

2.8 Water Supply

2.8.1 Introduction

The Rosemont Project lies in the headwaters of the Davidson Canyon drainage in the Cienega Creek basin southeast of Tucson, Arizona. Historically, mining companies that had evaluated development of the ore deposits in the Rosemont area planned to develop the associated water supply for mining operations from groundwater aquifers to the east of the Project site within the Cienega Creek watershed. Because of the recognized sensitivity of the Cienega basin, Rosemont determined at the beginning of its planning process to acquire a water supply for the Rosemont Project from the Santa Cruz basin to the west of the project site.

This decision, though more costly, allowed Rosemont Copper to achieve two important water management goals in addition to meeting the mining operational requirements. First, the impact of the Rosemont Project on the water supply of the Cienega Creek drainage is minimized. Second, purchase and recharge of water from the Central Arizona Project (CAP) aqueduct, which reaches the Santa Cruz basin but not the Cienega basin, will allow Rosemont to replace more than its entire consumption, thereby creating a net positive impact on the groundwater resources of the region.

In addition to the commitment to offset 105% of total project pumping with recharge in the Santa Cruz basin, Rosemont Copper also plans to utilize state-of-the-art water conserving technology as is described elsewhere in this Plan of Operations. Rosemont Copper is committed to having a cumulative recharge volume larger than its cumulative pumping quantity for mine operations. To this end, Rosemont Copper has begun its recharge program in calendar year 2007, well in advance of actual usage. Contracts are in place to recharge 15,000 acre feet (af), approximately 3 years of planned mine usage, in 2007.

2.8.2 Legal and Regulatory Considerations

Process water for the Rosemont Project will come from the aquifer within the Upper Santa Cruz sub-basin of the Tucson AMA groundwater basin. Water from this source will be used mostly at the mine site which lies within the adjacent Cienega Creek groundwater basin, as those basins have been delineated by the Arizona Department of Water Resources (ADWR) pursuant to A.R.S. Section 45-403.

The right to extract and use groundwater from the Tucson AMA will be pursuant to a Mineral Extraction and Metallurgical Processing groundwater withdrawal permit (ME permit) issued by ADWR pursuant to A.R.S. Section 45-514. The permit application will be filed in 2007. This type of permit is a “shall issue” permit that must be granted unless reliable alternative water supplies (uncommitted municipal and industrial CAP water, surface water, or effluent) are available at comparable cost at the point where the mine’s wellhead or distribution system would otherwise exist (A.R.S. Section 45-514[A][2] and [3]). No such reliable alternative water supplies are available. An ME permit may be granted for a period of up to 50 years. The ME permit is expected to be issued for the quantity of water needed for the Rosemont Project on an annual basis, and for a term that will match the intended life of the Project.

Non-exempt water production wells for withdrawals regulated under an ME permit may be constructed in accordance with A.R.S. Section 45-596(B) without the necessity of procuring a well permit pursuant to A.R.S. Sections 45-598 and -599. Thus, no well spacing or well interference analysis is required before siting such a well. Rosemont has secured property for well sites as illustrated in Figure 2-10. The production wells will be constructed in accordance with the “shall issue” drilling authority described in a Notice of Intent to Drill filed under A.R.S. Section 45-596.

Groundwater extracted pursuant to an ME permit may be transported away from an active management area, such as the Tucson AMA, to another basin, such as the Cienega Creek basin, in accordance with A.R.S. Section 45-543. However, this transportation is subject to a claim of damages by groundwater users in the basin of origin. A.R.S. Section 45-545 provides, however, that such damages shall not be presumed from the fact of transportation. This section also provides that, in considering the effect of transportation, mitigating factors such as the procurement of additional sources of water for the basin of origin shall be considered.

To mitigate harm to the Tucson AMA basin, Rosemont has procured an excess water subcontract from the Central Arizona Water Conservation District (CAWCD), which operates the CAP system. The subcontract allows Rosemont Copper to purchase CAP water on an annual basis, as available, and take to delivery in the Tucson AMA. As described above, Rosemont Copper began the process of purchase and recharge in 2007 in order to offset any potential harm to the Tucson AMA as the basin of origin for the Project’s water supply. It is expected that, by the time actual mining operations commence, Rosemont Copper will have recharged several years of the supply required for mine operations. The Rosemont CAP storage program will result in long-term storage credits issued by the State of Arizona to Rosemont for approximately 95% of the CAP water stored.

Rosemont Copper will also have the option of modifying the ME permit wells to allow them to operate as recovery wells. This would allow some or all of the water pumped from the wells to be legally characterized as recovered CAP water, rather than as groundwater. For the portion of the pumping that is characterized as CAP water recovery rather than groundwater pumping, a quantity of long-term storage credits equal to the annual amount of CAP water recovered will be extinguished each calendar year. Other long-term storage credits will be voluntarily extinguished as needed to offset groundwater pumping pursuant to the ME permit.

