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Mark S. Pelizza
Vice President
Health, Safety and Environmental Affairs

Via Fax 301-415-5399

September 13, 1996

40-8968

Mr. Bob Carlson
High Level Waste & Uranium Recovery Projects Branch
Division of Waste Management
U.S. Nuclear Regulatory Commission
NMSS (T-7-J9)
Washington, D.C. 20555-0001

RE: Response to Q3/##

Dear Mr. Carlson:

Please find attached three copies of No. Q3/## which was requested of HRI, Inc. by USNRC via fax on September 6, 1996.

Sincerely,

Mark S. Pelizza
Vice President
Health, Safety and Environmental Affairs

MSP/egh
Encl.

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Q3/## Comment: Effect of Groundwater Drawdown on Town of Crownpoint Wells

ACTION NEEDED: Describe the potential pumping cost and well yield impacts on the town well's ability to continue to supply water for the town of Crownpoint due to projected drawdowns as a result of (1) the combined effect of mining and restoring the Unit 1 and Crownpoint properties, (2) mining and restoring only the Unit 1 property, and (3) mining and restoring only the Crownppoint property.

Generally, the amperage used by submersible pumps in water wells is nearly constant over the lifting range differences (drawdown) which have been demonstrated will result from the operation of the Crownpoint/Unit 1 ISL mines (Q1/60) for the pumping flowrates specified in Q1/50. Practically speaking there will be very little (if any) increase in actual amperage drawn by the submersible pump motor in the NTUA #1 well during operations because of mining activities. Certainly, inefficiencies in the well itself such as electrical problems and wellbore damage will have a far greater effect on pumping cost.

However to be conservative, HRI presents the following worst case analysis of the most affected well during operations. The following equation is used to calculate ADDITIONAL $ / year required to operate the submersible pump in Well NTUA #1:

$$\frac{\$}{\text{year}} = \frac{(\text{gpm})\,(\text{head, feet})\,(0.746\ \text{kw/hp})\,(1440\ \text{min/day})\,(365\ \text{day/yr})\,(\$/\text{kw-hr})}{(3960)\,(60\ \text{min/hr})\,(\text{pump efficiency})\,(\text{motor efficiency})}$$

This equation assumes that the increase in hydraulic horsepower, required to pump the average 27.7 gpm flowrate of NTUA #1 (cost for other wells can be calculated with the same equation) an additional vertical height because of the lowered water level at that well, is reflected completely as an increase in yearly pumping costs (shown in Table 1 below).

Table 1

Conservative Case Showing Additional Pumping Cost per Year Due to Lowered Water Levels at NTUA #1 Caused by ISL Mining at Crownpoint / Unit One

	Additional Drawdown (feet)	Additional Cost per Year
Crownpoint Only	55	$336
Unit One only	25	$153
Both Crownpoint & Unit One	80	$488

It is unlikely that the submersible pump will actually need to be lowered into the well a result of the drop of the pumping fluid level. However, if additional pipe will be needed to lower the submersible pump, HRI will estimate a one time cost of $5000.00 for this work. Again, this cost is conservative because the additional pipe would normally be added during routine well servicing at the nominal cost of the pipe.

Adequate water column exists in the Crownpoint area to assure that well yield will not be affected with even the worst case drawdown. (i.e. if current water column is 1500 ft. then 1420 ft. will still be available).
The Crownpoint water wells run intermittently. Therefore, even if there was a minor decrease in yield rate as a result in water level change, it could be compensated for simply by pumping the well a little longer. These additional pumping costs are reflected in the annual cost stated in Table 1.

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