

Water

Most of our operations are located in arid or semi-arid areas, therefore the availability of water is a critical element for the sustainability of our operations and our neighbor communities.

Consumption of underground water by our Mexican operations was reduced 7.2% compared to last year. Our operations reported an overall reduction of 776,912 m³ in the consumption of fresh water, compared to 2008.

CONSUMPTION OF FRESH WATER BY SOURCE (thousands of m ³)			
	2007	2008	2009
Underground	43,300	44,568	43,067
Surface	32,801	33,543	34,234
Desalinized	1,126	1,154	1,187

Recovered water increased 8.3% from 2007 to 2009, while consumption of fresh water increased only 1.6% over this same period, which meant an increase in the percentage of recovered water from 67% to 69%.

CONSUMPTION OF RECOVERED WATER (thousands of m ³ and total percentage of water consumption)						
	2007		2008		2009	
	m ³	%	m ³	%	m ³	%
Total Mining Division	158,639	67	167,439	68	171,721	69

NOTE: The total water consumption is the sum of fresh water and recovered water.

The concentrators at our mines and the haulage of waste material (tailings) account for the greatest water consumption. We are analyzing the possibility of thickening tailings at La Caridad, Toquepala, and Cuajone (which would mean much less water used, greater recovery at each mine, and consequently less evaporation and need for pumping). Another important project is the optimization of the pumping systems at La Caridad, which will reduce loss on recovery and power consumption.

Wastewater treatment plant, benefiting everyone.

San Luis Potosí, Mexico.

CASE STUDY

BACKGROUND

The city of San Luis Potosí, where our facilities are located, is deemed a critical zone in terms of water availability. This water shortage is due to the climate conditions in the region and the urban growth reported over the last 20 years, which is estimated to cause the demand for water to increase approximately 18 liters per second annually.

Five years ago, Minera México decided to seek alternatives to using well water, to both contribute to better usage of this resource and to guarantee its own water supply, the principal limitation being that the electrolyte refining process requires high quality water at various stages of the process. The solution was to treat urban wastewater and bring it up to a quality where it could be used at the plant, exchanging a portion of the water under the current water concessions.

Our zinc electrolyte operation in San Luis Potosí consumes 50 liters of water per second, which had previously been obtained from underground sources. This consumption is equal to that of 4.5% of the city's population, which is now guaranteed a constant supply of this resource.

ACTIONS

Construction of a treatment plant with microfilters and inverse osmosis, among the most modern in the world of its type, with an initial capacity of 50 liters per second and the possibility of expanding to 80 liters per second. This satisfies the current needs of the Zinc Plant and future expansion, if necessary.

The total investment in the plant was US \$6.8 million. The approximate cost per cubic meter of treated water represents 66% of the cost of well water.



THE BENEFITS

The City of San Luis Potosí has 50 liters per second more water available to satisfy the water demand for 32,000 inhabitants, or cover growth for the next three years without having to incur increased costs because of a lack of water. There is an indirect benefit from the availability of soil improving muds that result in increased production at the company's nursery and a broader scope for our reforestation campaign.

The State of San Luis Potosí, as a whole, will benefit from having less low-quality treated water available and a lower demand for purification. Although the plant only increases the flow of treated water by 3%, it is one of the few plants that increase the availability of water in the city.

Lastly, the company benefits from guaranteeing a supply of quality water in sufficient quantities from a secondary source, lower water costs given the price per cubic meter for industrial use (also considering increasing energy costs), improved soils for the nursery, and also the possibility of growth without needing new or extended water concessions.

Right
Interior of the new wastewater treatment plant, San Luis Potosí, Mexico.



The wastewater treatment plant at San Luis Potosí is a sustainable project from just about every perspective, largely because this is a region that has been deemed critical in terms of water scarcity.