction wells, two reverse osmosis water treatment plants with collection and treated water pipelines, and five shallow extraction wells that will collect and treat water from near the Jordan River.

KUCC has built and will operate one of the reverse osmosis treatment plants in the Zone A portion of the project, the Bingham Canyon Water Treatment Plant. The remainder of the project will be built and operated by JVWCD, including the Southwest Groundwater Treatment Plant, which will be located in West Jordan and is projected to start up by Spring of 2009.

Over the next 40 years, the contaminated groundwater will be withdrawn from the aquifer and treated to provide municipal-quality water to the public in the affected areas.

### **How Did The Groundwater Become Contaminated?**

The contamination plumes identified by the project, were caused by 100 years of mining and other activities. These activities included land use practices, open pit mining, creation of tailings and crushed rock waste rock dumps, leaching waste rock for capture of dissolved metals, and collection of subsurface flow through mining and leaching areas.

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The result has been the creation of a much greater surface area of mineral rich rock and ore exposed to water. As precipitation water and leach water passed across this greatly increased rock surface area, concentrations of sulfate ions and trace metals increased. In addition, acidic water conditions were created.

The groundwater with elevated sulfate and metals concentrations, and acidic conditions, has continued to flow eastward. Diffusion and dispersion mechanisms have caused the contaminated water zones to spread out laterally and downward vertically. These mechanisms have created shapes of contaminated water that appear to be plumes.

If left unchecked the plumes would migrate north through the center of the Salt Lake Valley impacting other groundwater areas.

### **What Is The Contaminant?**

The contaminant that was introduced to the aquifer by mining activities is sulfate. Sulfate can cause a laxative effect on humans. Infants and travelers not accustomed to the water are especially susceptible.

The drinking water sulfate concentration standard to protect human health is 500 milligrams per liter. The EPA drinking water sulfate concentration standard for taste is 250 milligrams per liter. The two plumes of contamination in this project have sulfate concentrations that range from 500 to more than 20,000 milligrams per liter.

### **How The Unique Partnership Was Formed**

During the mid 1980s, the nature and the extent of the groundwater contamination began to be better documented and understood, and in 1995 a Consent Decree was finalized that required KUCC to complete all source control efforts it had already been pursuing since 1990. It also required a payment of \$37 million to be put in a trust fund to remediate the contaminated groundwater.

The Consent Decree required that KUCC provide municipal-quality drinking water. JWCD agreed to work with KUCC to distribute the water to the public in accordance with the Consent Decree. KUCC and JWCD commissioned a joint study to determine the best project to accomplish the Consent Decree. KUCC and JWCD then formulated a Project Proposal that was accepted by DEQ and is currently being carried out.

### **What Is The Project's Cost?**

The \$100 million project includes hard cash dollars and in-kind assets to clean up the contaminated groundwater. KUCC is responsible for paying the damage caused by mining contamination of sulfate in the groundwater. KUCC paid \$37 million to a natural resources trust fund in 1995. Since that time the trust fund has grown to more than \$62 million. JWCD is assuming only those costs related to normal water development and treatment, which are projected to be \$5 to \$10 million in capital costs.

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