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WHARF RESOURCES (USA) INC.

July 12, 2011

Mr. Eric Holm
Department of Environment and Natural Resources
Office of Minerals and Mining
Joe Foss Building
5223 East Capitol
Pierre, SD 57501-3181

Re: Wharf Resources Large Scale Mine Permit Application – PW-2 Sampling

Dear Mr. Holm:

Wharf Resources would like to petition that a shorter period of time for baseline data collection at monitoring well PW-2 be accepted. Hydrological justification for a reduced sampling period is provided in this letter.

Well PW-2 is located in Section 33, T5N, R2E, and is completed in the Madison Limestone Aquifer. The well is centrally located in the proposed Expansion Project permit boundary in that section. Operation plans for this area do not include mining but rather may be used for a roadway, parking lot space, or utility corridor.

Well PW-2 was completed in August 2010. A sample was collected via airlift in July 2010 during the well drilling. At that time only a select number of parameters were analyzed; the sample collected was not analyzed for the complete list of baseline water quality parameters but is still considered a representative water quality sample. The well was sampled again in October 2010 with regular monthly baseline sampling beginning in February 2011 and has continued with the most recent sample collected in early July 2011 (results pending). To date, a total of 7 water quality samples have been collected from PW-2. Water quality results and statistics are provided in Table 1.

A review of the data indicates that this Madison Aquifer well has fairly stable chemistry. Values for total anions, cations, pH, and electrical conductivity have very small ranges in values with samples being within five percent of each other. Boxplots display narrow ranges in water chemistry for nearly all other parameters (see Figures 1 through 3). The only parameters with notably larger ranges in values are field ORP, total suspended solids, and turbidity. The sample with the maximum values for TSS and turbidity was collected in February 2011; it is hypothesized that the temporary increase in these parameters was the result of agitating sediment within the well during pumping.

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**Figure 1. Boxplot of parameters with concentrations between 0 and 5 mg/L.**