2.8.3 Production Plan

The feasibility study and preliminary design for the Rosemont Project indicate that the water requirements are approximately 5,000 af per year with a peak delivery volume of 5,000 gpm. The wellfield and pipeline for the water supply system will be designed to accommodate both the peak delivery rate and the total annual supply requirement. The wellfield will have excess capacity so that it can meet the 5,000 gpm production requirement, while maintaining at least one production well in reserve.

Rosemont has acquired a 53-ac parcel along Santa Rita Road northwest of the Santa Rita Experimental Range (Figure 2-10), which will be Production Site 1. Technical studies of this site have provided the following results:

- Pump testing of an exploration water well drilled near the eastern boundary of Site 1 supports a production rate of at least 1,500 gpm from a large production well at that location.
- Site 1 can also likely provide a location for another production well of similar capacity near the western boundary of the Property. Though the production capacity of two wells at Site 1 may exceed 3,000 gpm, the water production plan anticipates only 3,000 gpm of production from the site.
- The presence of nearby large-capacity agricultural wells may have some effect on the overall production capability if all wells are operating simultaneously. The depth to groundwater at the site appears to vary between 200 ft and 270 ft, and appears to fluctuate as a result of pumping by other wells in the region. The Montgomery and Associates (2007) provides details on the Site 1 exploration well.

Rosemont Copper is currently evaluating other properties in the vicinity of Site 1 for acquisition to provide well sites to meet the additional 2,000 gpm peak pumping requirement. This capacity requirement is expected to require two or three more production wells.

2.8.4 Delivery System

Figure 2-10 shows the water delivery pipeline route currently under evaluation with the Arizona State Land Department (ASDL), which owns most of the land that will be traversed by the alignment. The alignment is designed to avoid the Santa Rita Experimental Range (SRER). Administered by the University of Arizona, SRER is the oldest experimental range in the country. It was founded to study range recovery from drought and overgrazing, as well as sustainable grazing practices. The pipeline alignment avoids SRER where possible by traversing lands to the north and east. Where it cannot be entirely avoided, the pipeline will follow the boundary of the range.

Easement negotiations with private landowners and the ASDL will run concurrently with Plan of Operations review and analysis, allowing the finalized route to incorporate community input.

The water delivery system will consist of 20-in ductile iron pipe, four or five pump stations, and an electrical line to provide the required power. The 20-in pipe will accommodate the expected maximum flow rate of 5,000 gpm at a flow velocity of 5.0 feet per second (fps). The four or five pump stations will consist of: a forebay with a volume of 300,000 gallons; three vertical turbine pumps (two active and one stand-by) totaling approximately 650 hp; and, a 10,000 gallon hydropneumatic tank to absorb pressure fluctuations in the event of a power outage or equipment failure.

Pumping stations will be located at Site 1, at approximately 3,310 ft above msl along the north boundary of the Santa Rita Experimental Range, and at approximate elevations of 3,885 ft, 4,460 ft, and 5,035 ft (the latter is east of the Range). Pumping stations at these elevations will help to maintain pipeline pressures at reasonable levels.

2.8.5 Recharge Plan

Rosemont Copper has no legal obligation to replace any of the water it will produce for the operation of the mine. No other mining operation in the region has previously done so. However, Rosemont has made a commitment to the local community to utilize available CAP water to recharge 105% of the total water production over the life of the Project. The recharge will be within the Tucson AMA, and as close to the water production site as possible. The total life-of-mine usage is currently estimated to be 100,000 af, resulting in a recharge commitment of 105,000 af.

Rosemont Copper began recharging CAP water in the Santa Cruz basin in 2007, with contracts in place to recharge 15,000 af at three state-permitted underground storage facilities, which include Pima Mine Road near the terminus of the CAP aqueduct, and the Lower Santa Cruz and Avra Valley sites near Marana. Rosemont Copper contracted to utilize all of the available capacity at Pima Mine Road (about 600 af in 2007), with the balance to be stored at the Lower Santa Cruz and Avra Valley sites. Rosemont plans to continue this water storage program for the next several years. A volume of water equal to several years of mine water supply will likely have been stored by the time Rosemont mining operations begin.

Pima Mine Road is the state-permitted underground storage facility closest to Site 1. Because available capacity at this facility may remain limited for the foreseeable future, Rosemont Copper has also begun evaluating construction of a new recharge facility in close proximity to it. Although construction and operation of a nearby recharge facility is not required by law, regulation, or any contractual obligation, Rosemont Copper is committed to recharge available CAP water at groundwater storage facilities close to its production wells to lessen impacts of mine water production on local water users.