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MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

CLIENT: Oil, Gas, & Mining
3 Triad Center
Salt Lake City, UT 84180-1203

ATTN: H. .Shepard

Date Samples Rec'd: 05/04/89
MSAI Group No.: 992
Sample Matrix: Aqueous
Report Date: 05/08/89
P.O. Number: 582993
Project: HECLA

LAB NO.	SAMPLE DATE	SAMP TIME	SAMPLE DESCRIPTION	ANALYSES PERFORMED	RESULT
7597	05/03/89	0	HECLA POND 1	CYANIDE, Free	100.1 mg/l
7598	05/03/89	0	HECLA POND 2	CYANIDE, Free	71.5 mg/l

Respectfully submitted,

Glenn A. Sorensen, B.S.
Manager, Technical Operations

EXPLANATION OF SYMBOLS AND ABBREVIATIONS

The following defines common symbols and abbreviations used in reporting technical data.

1. < means "less than." The number following the sign is the smallest amount which can be detected using this specific test.

2. > means "greater than."

3. **N.D.** means "none detected."
   BMDL means "Below Minimum Detection Level."
   TNTC means "Too Numerous to Count."

4. **MPN** means "Most Probable Number." Used in reporting certain bacteriological results which are calculated from a statistical formula related to bacterial count observed in a series of dilutions of the sample.

5. **IU** means "International Units." Used in reporting results on certain Vitamin assays.

6. **CP Units** means "cobalt-chloroplatinate units." Used in reporting color of aqueous solutions.

7. **umhos/cm** means "micromhos/cm." Used in reporting specific conductance of solutions.

8. **NTU** means "nephelometric turbidity units."

9. **fib >5 um/ml** means "fibers greater than 5 microns in length, per ml."

10. **C** and **F** represent degrees of temperature and refer to Celsius and Fahrenheit respectively.

11. **Cal** means (diet) calories.

12. **lb.** means pound(s).

13. **meq** means milliequivalents, a chemical term meaning 1/1000 of the equivalent weight of a substance or element.

14. **g** means "gram(s)." The unit of weight used in the metric system. One gram equals about 1/30th of an ounce.
    kg means "kilogram(s)." One kilogram is 1000 grams.
    mg means "milligram(s)." One milligram is 1/1000 of a gram.
    ug means "microgram(s)." One-millionth of a gram.

15. **l** means "liter(s)." The unit of volume used in the metric system.
    ml means "milliliter(s)." One milliliter is 1/1000 of a liter.
    ul means "microliter(s)." One microliter is 1/1000 of a milliliter or one-millionth of a liter.

16. **m3** means "cubic meter(s)." Usually used as a volume unit in air analyses.

17. **ppm** means "parts per million." One ppm is equivalent to one microgram per gram, or one gram per million grams. For aqueous liquids ppm is usually taken to be equivalent to milligrams per liter, because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

18. **ppb** means "parts per billion." One ppb is 1/1000 of a ppm.

19. **%** means "percent" or part per hundred. This is usually followed by the designation "by weight," meaning grams per hundred grams. If followed by the designation "by volume," it refers to volume per unit volume, e.g., milliliters per hundred milliliters.

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Clients should be aware that a most important step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

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WARRANTY AND LIMITATION OF LIABILITY. In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. We disclaim any other warranties, express or implied, including a Warranty of Fitness for particular Purpose and Warranty of Merchantability. We accept no legal responsibility for the purpose for which the client uses the test results. No purchase order or other order for work shall be accepted by the company with any conditions that vary from our Standard Terms and Conditions. If Mountain States Analytical performs work requested by the client, conditions at variance to our Standard Terms and Conditions are not part of the contract.