Springs below the mine will be sampled to determine discharge and water quality parameters and their possible variation with time. These springs include SBC-14, Big Bear Springs, COP Development Springs, and Birch Springs (Plate 7-4). Periodic checks will be made of the mine area to determine any impact not currently expressed at the surface. This data will be used to estimate seasonal fluctuations, aquifer recharge and consistent long-term changes and to ensure that no impacts occur. Springs above the mine will be monitored for field parameters, since the potential for impact to these springs is quantity rather than quality. SBC-9A will be monitored for lead quarterly. If flow from this site is impacted or stops SBC-4 will be monitored quarterly for lead.

Groundwater monitoring will follow the ground water sampling guidelines as shown in Table 7.1-6 using the water quality parameter list in Table 7.1-7. These tables follow the recommendations presented in Appendix 7-J. New significant occurrences within the present permit area will be promptly included in the sampling program, as specified by state requirements. Operational ground water monitoring will continue through reclamation to Bond Release.

The sampling matrix for each of the existing monitoring stations during the operational phase of mining is included in Table 7.1-8. No baseline data is available for SBC-17, but will be collected in 2000 and 2001, prior to mining occurring within the vicinity of this spring. Baseline samples will be collected for SBC-14, SBC-15, SBC-16, MW-114 and MW-117 in 2001.

Temporary Drill Hole Seals. Within 30 days of completion, drill holes utilized for groundwater monitoring will be sealed in a nonpermanent fashion by installing PVC surface casing with a threaded cap for access.

Table 7.1-7 Ground Water Quality Parameter List

Field Measurements:

* - Water Levels or Flow
* - pH
* - Specific Conductivity (umhos/cm)
* - Temperature (C°)

Laboratory Measurements: (mg/l) **(Major, minor ions and trace elements are to be analyzed in dissolved form only.)**

* - Total Dissolved Solids
* - Total Hardness (as $CaCO_3$)
- - Aluminum (Al)
- - Arsenic (As)
- - Boron (B)
* - Carbonate ($CO_3^{-2}$)
* - Bicarbonate ($HCO_3^-$)
- - Cadmium (Cd)
* - Calcium (Ca)
* - Chloride ($Cl^-$)
- - Copper (Cu)
* - Iron (Fe) (Total and Dissolved)
† - Lead (Pb)
* - Magnesium (Mg)
* - Manganese (Mn) (Total and Dissolved)
- - Molybdenum (Mo)
- - Nitrogen: Ammonia ($NH_3$)
- - Nitrite ($NO_2$)
- - Nitrate ($NO_3^-$)
* - Potassium (K)
- - Phosphate ($PO_4^{-3}$)
- - Selenium (Se)
* - Sodium (Na)
* - Specific Conductivity (umhos/cm)
* - Sulfate ($SO_4^{-2}$)
- - Zinc (Zn)

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Sampling Period:

-Baseline

*Operational, Postmining

†Quarterly for site SBC-9A

# Appendix 7-P Abandon Equipment

On January 14,2003 a roof fall occurred in the Hiawatha seam of the # 1 Bear Canyon Mine. This roof fall buried a coal hauler, a distribution box, and a shop trailer. After the roof fall all remaining equipment was removed from the section and the area was sealed off. This is a concern for ground water contamination since water monitoring site SBC-11 is in the area ~~and there are~~ as well as floor and roof seeps ~~in the area~~. The entry where the equipment was left is higher then the surrounding entries so water should flow around it. ~~Also drainpipes were installed in the seals close to SBC-11 at a lower elevation than the abandoned equipment so water should drain out of the area before reaching the level of the equipment. The water is currently draining from the area trough pipes into the monitoring site SBC-9A. Because of hazardous roof conditions in that area, it will be abandoned in 2003 or 2004 and the water will be allowed to fill until it reaches entry 26 at which point it will drain to the portals.~~ In January of 2004 the portals to the #1 mine were sealed. Prior to sealing the portals C.W. Mining shot a channel through all high spots between the portals and all water sources to insure that the water would gradually flow out the portals. To make sure the water wouldn't seep in to the floor or be blocked by a roof fall a pipeline was laid between the sources and the portals. A heavy duty polyethylene pipe was used because it could withstand the impact and pressures of a roof fall. The only concern was that a sharp edge could puncture the pipe. To prevent this from happening and to further protect the pipe crib blocks were laid on either side of the pipe and crib blocks, sand, and/or crushed coal was laid over the pipe. The location of the pipeline and the roof fall are shown on the figure plate 7-10B. The elevation of the coal seam is also shown on plate 7-10B. A typical cross-section of the pipeline is shown in figure 7P-1. C. W. Mining uses the water for mine and culinary use and will continue to monitor it for the life of the mine. The ~~anticipation~~ path of the water is illustrated on the diagram. A copy of the MSHA accident report has also been included. The area of the roof fall is also shown on plate 7-10B.

Potential contaminants to ground water from buried equipment are battery acid, lead, and oil. Current water sampling will detect and quantities are listed below.

15 Gallons of R & O 150 in the gear boxes.

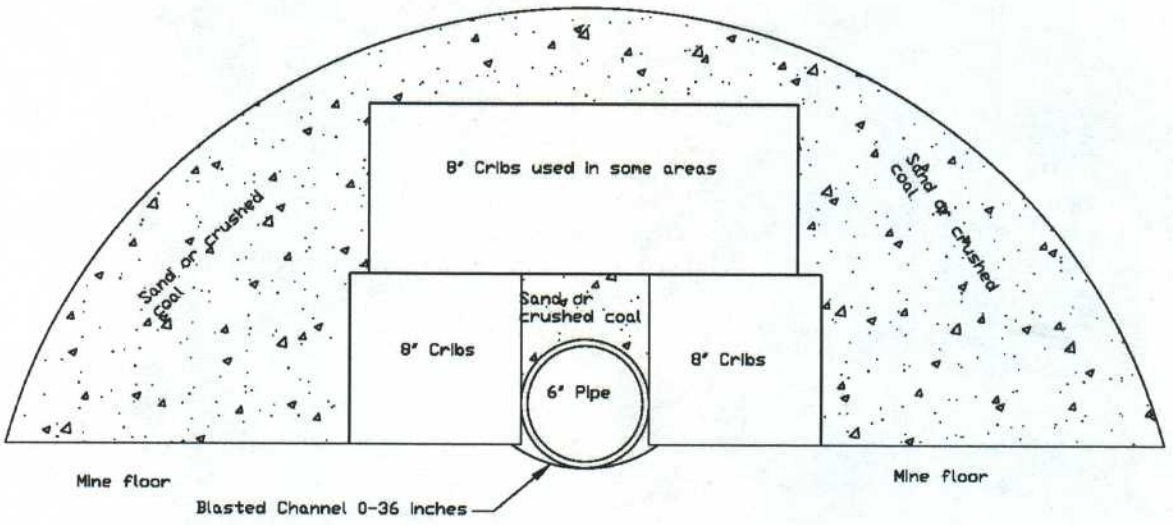
50-55 Gallons of Hydraulic oil.

20-28 gallons of battery acid in the batteries.

8,768 lbs of lead.

MSD's for the substances have been included.

Figure 7P-1




Typical Pipe Cross-Section