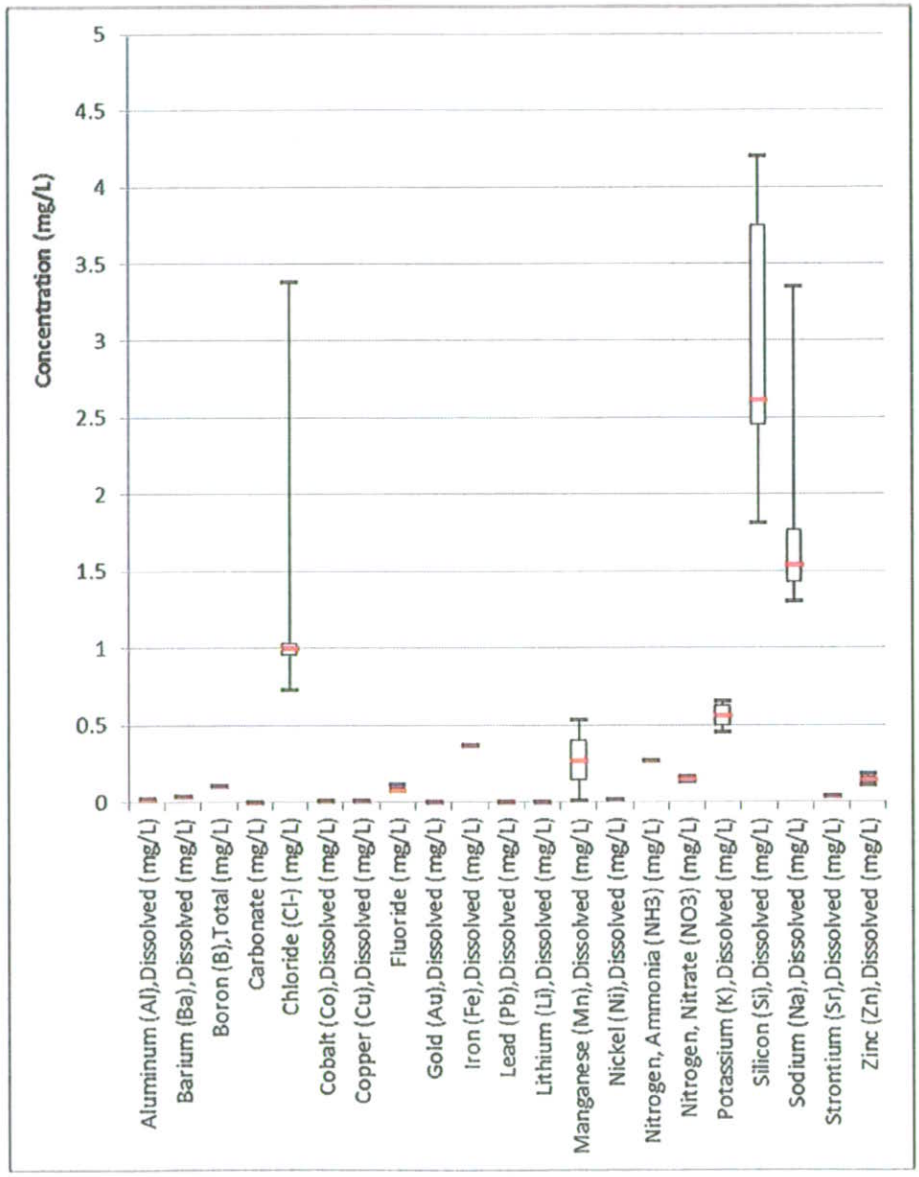


**Figure 2. Boxplot of parameters with concentrations between 0 and 50 mg/L.**

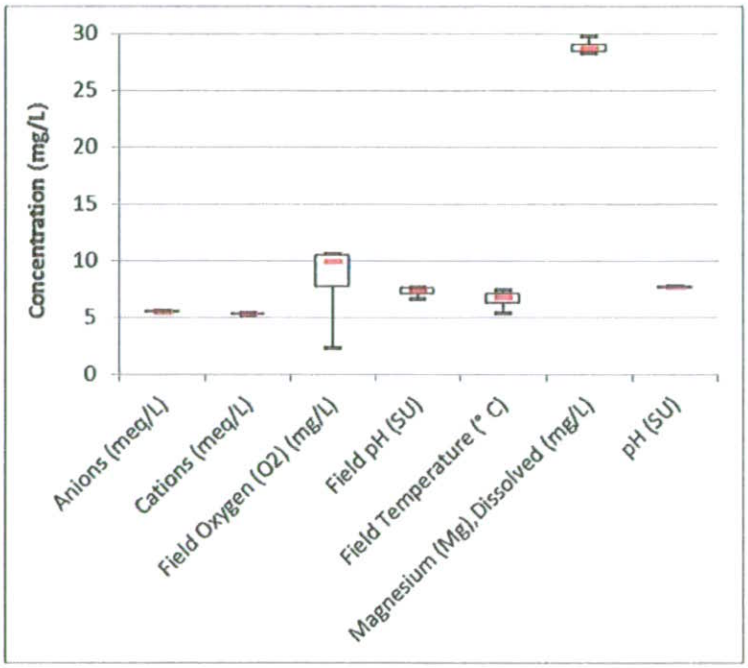
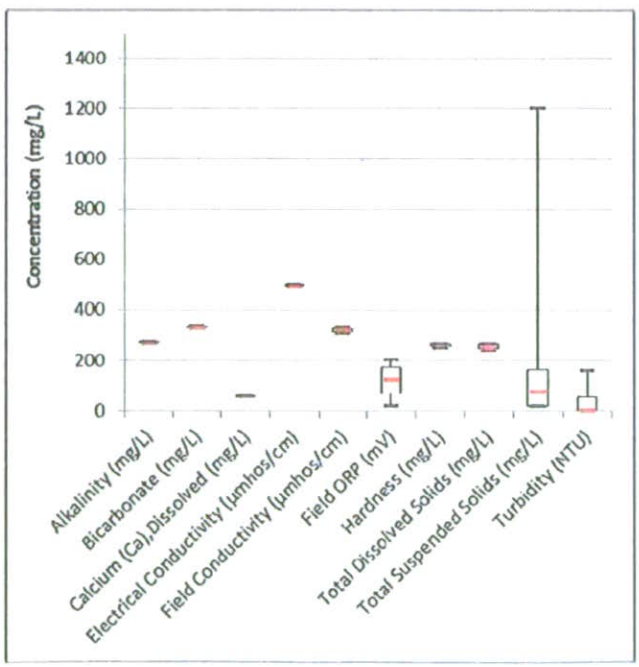



**Figure 3. Boxplot of parameters with concentrations between 0 and 1200 mg/L.**



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Numerous parameters have been undetected in every sample collected to date (see Table 1). These undetected parameters include: antimony, arsenic, beryllium, cadmium, chromium, coliform, cyanide, mercury, molybdenum, nitrite, selenium, silver, sulfate, and vanadium.

The general water quality does not indicate any significant seasonal fluctuations. Additional sampling results are expected to be extremely similar to those samples already collected, therefore additional baseline sampling would yield little to no new information about the water quality of at well PW-2. For this reason, Wharf Resources requests that the SD DENR determine a shorter baseline period is adequate for this well.

If you have any questions or require further information, please contact me at 605.584.4155.

Sincerely,

Ron Waterland
Environmental Manager

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## Table 1. PW-2 Water Quality Data 2010-2011 (Page 1 of 3)

| Parameter | 7/21/2010 | 10/6/2010 | 2/16/2011 | 3/18/2011 | 4/7/2011 | 6/10/2011 | Q1 | Min | Median | Max | Q3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity (mg/L) | - | 275 | 269 | 265 | 271 | 275 | 269 | 265 | 271 | 275 | 275 |
| Aluminum (Al),Dissolved (mg/L) | - | 0.029 | 0.016 | 0.013 | 0.016 | 0.011 | 0.013 | 0.011 | 0.016 | 0.029 | 0.016 |
| Anion - Cation Balance (%) | - | -1.79 | -2.36 | 0.511 | -0.633 | -2.72 | -2.36 | -2.72 | -1.79 | 0.511 | -0.633 |
| Anions (meq/L) | - | 5.61 | 5.42 | 5.36 | 5.46 | 5.53 | 5.42 | 5.36 | 5.46 | 5.61 | 5.53 |
| Antimony (Sb),Dissolved (mg/L) | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | |
| Arsenic (As),Dissolved (mg/L) | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | | | | | |
| Barium (Ba),Dissolved (mg/L) | 0.049 | 0.033 | 0.043 | 0.042 | 0.041 | 0.044 | 0.041 | 0.033 | 0.042 | 0.044 | 0.043 |
| Beryllium (Be),Dissolved (mg/L) | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | |
| Bicarbonate (mg/L) | - | 336 | 328 | 324 | 330 | 335 | 328 | 324 | 330 | 336 | 335 |
| Boron (B),Total (mg/L) | - | 0.109 | <0.02 | <0.02 | <0.02 | <0.02 | 0.109 | 0.109 | 0.109 | 0.109 | 0.109 |
| Cadmium (Cd),Dissolved (mg/L) | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | |
| Calcium (Ca),Dissolved (mg/L) | - | 59.8 | 53.1 | 60.2 | 57.5 | 55.5 | 55.5 | 53.1 | 57.5 | 60.2 | 59.8 |
| Carbonate (mg/L) | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cations (meq/L) | - | 5.41 | 5.17 | 5.41 | 5.39 | 5.24 | 5.24 | 5.17 | 5.39 | 5.41 | 5.41 |
| Chloride (Cl-) (mg/L) | - | 3.38 | 0.96 | 1 | 1.03 | 0.73 | 0.96 | 0.73 | 1 | 3.38 | 1.03 |
| Chromium (Cr),Dissolved (mg/L) | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | |
| Cobalt (Co),Dissolved (mg/L) | - | 0.007 | <0.001 | <0.001 | <0.001 | <0.001 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 |
| Coliform, Fecal | - | - | - | - | - | - | | | | | |
| Coliform, Total | - | - | - | - | - | - | | | | | |
| Copper (Cu),Dissolved (mg/L) | - | 0.007 | 0.005 | 0.011 | 0.01 | <0.005 | 0.0065 | 0.005 | 0.0085 | 0.011 | 0.01025 |
| Cyanide, Free (mg/L) | - | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | | | | | |
| Cyanide, Total (mg/L) | - | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | | | | | |
| Cyanide, WAD (mg/L) | - | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | | | | | |