UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

# Analytical results and sample localities of rock, stream sediment and oxalic-acid-soluble fraction of stream-sediment samples from the Ten Lakes Wilderness Study Area, Lincoln County, Montana

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Open-File Report 86-429



1984

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## STUDIES RELATED TO WILDERNESS

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines to survey certain areas on Federal lands to determine their mineral resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a geochemical survey of the Ten Lakes Wilderness Study Area in the Kootenai National Forest, Lincoln County, Montana. The area was proposed for study by the Montana Wilderness Study Bill (5.393), April, 1976 and was classified as a Further Planning Area during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979.

## INTRODUCTION

In June, 1981 a reconnaissance geochemical survey was made of the Ten Lakes Wilderness Study Area, Lincoln County, Montana.

The Ten Lakes Wilderness Study Area comprises about 53 $mi^2$ in the northeast corner of Lincoln County, Montana, and lies about 5 mi east of Eureka (see Fig. 1). Access to the vicinity of the study area is provided on the southwest by U.S. Forest Service Road 319 that begins at U.S. Highway 93, 8 mi southeast of Eureka.

The study area consists chiefly of Middle Proterozoic metasedimentary rocks of the Belt Supergroup. The oldest rocks are the upper part of the Grinnell formation, the youngest are the McNamara formation. Igneous rocks include the Purcell Lava, predominantly basalt, and minor exposures of a metadiorite sill. A detailed report on the geology is presented by Whipple and others (1984). Generalized geology is shown in Plate 1.

The topography of the area consists of heavily timbered, rugged, glaciated mountain terrain, with relief up to 3000 ft and maximum elevation of 7832 ft. Streams have steep gradients and are generally fast flowing. The climate is typically subalpine to alpine.

## METHODS OF STUDY

### Sample Collection

Rock samples of all the major rock types in the study area were collected during geologic mapping. Most of these rocks were relatively fresh and provided data on background concentrations of elements important in the mineral evaluation. Mineralized rocks from mines and prospects were collected to establish trace element signatures from these occurrences. Sediment samples were collected from selected drainages, mainly first and second order, in and around the study area. The sediment was taken at the best available location in the stream channel. Float rocks and stream pebbles were examined in all the sampled drainages and those with visible signs of mineralization or alteration were collected. Sample locations are plotted on Plate 1.

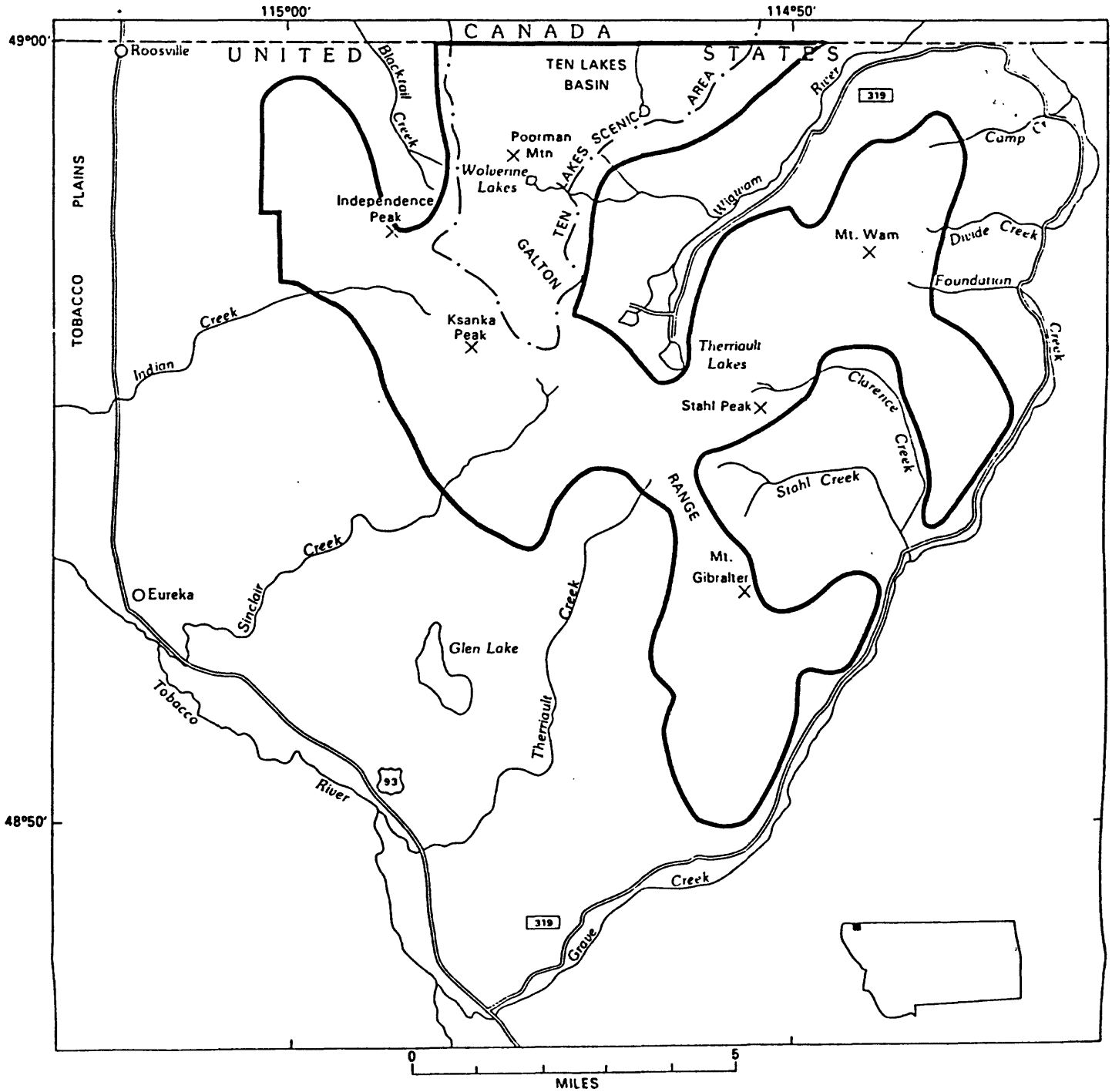


FIGURE 1. Location map of the Ten Lakes Wilderness Study Area, Lincoln County, Montana.

## Sample Preparation

All rock samples were reduced to minus 6 mm in a jaw crusher and ground to minus 0.15 mm in a vertical pulverizer equipped with a ceramic plate. Stream-sediment samples were collected in metal-free paper envelopes, air dried, and sieved to minus 0.18 mm with stainless-steel sieves. A split of all the sieved sediments was leached with oxalic acid. The leachate was evaporated to dryness and ignited in a muffle furnace to provide a residue containing the secondary iron and manganese oxide fraction of the sample. The ability of secondary Fe-Mn oxides to scavenge metals from solution and their significance in geochemical exploration is described by Chao and Theobald (1976). The oxalic leaching technique used is a modification of Alminas and Mosier (1976).

## Analytical Methods

### Spectrographic method

The rock, stream sediment, and oxalic-acid-soluble Fe-Mn oxide fractions of stream-sediment samples were analyzed for 31 elements using a semiquantitative, direct-current arc emission spectrographic method (Grimes and Marranzino, 1968). Spectrographic results are obtained by visual comparison of spectra derived from the sample against spectra obtained from standards made from pure oxides and carbonates. Standard concentrations are geometrically spaced over any given order of magnitude of concentration as follows: 100, 50, 20, 10, and so forth. Samples whose concentrations are estimated to fall between those values are assigned values of 70, 30, 15, and so forth. The precision of the analytical method is approximately plus or minus one reporting unit at the 83 percent confidence level and plus or minus two reporting units at the 96 percent confidence level (Motooka and Grimes, 1976). Values determined for the major elements (iron, magnesium, calcium, and titanium) are given in weight percent; all others are given in parts per million (micrograms/gram) (Table 1). Spectrographic data are presented in Tables 3, 4, and 5.

### Chemical methods

Other methods of analysis used on rock and stream-sediment samples from the Ten Lakes Study Area are summarized in Table 2. These analytical data are presented in Tables 3 and 4.

## ROCK ANALYSIS STORAGE SYSTEM

Upon completion of all analytical work, the information was entered into a computer-based file called RASS (Rock Analysis Storage System). This RASS file contains both descriptive geological information and analytical data. Any or all of this information may be retrieved and converted to a standard form (STATPAC) for computerized statistical analysis or publication (VanTrump and Miesch, 1976).

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TABLE 1.--Limits of determination for the spectrographic analysis of rocks and stream sediments, based on a 10-mg sample

[The spectrographic limits of determination for oxalic-acid-soluble Fe-Mn oxide fractions of stream sediments are two reporting units higher than the limits given for rocks and stream sediments]

| Elements | Lower determination limit | Upper determination limit |
|---|---|---|
| | Percent | |
| Iron (Fe) | 0.05 | 20 |
| Magnesium (Mg) | .02 | 10 |
| Calcium (Ca) | .05 | 20 |
| Titanium (Ti) | .002 | 1 |
| | Parts per million | |
| Manganese (Mn) | 10 | 5,000 |
| Silver (Ag) | 0.5 | 5,000 |
| Arsenic (As) | 200 | 10,000 |
| Gold (Au) | 10 | 500 |
| Boron (B) | 10 | 2,000 |
| Barium (Ba) | 20 | 5,000 |
| Beryllium (Be) | 1 | 1,000 |
| Bismuth (Bi) | 10 | 1,000 |
| Cadmium (Cd) | 20 | 500 |
| Cobalt (Co) | 5 | 2,000 |
| Chromium (Cr) | 10 | 5,000 |
| Copper (Cu) | 5 | 20,000 |
| Lanthanum (La) | 20 | 1,000 |
| Molybdenum (Mo) | 5 | 2,000 |
| Niobium (Nb) | 20 | 2,000 |
| Nickel (Ni) | 5 | 5,000 |
| Lead (Pb) | 10 | 20,000 |
| Antimony (Sb) | 100 | 10,000 |
| Scandium (Sc) | 5 | 100 |
| Tin (Sn) | 10 | 1,000 |
| Strontium (Sr) | 100 | 5,000 |
| Vanadium (V) | 10 | 10,000 |
| Tungsten (W) | 50 | 10,000 |
| Yttrium (Y) | 10 | 2,000 |
| Zinc (Zn) | 200 | 10,000 |
| Zirconium (Zr) | 10 | 1,000 |
| Thorium (Th) | 100 | 2,000 |

TABLE 2.--Chemical methods used on rock and stream-sediment samples

| Sample type | Constituent determined | Analytical method | Determination limit micrograms/ gram or ppm | Analyst | Reference |
|---|---|---|---|---|---|
| Rocks | Au | AA | 0.05 | Leinz | Thompson, and others, 1968 |
| Rocks | Te | AA | 0.10 | Leinz | Chao and others, 1973 |
| Rocks | F | Specific Ion | 100 | Sharkey | Hopkins, 1977 |
| Rock | As, Sb, Zn Bi, Cd, Mo | AA | As 5 or 10<br>Sb 1 or 2<br>Zn 5<br>Bi 1 or 2 | Arbogast | Modification of Viets, 1978 |
| Sediments | " " " | | Cd 0.1<br>Mo 1 | and Sharkey | |
| Rocks | Hg | Instrumental | 0.02 | Arbogast and | Modification of McNerney and |
| Sediments | " | " | " | Sharkey | others, 1972 and Vaughn and McCarthy, 1964 |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana
[N, not detected at limit of determination (cf. tables 1 and 2). <, detected but less than the limit of determination. >, greater than the listed value. ---, not determined]

| Sample | Latitude | Longitude | Fe-pct. s | Mg-pct. s | Ca-pct. s | Ti-pct. s | Mn-ppm s | Ag-ppm s | As-ppm s | Au-ppm s | B-ppm s | Ba-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BR1R | 48 58 23 | 114 57 18 | >20.00 | .50 | <.05 | .700 | 20 | N | N | N | N | 300 |
| GR1R | 48 50 53 | 114 50 55 | .30 | .15 | .15 | .100 | 30 | 500.0 | 700 | N | 50 | 500 |
| GR2R | 48 50 53 | 114 50 55 | .10 | .20 | .50 | .002 | 150 | 200.0 | N | N | 10 | 50 |
| GR3R | 48 50 53 | 114 50 55 | 3.00 | 7.00 | 5.00 | .200 | 700 | N | N | N | 50 | 700 |
| GR4R | 48 50 43 | 114 51 9 | 2.00 | 2.00 | 3.00 | .200 | 500 | N | N | N | 70 | 700 |
| GR5R | 48 50 57 | 114 50 55 | 1.00 | 1.00 | 20.00 | .200 | 700 | .5 | N | N | 30 | 200 |
| IM1R | 48 57 6 | 114 57 34 | 10.00 | 7.00 | .30 | 1.000 | 300 | 5.0 | N | N | <10 | 1,000 |
| IM2R | 48 57 15 | 114 57 50 | 10.00 | .30 | .20 | .070 | 300 | 50.0 | N | N | <10 | 50 |
| IM3R | 48 57 15 | 114 57 50 | .50 | 1.00 | .07 | .150 | 150 | 30.0 | N | N | <10 | 20 |
| IM4R | 48 57 15 | 114 57 50 | 7.00 | 5.00 | 2.00 | 1.000 | 1,000 | N | N | N | 100 | 500 |
| IM5R | 48 57 10 | 114 57 55 | 5.00 | 2.00 | .15 | .300 | 1,000 | N | N | N | 300 | 500 |
| IM6R | 48 57 10 | 114 57 55 | 10.00 | 5.00 | .50 | 1.000 | 200 | 5.0 | N | N | 200 | 150 |
| JS1001 | 48 56 50 | 114 45 40 | 5.00 | 3.00 | 1.00 | .300 | 300 | N | N | N | 200 | 700 |
| JS1002 | 48 56 48 | 114 47 3 | 5.00 | 2.00 | .07 | .500 | 150 | N | N | N | 500 | 2,000 |
| JS1003 | 48 57 4 | 114 46 8 | 1.00 | .30 | <.05 | .020 | 100 | N | N | N | 100 | 30 |
| JS1004 | 48 57 5 | 114 57 34 | 10.00 | 7.00 | .20 | .700 | 300 | 5.0 | N | N | 15 | 500 |
| JS1006 | 48 57 14 | 114 57 52 | 10.00 | 5.00 | 3.00 | 1.000 | 700 | N | N | N | 50 | 300 |
| JS1009 | 48 57 2 | 114 57 53 | 7.00 | 7.00 | 10.00 | .030 | 5,000 | 7.0 | N | N | <10 | 20 |
| JS1010 | 48 57 7 | 114 57 59 | 3.00 | 5.00 | 10.00 | .200 | 700 | N | N | N | 200 | 300 |
| JS1011 | 48 57 6 | 114 57 58 | 2.00 | .70 | >20.00 | .100 | 1,000 | N | N | N | 10 | 100 |
| JS1012 | 48 49 54 | 114 51 12 | 2.00 | 5.00 | 2.00 | .200 | 1,000 | N | N | N | 10 | 200 |
| JS1013 | 48 49 54 | 114 51 12 | 2.00 | 5.00 | 7.00 | .300 | 2,000 | N | N | N | 30 | 5,000 |
| JS1014 | 48 50 55 | 114 50 55 | 2.00 | 3.00 | 5.00 | .050 | 1,500 | 1.5 | N | N | 15 | 100 |
| JS1015 | 48 50 55 | 114 50 55 | 2.00 | 5.00 | 7.00 | .100 | 700 | N | N | N | 20 | 200 |
| JS1016 | 48 50 55 | 114 50 55 | .50 | .20 | .07 | .150 | 20 | 50.0 | N | N | 70 | 700 |
| JS1018 | 48 50 35 | 114 52 0 | 1.00 | 1.00 | 5.00 | .150 | 300 | N | N | N | 50 | 200 |
| JS1019 | 48 49 54 | 114 51 55 | 3.00 | .50 | .10 | .100 | 700 | N | N | N | 10 | 1,000 |
| JS1020 | 48 49 52 | 114 51 51 | 10.00 | .30 | 1.50 | .500 | 2,000 | N | N | N | 10 | 5,000 |
| JS1021 | 48 50 44 | 114 50 16 | .20 | .50 | .70 | .050 | 1,500 | 3.0 | N | N | 20 | 3,000 |
| JS1022 | 48 50 44 | 114 50 18 | 2.00 | 3.00 | 1.00 | .200 | 2,000 | .7 | N | N | 50 | 700 |
| JS1023 | 48 55 6 | 114 54 55 | 1.50 | 2.00 | 3.00 | .200 | 300 | N | N | N | 70 | 500 |
| JS1024 | 48 54 54 | 114 55 37 | 2.00 | 3.00 | .07 | .500 | 100 | N | N | N | 200 | 700 |
| JS1025 | 48 55 54 | 114 47 15 | .10 | .05 | <.05 | .010 | 100 | N | N | N | 50 | <20 |
| JS1027 | 48 55 26 | 114 48 45 | 2.00 | 3.00 | 20.00 | .200 | 1,000 | N | N | N | 70 | 300 |
| JS1028 | 48 55 27 | 114 49 52 | 7.00 | 3.00 | .07 | 1.000 | 700 | N | N | N | 10 | 700 |
| JS1029 | 48 54 36 | 114 53 4 | .30 | .50 | >20.00 | .003 | 700 | N | N | N | N | <20 |
| JS1030 | 48 54 42 | 114 53 13 | 1.50 | 3.00 | 20.00 | .150 | 500 | N | N | N | 15 | 100 |
| JS1031 | 48 54 53 | 114 54 10 | .50 | .30 | >20.00 | .003 | 1,000 | N | N | N | N | N |
| JS1032 | 48 54 53 | 114 54 10 | 5.00 | 3.00 | .50 | .200 | 150 | N | N | N | 200 | 300 |
| JS1033 | 48 59 43 | 115 0 13 | 3.00 | .20 | .07 | .300 | 500 | N | N | N | 150 | 300 |
| JS1035 | 48 59 52 | 115 0 15 | 7.00 | 5.00 | 5.00 | 1.000 | 1,000 | 2.0 | N | N | 150 | >5,000 |
| JS1036 | 48 55 42 | 114 56 28 | 5.00 | 1.50 | .10 | .500 | 200 | N | N | N | 300 | 1,000 |
| JS1037 | 48 55 48 | 114 56 21 | 3.00 | .50 | <.05 | .200 | 100 | N | N | N | 150 | 500 |
| JS1038 | 48 55 48 | 114 56 21 | 10.00 | 5.00 | .30 | 1.000 | 500 | .7 | N | N | 20 | 500 |
| JS1039 | 48 56 5 | 114 56 44 | 7.00 | 7.00 | 15.00 | .030 | >5,000 | N | N | N | N | <20 |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana

[N, not detected at limit of determination (cf. tables 1 and 2). <, detected but less than the limit of determination. >, greater than the listed value. ---, not determined]

| Sample | Be-ppm s | Bi-ppm s | Cd-ppm s | Co-ppm s | Cr-ppm s | Cu-ppm s | La-ppm s | Mo-ppm s | Nb-ppm s | Ni-ppm s | Pb-ppm s | Sb-ppm s | Sc-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BR1R | N | N | N | 300 | 30 | 200 | 100 | N | N | 50 | 30 | N | 10 |
| GR1R | 1.0 | N | 300 | 7 | 20 | 20,000 | 50 | 15 | N | <5 | 15,000 | >10,000 | <5 |
| GR2R | <1.0 | N | 20 | N | N | 1,500 | 20 | N | N | N | >20,000 | 200 | N |
| GR3R | 1.5 | N | N | 10 | 50 | 20 | 50 | N | N | 15 | 200 | N | 10 |
| GR4R | 3.0 | N | N | 5 | 70 | 50 | 50 | N | N | 10 | 70 | N | 10 |
| GR5R | 1.5 | N | N | 20 | 50 | 200 | 70 | N | N | 50 | 50 | 100 | 7 |
| IM1R | 1.5 | N | N | 70 | 20 | 5,000 | N | N | N | 50 | 10 | N | 10 |
| IM2R | <1.0 | N | N | 15 | N | >20,000 | N | N | N | 5 | 10 | N | <5 |
| IM3R | 1.0 | N | N | 100 | <10 | >20,000 | N | N | N | 150 | 15 | N | 7 |
| IM4R | 2.0 | N | N | 30 | 50 | 300 | 30 | N | N | 30 | <10 | N | 15 |
| IM5R | 2.0 | N | N | 15 | 70 | 100 | 50 | N | N | 30 | 15 | N | 10 |
| IM6R | 2.0 | <10 | N | 200 | 20 | 7,000 | 30 | 15 | <20 | 100 | 15 | N | 20 |
| JS1001 | 2.0 | N | N | 10 | 70 | N | 50 | N | N | 30 | 30 | N | 10 |
| JS1002 | 5.0 | N | N | 7 | 100 | <5 | 70 | 10 | N | 30 | 20 | N | 15 |
| JS1003 | N | N | N | <5 | 10 | N | N | N | N | <5 | <10 | N | <5 |
| JS1004 | 3.0 | N | N | 70 | 20 | 20,000 | 20 | N | N | 70 | 10 | N | 10 |
| JS1006 | 3.0 | N | N | 30 | 30 | 500 | 50 | N | N | 50 | 10 | N | 15 |
| JS1009 | N | N | N | 30 | <10 | 15,000 | N | 20 | N | 20 | 10 | N | 15 |
| JS1010 | 3.0 | N | N | 5 | 50 | 50 | 50 | N | N | 15 | 20 | N | 10 |
| JS1011 | N | N | N | 20 | 20 | 70 | 70 | N | N | 20 | 100 | N | 5 |
| JS1012 | 1.0 | N | N | 10 | 30 | 10 | 50 | N | N | 15 | 15 | N | 7 |
| JS1013 | N | N | N | N | 50 | 20 | 70 | 15 | N | 20 | 30 | N | 7 |
| JS1014 | N | N | N | 5 | 30 | 50 | 20 | 5 | N | 15 | 500 | N | 5 |
| JS1015 | N | N | N | 7 | 20 | 7 | 30 | N | N | 10 | 30 | N | 5 |
| JS1016 | 1.5 | N | N | N | 20 | 1,500 | 20 | N | N | 5 | >20,000 | 700 | 5 |
| JS1018 | N | N | N | N | 30 | N | 70 | <5 | N | 7 | 20 | N | 5 |
| JS1019 | 1.5 | N | N | N | <10 | 30 | 30 | N | N | N | 70 | N | 7 |
| JS1020 | 5.0 | N | N | 7 | <10 | 20 | 100 | 20 | 30 | 15 | 50 | N | 30 |
| JS1021 | N | N | N | N | 10 | 10 | <20 | N | N | N | 20 | N | N |
| JS1022 | 2.0 | N | N | 10 | 50 | 150 | 50 | N | N | 20 | 30 | N | 10 |
| JS1023 | 1.0 | N | N | 5 | 30 | 5 | 20 | N | N | 20 | 20 | N | 7 |
| JS1024 | 3.0 | N | N | 7 | 70 | 30 | 50 | 5 | N | 30 | 10 | N | 15 |
| JS1025 | N | N | N | N | <10 | N | <20 | N | N | 7 | 30 | N | <5 |
| JS1027 | 2.0 | N | N | 5 | 30 | 7 | 50 | 10 | N | 20 | 15 | N | 7 |
| JS1028 | 1.5 | N | N | 10 | <10 | 5 | 100 | 10 | 50 | 10 | 15 | N | 20 |
| JS1029 | N | N | N | N | <10 | <5 | 50 | N | N | 5 | 20 | N | <5 |
| JS1030 | N | N | N | N | 20 | 5 | 50 | N | N | 10 | 10 | N | 7 |
| JS1031 | N | N | N | N | 15 | <5 | 50 | 5 | N | 15 | <10 | N | 7 |
| JS1032 | 3.0 | N | N | 30 | 70 | 15 | 50 | N | N | 50 | 20 | N | 15 |
| JS1033 | N | N | N | <5 | 20 | N | 150 | N | 20 | <5 | 10 | N | 5 |
| JS1035 | 2.0 | N | N | 50 | 70 | 700 | 100 | N | 20 | 20 | 30 | N | 15 |
| JS1036 | 2.0 | N | N | 15 | 70 | 7 | 70 | N | <20 | 30 | 15 | N | 10 |
| JS1037 | 1.0 | N | N | 10 | 50 | 15 | 100 | 20 | N | 20 | 15 | N | 10 |
| JS1038 | 1.0 | N | N | 50 | 20 | 100 | N | 20 | <20 | 50 | 20 | N | 20 |
| JS1039 | N | N | N | 10 | <10 | N | N | N | N | 10 | 500 | N | 10 |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana

[N, not detected at limit of determination (cf. tables 1 and 2). <, detected but less than the limit of determination. >, greater than the listed value. ---, not determined]

| Sample | Sn-ppm s | Sr-ppm s | V-ppm s | W-ppm s | Y-ppm s | Zn-ppm s | Zr-ppm s | Th-ppm s | Au-ppm aa | Hg-ppm inst | Te-ppm aa | As-ppm aa | Zn-ppm aa |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BR1R | N | N | 20 | N | 20 | N | 150 | N | -- | .20 | -- | <10 | <5 |
| GR1R | N | N | 30 | N | <10 | 2,000 | 100 | N | .13 | 6.70 | .4 | 1,500 | 1,600 |
| GR2R | N | N | <10 | N | N | >10,000 | 10 | N | N | 2.20 | 2.0 | 20 | 12,000 |
| GR3R | N | 100 | 70 | N | 20 | N | 200 | N | N | .08 | N | <10 | 65 |
| GR4R | N | N | 70 | N | 20 | N | 150 | N | N | .04 | N | 30 | 25 |
| GR5R | N | 100 | 30 | N | 50 | N | 150 | N | -- | .20 | -- | 40 | 70 |
| IM1R | N | N | 100 | N | 20 | N | 150 | N | N | .08 | N | 10 | 40 |
| IM2R | N | N | 10 | N | N | N | 20 | N | N | 2.20 | N | 10 | 35 |
| IM3R | N | N | 50 | N | <10 | N | 30 | N | N | .34 | .1 | 40 | 25 |
| IM4R | N | 150 | 150 | N | 30 | N | 150 | N | N | .06 | N | <10 | 25 |
| IM5R | N | N | 70 | N | 30 | N | 300 | N | N | .04 | .1 | 20 | 30 |
| IM6R | N | N | 100 | N | 50 | N | 150 | N | N | .12 | N | 80 | 20 |
| JS1001 | N | <100 | 70 | N | 30 | N | 200 | N | N | .10 | N | <10 | 70 |
| JS1002 | N | <100 | 150 | N | 50 | N | 150 | N | N | <.02 | N | <10 | 30 |
| JS1003 | N | N | 10 | N | N | N | 15 | N | N | <.02 | N | <10 | 5 |
| JS1004 | N | <100 | 100 | N | 20 | N | 100 | N | N | .08 | .1 | <10 | 50 |
| JS1006 | N | 200 | 150 | N | 30 | N | 150 | N | N | <.02 | N | N | 35 |
| JS1009 | N | 200 | 30 | N | 50 | N | N | N | N | .14 | N | <10 | 20 |
| JS1010 | N | 100 | 70 | N | 20 | N | 100 | N | N | <.02 | .1 | <10 | 35 |
| JS1011 | N | 200 | 20 | N | 100 | N | 50 | N | N | .24 | N | 20 | 10 |
| JS1012 | N | 150 | 50 | N | 30 | N | 150 | N | N | .02 | N | N | 40 |
| JS1013 | N | 150 | 30 | N | 30 | N | 700 | N | N | <.02 | N | N | 20 |
| JS1014 | N | 100 | 10 | N | 15 | 500 | 70 | N | N | <.02 | N | N | 300 |
| JS1015 | N | 100 | 20 | N | 20 | N | 100 | N | N | .04 | .1 | N | 40 |
| JS1016 | N | N | 70 | N | 15 | 7,000 | 100 | N | N | .18 | .3 | 40 | 6,500 |
| JS1018 | N | N | 20 | N | 20 | N | 100 | N | N | <.02 | .2 | N | 45 |
| JS1019 | N | N | <10 | N | <10 | 700 | 100 | N | N | .04 | N | 20 | 400 |
| JS1020 | N | 200 | <10 | <50 | 70 | N | 300 | N | N | .02 | N | N | 160 |
| JS1021 | N | 150 | 10 | N | 10 | N | 70 | N | N | <.02 | N | N | 15 |
| JS1022 | N | 100 | 50 | N | 20 | N | 200 | N | N | <.02 | 1.9 | 10 | 110 |
| JS1023 | N | N | 50 | N | 15 | N | 150 | N | N | .02 | N | 20 | 20 |
| JS1024 | N | N | 100 | N | 20 | N | 200 | N | N | <.02 | <.1 | 10 | 15 |
| JS1025 | N | N | <10 | N | N | N | <10 | N | N | <.02 | N | 10 | 5 |
| JS1027 | N | 100 | 30 | N | 50 | N | 100 | N | N | .06 | N | 10 | 35 |
| JS1028 | N | N | 10 | N | 100 | N | 500 | N | N | .08 | N | 20 | 260 |
| JS1029 | N | 500 | <10 | N | 70 | N | 10 | N | N | <.02 | N | 10 | 5 |
| JS1030 | N | 150 | 20 | N | 30 | N | 50 | N | N | .06 | N | 20 | 10 |
| JS1031 | N | 500 | 15 | N | 50 | N | 30 | N | N | .02 | N | 20 | <5 |
| JS1032 | N | N | 100 | N | 70 | N | 100 | N | N | <.02 | .1 | 30 | 50 |
| JS1033 | N | N | 50 | N | 30 | N | 300 | N | N | <.02 | .1 | 10 | 10 |
| JS1035 | N | 200 | 150 | N | 50 | N | 200 | N | N | .08 | .1 | 10 | 25 |
| JS1036 | N | N | 100 | N | 50 | N | 500 | N | N | <.02 | .1 | <10 | 20 |
| JS1037 | N | N | 100 | N | 10 | N | 200 | N | N | <.02 | .1 | <10 | 10 |
| JS1038 | N | <100 | 150 | N | 20 | N | 100 | N | N | .08 | N | <10 | 85 |
| JS1039 | N | 500 | 30 | N | 20 | N | <10 | N | N | .02 | N | <10 | 30 |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana

[N, not detected at limit of determination (cf. tables 1 and 2). <, detected but less than the limit of determination. >, greater than the listed value. ---, not determined]

| Sample | Cd-ppm aa | Bi-ppm aa | Sb-ppm aa | Sl-F |
|---|---|---|---|---|
| BR1R | N | N | N | -- |
| GR1R | 380.0 | 4 | 8,200 | 180 |
| GR2R | 13.0 | 3 | 140 | <100 |
| GR3R | .3 | 3 | 8 | 425 |
| GR4R | .2 | 1 | 13 | 600 |
| GR5R | N | N | 70 | -- |
| IM1R | .4 | 6 | 4 | 900 |
| IM2R | 3.7 | 10 | 13 | <100 |
| IM3R | 1.0 | 8 | 9 | 160 |
| IM4R | .5 | 4 | 7 | 600 |
| IM5R | .5 | 5 | 7 | 275 |
| IM6R | .1 | 4 | 5 | 600 |
| JS1001 | N | 1 | N | 700 |
| JS1002 | .6 | 1 | N | 500 |
| JS1003 | N | N | N | 100 |
| JS1004 | N | 1 | N | 1,100 |
| JS1006 | N | 3 | N | 800 |
| JS1009 | .2 | 3 | N | 100 |
| JS1010 | N | 1 | N | 1,000 |
| JS1011 | N | 3 | N | 300 |
| JS1012 | N | 1 | N | 1,200 |
| JS1013 | N | 1 | N | 200 |
| JS1014 | 1.8 | 3 | 2 | 200 |
| JS1015 | .2 | N | 1 | 200 |
| JS1016 | 11.3 | 2 | 600 | 600 |
| JS1018 | N | N | N | 400 |
| JS1019 | .8 | N | 4 | 400 |
| JS1020 | .2 | N | 1 | 800 |
| JS1021 | N | 2 | N | 100 |
| JS1022 | N | 7 | N | 500 |
| JS1023 | N | N | N | 700 |
| JS1024 | N | N | N | 1,200 |
| JS1025 | N | N | N | 100 |
| JS1027 | N | 1 | N | 800 |
| JS1028 | N | N | N | 600 |
| JS1029 | .1 | 1 | N | 100 |
| JS1030 | N | N | N | 200 |
| JS1031 | N | N | N | 200 |
| JS1032 | N | 3 | N | 1,200 |
| JS1033 | N | N | N | 400 |
| JS1035 | N | N | N | 700 |
| JS1036 | N | N | N | 600 |
| JS1037 | N | N | N | 100 |
| JS1038 | N | N | N | 700 |
| JS1039 | N | N | N | 100 |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Latitude | Longitude | Fe-pct. s | Mg-pct. s | Ca-pct. s | Ti-pct. s | Mn-ppm s | Ag-ppm s | As-ppm s | Au-ppm s | B-ppm s | Ba-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JS1040 | 48 58 14 | 114 46 5 | 5.00 | 2.00 | .50 | .150 | 500 | N | N | N | 100 | 200 |
| JS1041 | 48 56 35 | 114 49 25 | 2.00 | 5.00 | 5.00 | .300 | 300 | N | N | N | 150 | 1,000 |
| JS1043 | 48 57 10 | 114 50 55 | .50 | .05 | <.05 | .015 | 500 | N | N | N | 50 | 70 |
| JS1044 | 48 56 27 | 114 55 57 | .20 | .02 | <.05 | <.002 | 30 | N | N | N | 30 | 300 |
| JS1045 | 48 56 7 | 114 54 46 | .05 | .02 | .05 | <.002 | 50 | N | N | N | 20 | 20 |
| JW1001 | 48 56 50 | 114 45 40 | 2.00 | 3.00 | 7.00 | .300 | 700 | N | N | N | 300 | 5,000 |
| JW1002 | 48 59 48 | 115 0 5 | 1.00 | .30 | .15 | .150 | 100 | N | N | N | 200 | 200 |
| JW1003 | 48 59 56 | 115 0 15 | 7.00 | 7.00 | .30 | 1.000 | 500 | N | N | N | <10 | 200 |
| JW1004 | 48 59 58 | 115 0 16 | 1.50 | .20 | .05 | .100 | 2,000 | N | N | N | 20 | 3,000 |
| JW1005 | 48 59 27 | 114 59 58 | 7.00 | .07 | <.05 | .200 | 300 | 15.0 | N | N | 10 | 1,500 |
| JW1007 | 48 53 20 | 114 55 38 | 3.00 | .30 | .07 | .300 | 3,000 | N | N | N | 15 | 300 |
| JW1009 | 48 54 29 | 114 51 11 | .20 | .30 | >20.00 | .002 | 500 | N | N | N | N | N |
| JW1011 | 48 56 50 | 114 45 40 | 3.00 | 10.00 | 15.00 | .050 | 3,000 | 1.0 | N | N | 200 | 70 |
| JW1012 | 48 57 4 | 114 46 8 | 2.00 | 10.00 | 20.00 | .050 | 5,000 | N | N | N | 20 | 700 |
| JW1013 | 48 50 45 | 114 51 8 | .30 | .20 | .70 | .070 | 300 | 10.0 | N | N | 20 | 100 |
| JW1015 | 48 54 34 | 114 53 3 | 2.00 | 5.00 | 2.00 | .500 | 150 | N | N | N | 150 | 1,000 |
| JW1018 | 48 54 53 | 114 54 10 | .05 | .05 | .70 | .005 | 100 | N | N | N | 20 | 50 |
| JW1019 | 48 54 43 | 114 53 13 | 1.00 | .70 | >20.00 | .100 | 1,000 | N | N | N | 10 | 70 |
| JW1019A | 48 55 57 | 114 56 25 | 10.00 | 3.00 | .70 | 1.000 | 1,000 | N | N | N | 10 | 500 |
| JW1020 | 48 55 49 | 114 56 21 | 7.00 | 5.00 | .50 | 1.000 | 700 | N | N | N | 15 | 500 |
| LL2001 | 48 49 12 | 114 52 33 | 2.00 | 3.00 | 5.00 | .300 | 700 | N | N | N | 100 | 700 |
| LL2002 | 48 49 54 | 114 52 28 | 2.00 | 5.00 | 10.00 | .200 | 500 | 1.5 | N | N | 20 | 150 |
| LL2003 | 48 49 56 | 114 52 22 | 1.50 | 3.00 | 10.00 | .200 | 300 | N | N | N | 10 | 150 |
| LL2004 | 48 50 54 | 114 53 8 | 10.00 | 1.50 | .30 | >1.000 | 150 | N | N | N | 70 | 1,000 |
| LL2005 | 48 50 54 | 114 53 8 | 7.00 | 2.00 | .07 | .500 | 300 | .5 | N | N | 700 | 1,000 |
| LL2006 | 48 50 42 | 114 50 28 | 15.00 | .20 | .15 | .500 | 20 | N | N | N | 20 | 200 |
| LL2007 | 48 50 42 | 114 50 34 | 5.00 | 3.00 | 5.00 | .300 | 500 | N | N | N | 70 | 300 |
| LL2008 | 48 50 46 | 114 50 35 | 5.00 | 1.00 | .50 | .300 | 300 | 7.0 | N | N | 70 | 1,000 |
| LL2009 | 48 50 36 | 114 50 25 | 1.00 | 1.00 | 2.00 | .002 | 1,000 | 15.0 | N | N | <10 | >5,000 |
| LL2010 | 48 50 35 | 114 50 19 | 5.00 | 2.00 | .50 | .500 | 500 | .5 | N | N | 300 | 2,000 |
| LL2011 | 48 50 29 | 114 52 26 | 10.00 | 1.50 | 20.00 | .007 | 2,000 | N | N | N | N | 100 |
| LL2012 | 48 50 29 | 114 52 26 | 3.00 | 7.00 | 15.00 | .200 | 1,000 | N | N | N | 70 | 1,500 |
| LL2013 | 48 50 29 | 114 52 26 | .70 | .20 | 3.00 | .015 | 70 | N | N | N | 10 | 100 |
| LL2014 | 48 50 29 | 114 52 26 | 15.00 | 1.50 | .30 | .700 | 2,000 | N | N | N | 15 | 2,000 |
| LL2015 | 48 51 17 | 114 52 44 | 2.00 | 7.00 | 20.00 | .070 | 1,500 | N | N | N | 70 | 1,000 |
| LL2016 | 48 51 24 | 114 52 10 | 3.00 | 7.00 | 15.00 | .200 | 700 | N | N | N | 100 | 500 |
| LL2017 | 48 51 31 | 114 51 28 | 10.00 | 1.00 | 1.50 | 1.000 | 300 | N | N | N | 70 | 1,000 |
| LL2018 | 48 52 4 | 114 52 55 | 10.00 | 5.00 | 10.00 | .200 | 500 | N | N | N | 150 | 500 |
| LL2021 | 48 50 22 | 114 50 45 | 5.00 | 3.00 | 5.00 | .300 | 1,000 | N | N | N | 30 | 500 |
| LL2022 | 48 51 57 | 114 50 36 | 1.50 | 2.00 | 15.00 | .300 | 200 | N | N | N | 70 | 500 |
| LL2024 | 48 51 27 | 114 50 18 | 5.00 | 7.00 | 1.00 | .300 | 500 | N | N | N | 50 | 1,000 |
| LL2025 | 48 53 8 | 114 52 45 | 3.00 | 7.00 | 20.00 | .150 | 1,000 | N | N | N | 70 | 700 |
| LL2026 | 48 53 28 | 114 52 1 | 3.00 | 5.00 | 20.00 | .300 | 700 | N | N | N | 100 | 300 |
| LL2027 | 48 48 32 | 114 52 20 | 5.00 | .20 | 5.00 | .050 | 2,000 | .7 | N | N | 10 | 100 |
| LL2028 | 48 57 41 | 114 45 5 | 7.00 | 2.00 | 1.00 | .500 | 500 | N | N | N | 300 | 1,000 |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Be-ppm s | Bi-ppm s | Cd-ppm s | Co-ppm s | Cr-ppm s | Cu-ppm s | La-ppm s | Mo-ppm s | Nb-ppm s | Ni-ppm s | Pb-ppm s | Sb-ppm s | Sc-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JS1040 | 1.5 | N | N | N | 10 | N | 50 | N | N | 10 | <10 | N | 5 |
| JS1041 | 2.0 | N | N | 10 | 50 | 30 | 50 | N | N | 20 | 30 | N | 10 |
| JS1043 | N | N | N | N | N | <5 | <20 | N | N | 15 | 20 | N | N |
| JS1044 | N | N | N | N | N | <5 | N | N | N | 15 | 10 | N | N |
| JS1045 | N | N | N | N | N | N | N | N | N | <5 | <10 | N | N |
| JW1001 | 3.0 | N | N | 10 | 70 | 10 | 50 | N | N | 15 | 15 | N | 15 |
| JW1002 | 2.0 | N | N | <5 | 20 | 70 | N | N | N | 10 | 10 | N | <5 |
| JW1003 | 1.0 | N | N | 100 | 50 | 20 | 20 | N | N | 50 | 10 | N | 20 |
| JW1004 | N | N | N | 5 | 10 | 15 | 30 | N | N | 5 | N | N | 7 |
| JW1005 | N | N | N | 50 | 10 | >20,000 | N | 20 | N | 10 | 10 | N | 7 |
| JW1007 | N | N | N | 10 | 10 | 50 | <20 | N | N | 5 | <10 | N | 5 |
| JW1009 | N | N | N | N | <10 | 10 | 50 | N | N | <5 | 50 | N | N |
| JW1011 | N | N | N | 20 | 15 | 150 | 20 | N | N | 20 | 150 | N | <5 |
| JW1012 | 1.5 | N | N | N | 15 | 10 | 20 | N | N | 5 | 10 | N | 5 |
| JW1013 | N | N | N | N | 15 | 2,000 | 20 | N | N | <5 | 15,000 | 200 | N |
| JW1015 | 7.0 | N | N | 10 | 100 | 70 | 70 | N | N | 20 | 70 | N | 20 |
| JW1018 | N | N | N | N | <10 | 5 | N | N | N | N | 20 | N | N |
| JW1019 | N | N | N | 7 | 15 | 15 | 70 | N | N | 7 | 30 | N | 5 |
| JW1019A | 3.0 | N | N | 50 | 70 | 5 | 70 | N | <20 | 50 | 20 | N | 20 |
| JW1020 | 2.0 | N | N | 30 | 20 | <5 | 20 | N | N | 30 | 20 | N | 15 |
| LL2001 | 5.0 | N | N | 15 | 50 | 15 | 100 | N | <20 | 15 | 15 | N | 10 |
| LL2002 | <1.0 | <10 | N | 5 | 30 | 700 | 50 | N | N | 10 | 1,000 | <100 | 7 |
| LL2003 | <1.0 | N | N | 5 | 30 | 20 | 50 | N | N | 10 | 15 | N | 7 |
| LL2004 | 2.0 | N | N | 100 | 70 | 70 | 70 | N | 30 | 50 | <10 | N | 20 |
| LL2005 | 7.0 | N | N | 20 | 70 | 10 | 70 | N | <20 | 30 | 10 | N | 15 |
| LL2006 | 2.0 | N | N | N | 10 | <5 | 200 | N | 30 | N | 10 | N | 15 |
| LL2007 | 3.0 | N | N | 10 | 50 | 50 | 50 | N | N | 20 | 10 | N | 15 |
| LL2008 | 5.0 | N | N | 10 | 30 | 150 | 70 | N | <20 | 20 | 10 | N | 10 |
| LL2009 | N | N | N | 7 | <10 | 10,000 | N | 10 | N | 7 | 20,000 | N | N |
| LL2010 | 7.0 | N | N | 20 | 70 | 1,000 | 100 | N | 20 | 50 | 200 | N | 20 |
| LL2011 | N | N | N | <5 | 10 | 30 | N | N | N | 10 | 100 | N | 10 |
| LL2012 | 7.0 | N | N | 15 | 30 | 7 | 70 | N | <20 | 15 | 30 | N | 10 |
| LL2013 | N | N | N | 5 | 10 | 5 | 20 | N | N | 7 | 15 | N | <5 |
| LL2014 | 5.0 | N | N | 7 | 10 | 15 | 150 | N | 50 | <5 | 20 | N | 30 |
| LL2015 | 2.0 | N | N | 5 | 20 | 5 | 70 | N | N | 5 | 30 | N | 5 |
| LL2016 | 2.0 | N | N | 7 | 50 | 20 | 50 | N | N | 15 | 20 | N | 10 |
| LL2017 | 3.0 | N | N | 10 | 10 | 30 | 150 | N | 70 | <5 | 10 | N | 30 |
| LL2018 | 2.0 | N | N | 7 | 20 | 100 | 30 | N | N | 10 | 50 | N | 7 |
| LL2021 | 3.0 | N | N | 7 | 70 | 5 | 70 | N | N | 20 | 10 | N | 15 |
| LL2022 | 2.0 | N | N | 7 | 30 | 10 | 100 | N | N | 5 | 10 | N | 7 |
| LL2024 | 7.0 | N | N | 20 | 50 | <5 | 100 | N | <20 | 30 | 10 | N | 15 |
| LL2025 | 2.0 | N | N | 7 | 30 | <5 | 70 | N | N | 10 | 20 | N | 7 |
| LL2026 | 2.0 | N | N | 7 | 50 | 70 | 50 | N | N | 10 | 15 | N | 10 |
| LL2027 | N | N | N | N | 10 | <5 | 20 | 5 | N | 5 | 10 | N | 10 |
| LL2028 | 5.0 | N | N | 15 | 50 | N | 70 | N | 20 | 15 | 10 | N | 15 |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Sn-ppm s | Sr-ppm s | V-ppm s | W-ppm s | Y-ppm s | Zn-ppm s | Zr-ppm s | Th-ppm s | Au-ppm aa | Hg-ppm inst | Te-ppm aa | As-ppm aa | Zn-ppm aa |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JS1040 | N | N | 20 | N | 20 | N | 150 | N | N | .04 | N | 80 | 35 |
| JS1041 | N | N | 70 | N | 20 | N | 150 | N | N | .04 | .2 | 20 | 45 |
| JS1043 | N | N | 10 | N | <10 | N | 20 | N | N | .02 | N | <10 | 5 |
| JS1044 | N | N | <10 | N | N | N | N | N | N | <.02 | N | N | 5 |
| JS1045 | N | N | <10 | N | N | N | N | N | N | <.02 | N | <10 | 20 |
| JW1001 | N | <100 | 100 | N | 30 | N | 200 | N | N | .02 | .1 | <10 | 35 |
| JW1002 | N | N | 20 | N | 15 | N | 150 | N | N | .06 | .1 | <10 | <10 |
| JW1003 | N | N | 200 | N | 30 | N | 100 | N | N | <.02 | .1 | <10 | 85 |
| JW1004 | N | 100 | 10 | N | 20 | N | 150 | N | N | .02 | N | 10 | 10 |
| JW1005 | N | <100 | 20 | N | 10 | N | 50 | N | N | .30 | N | <10 | <10 |
| JW1007 | N | N | 30 | N | 10 | N | 50 | N | N | <.02 | .1 | <10 | 20 |
| JW1009 | N | 500 | <10 | N | 50 | N | N | N | N | .04 | N | <10 | 75 |
| JW1011 | N | 100 | 15 | N | 20 | N | 30 | N | N | .04 | N | <10 | 20 |
| JW1012 | N | 150 | 20 | N | 70 | N | 20 | N | N | .02 | .1 | <10 | 15 |
| JW1013 | N | N | 15 | N | N | 10,000 | 50 | N | N | .02 | .1 | <10 | 4,200 |
| JW1015 | N | N | 150 | N | 30 | N | 150 | N | N | .10 | .1 | 20 | 40 |
| JW1018 | N | N | <10 | N | N | N | <10 | N | N | <.02 | N | N | 5 |
| JW1019 | N | 200 | 20 | N | 50 | 300 | 100 | N | N | .04 | N | 10 | 600 |
| JW1019A | N | 100 | 150 | N | 50 | N | 150 | N | N | .02 | N | <10 | 260 |
| JW1020 | N | <100 | 150 | N | 30 | N | 100 | N | N | .04 | N | <10 | 95 |
| LL2001 | N | 100 | 70 | N | 50 | N | 200 | N | -- | .10 | -- | 10 | 50 |
| LL2002 | N | 100 | 30 | N | 20 | 1,500 | 70 | N | N | .45 | -- | 25 | 1,900 |
| LL2003 | N | 100 | 30 | N | 30 | N | 100 | N | -- | .02 | -- | <5 | 35 |
| LL2004 | N | N | 150 | N | 50 | N | 300 | N | -- | .04 | -- | <5 | 15 |
| LL2005 | N | N | 150 | N | 30 | N | 200 | N | -- | .22 | -- | <5 | 30 |
| LL2006 | N | N | <10 | N | 100 | N | 1,000 | N | -- | <.02 | -- | <5 | 10 |
| LL2007 | N | 100 | 100 | N | 30 | N | 150 | N | -- | .08 | -- | N | 150 |
| LL2008 | 15 | N | 100 | N | 70 | N | 200 | N | N | .06 | -- | <5 | 50 |
| LL2009 | N | 500 | <10 | N | <10 | N | N | N | N | .06 | -- | <5 | 10 |
| LL2010 | N | N | 100 | N | 70 | <200 | 500 | N | -- | .02 | -- | N | 150 |
| LL2011 | N | 100 | 10 | N | 20 | <200 | 20 | N | -- | .08 | -- | 20 | 110 |
| LL2012 | 20 | 700 | 50 | N | 30 | N | 20 | N | -- | .10 | -- | 5 | 55 |
| LL2013 | N | N | <10 | N | N | N | <10 | N | -- | N | -- | 5 | 5 |
| LL2014 | N | N | <10 | N | 70 | <200 | 700 | N | -- | N | -- | 10 | 170 |
| LL2015 | N | 150 | 15 | N | 30 | N | 70 | N | -- | .14 | -- | 5 | 25 |
| LL2016 | N | 300 | 50 | N | 30 | N | 70 | N | -- | .04 | -- | 15 | 30 |
| LL2017 | N | N | <10 | N | 100 | N | 1,000 | N | -- | .02 | -- | 5 | 140 |
| LL2018 | N | 100 | 50 | N | 20 | N | 150 | N | -- | <.02 | -- | 5 | 130 |
| LL2021 | N | 100 | 100 | N | 50 | N | 200 | N | -- | <.02 | -- | <5 | 25 |
| LL2022 | N | 100 | 50 | N | 50 | N | 500 | N | -- | .04 | -- | <5 | 15 |
| LL2024 | N | <100 | 100 | N | 100 | N | 300 | N | -- | .10 | -- | <5 | 110 |
| LL2025 | N | 150 | 30 | N | 30 | N | 100 | N | -- | .04 | -- | 10 | 20 |
| LL2026 | N | 150 | 50 | N | 30 | N | 150 | N | -- | <.02 | -- | 5 | 20 |
| LL2027 | N | N | 15 | N | 50 | 200 | 20 | N | -- | <.02 | -- | 50 | 220 |
| LL2028 | N | <100 | 100 | N | 50 | N | 200 | N | -- | .02 | -- | <5 | 60 |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Cd-ppm aa | Bi-ppm aa | Sb-ppm aa | SI-F |
|---|---|---|---|---|
| JS1040 | N | N | 2 | 300 |
| JS1041 | N | 2 | N | 1,500 |
| JS1043 | N | N | N | 100 |
| JS1044 | N | N | N | 200 |
| JS1045 | N | N | N | 700 |
| JW1001 | N | 1 | N | 600 |
| JW1002 | N | 2 | N | 200 |
| JW1003 | N | 2 | N | 900 |
| JW1004 | N | 1 | N | 100 |
| JW1005 | .4 | N | N | 100 |
| JW1007 | N | N | N | 100 |
| JW1009 | N | N | 1 | 100 |
| JW1011 | N | 3 | N | 200 |
| JW1012 | N | 4 | N | 200 |
| JW1013 | 1.3 | 1 | 62 | 200 |
| JW1015 | N | 1 | 2 | 1,600 |
| JW1018 | N | 1 | N | 100 |
| JW1019 | 1.2 | 1 | N | 200 |
| JW1019A | N | N | N | 600 |
| JW1020 | N | 1 | N | 700 |
| LL2001 | .2 | N | 8 | -- |
| LL2002 | 4.6 | N | 55 | -- |
| LL2003 | N | N | 1 | -- |
| LL2004 | N | N | N | -- |
| LL2005 | N | N | N | -- |
| LL2006 | N | N | N | -- |
| LL2007 | .1 | N | N | -- |
| LL2008 | .1 | N | N | -- |
| LL2009 | .8 | N | N | -- |
| LL2010 | <.1 | N | N | -- |
| LL2011 | .2 | N | <1 | -- |
| LL2012 | N | N | N | -- |
| LL2013 | N | N | N | -- |
| LL2014 | .1 | N | N | -- |
| LL2015 | N | N | N | -- |
| LL2016 | .1 | N | 4 | -- |
| LL2017 | N | N | N | -- |
| LL2018 | .2 | N | N | -- |
| LL2021 | .1 | N | <1 | -- |
| LL2022 | N | N | N | -- |
| LL2024 | N | N | N | -- |
| LL2025 | N | N | <1 | -- |
| LL2026 | N | N | N | -- |
| LL2027 | .4 | N | N | -- |
| LL2028 | N | N | N | -- |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Latitude | Longitude | Fe-pct. s | Mg-pct. s | Ca-pct. s | Ti-pct. s | Mn-ppm s | Ag-ppm s | As-ppm s | Au-ppm s | B-ppm s | Ba-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LL2029 | 48 57 41 | 114 45 5 | 3.00 | 2.00 | 7.00 | .100 | 2,000 | N | N | N | 10 | >5,000 |
| LL2031 | 48 57 41 | 114 45 5 | 7.00 | 3.00 | .30 | .300 | 500 | N | N | N | 300 | 2,000 |
| LL2032 | 48 57 39 | 114 44 58 | 3.00 | 2.00 | .30 | .300 | 300 | N | N | N | 150 | 700 |
| LL2032A | 48 57 39 | 114 44 58 | 5.00 | 3.00 | .20 | .200 | 300 | N | N | N | 100 | 300 |
| LL2033 | 48 57 39 | 114 44 48 | 2.00 | 1.50 | 20.00 | .200 | 3,000 | .5 | N | N | 70 | >5,000 |
| LL2035 | 48 57 59 | 114 44 45 | .50 | .30 | .15 | .070 | 100 | N | N | N | 20 | 150 |
| LL2036 | 48 59 7 | 114 45 11 | 5.00 | .70 | .05 | .300 | 300 | N | N | N | 70 | 300 |
| LL2037 | 48 59 7 | 114 45 11 | 7.00 | 2.00 | .20 | 1.000 | 500 | N | N | N | 700 | 1,000 |
| LL2038 | 48 59 7 | 114 45 11 | 5.00 | .70 | 20.00 | .200 | >5,000 | N | N | N | 100 | 300 |
| LL2039 | 48 59 49 | 114 46 45 | 2.00 | 1.00 | 1.00 | .200 | 500 | <.5 | N | N | 50 | 1,000 |
| LL2040 | 48 55 55 | 114 52 19 | 5.00 | 5.00 | 10.00 | .300 | 700 | N | N | N | 100 | 1,000 |
| LL2041 | 48 58 5 | 114 50 27 | .50 | .70 | >20.00 | .010 | 1,000 | N | N | N | N | <20 |
| LL2043 | 48 58 22 | 114 45 35 | 5.00 | 1.50 | .15 | .300 | 700 | N | N | N | 100 | 300 |
| LL2044 | 48 58 34 | 114 45 25 | 5.00 | 1.00 | .05 | .500 | 300 | N | N | N | 300 | 1,000 |
| LL2045 | 48 59 29 | 115 0 4 | .20 | <.02 | <.05 | .010 | 150 | N | N | N | N | >5,000 |
| LL2046 | 49 0 0 | 115 0 17 | 1.00 | .70 | <.05 | .007 | 700 | N | N | N | 10 | 5,000 |
| LL2047 | 48 58 9 | 114 56 31 | 10.00 | .05 | .15 | .010 | 50 | 50.0 | 1,000 | 10 | 15 | 700 |
| LL2048 | 48 58 9 | 114 56 31 | 15.00 | 5.00 | .50 | >1.000 | 150 | 2.0 | N | N | <10 | 500 |
| LL2049 | 48 58 9 | 114 56 36 | 20.00 | 10.00 | .50 | .030 | 300 | N | N | N | <10 | 50 |
| LL2050 | 48 58 9 | 114 56 36 | 10.00 | 10.00 | 20.00 | .007 | 2,000 | <.5 | N | N | N | <20 |
| LL2051 | 48 58 42 | 114 47 28 | 3.00 | 2.00 | 3.00 | .200 | 1,500 | N | N | N | 100 | 300 |
| LL2052 | 48 59 3 | 114 46 4 | 2.00 | 1.50 | 3.00 | .300 | 1,000 | N | N | N | 200 | 700 |
| LL2053 | 48 55 23 | 114 45 56 | 3.00 | 7.00 | 15.00 | .150 | 2,000 | N | N | N | 100 | 2,000 |
| LL2054 | 48 55 22 | 114 46 7 | 5.00 | 1.50 | .30 | .200 | 200 | <.5 | N | N | 500 | 2,000 |
| LL2056 | 48 55 22 | 114 46 7 | .10 | .03 | <.05 | .005 | 15 | N | N | N | 20 | 300 |
| LL2058 | 49 0 0 | 114 50 1 | 2.00 | 2.00 | 5.00 | .200 | 300 | N | N | N | 100 | 500 |
| LL2059 | 48 59 57 | 114 50 27 | 3.00 | 1.50 | .07 | .300 | 100 | N | N | N | 100 | 700 |
| LL2060 | 48 59 56 | 114 50 29 | .20 | .15 | .05 | .070 | 50 | N | N | N | 20 | 100 |
| LL2061 | 48 59 39 | 114 50 37 | 2.00 | 5.00 | 5.00 | .300 | 1,500 | .5 | N | N | 200 | 500 |
| LL2062 | 48 59 39 | 114 50 37 | 5.00 | 3.00 | 1.50 | .300 | 1,000 | N | N | N | 300 | >5,000 |
| LL2063 | 48 59 43 | 114 51 5 | 3.00 | 7.00 | 10.00 | .300 | >5,000 | .7 | N | N | 150 | 2,000 |
| LL2064 | 48 59 34 | 114 51 25 | 3.00 | 7.00 | 10.00 | .300 | 2,000 | N | N | N | 300 | 500 |
| LL2066 | 48 59 33 | 114 51 28 | .10 | .02 | .05 | .010 | 70 | N | N | N | 15 | 100 |
| LL2068 | 48 59 8 | 114 51 7 | .50 | .20 | .30 | .020 | 50 | N | N | N | 15 | 200 |
| LL2069 | 48 57 53 | 114 55 58 | 10.00 | 5.00 | >20.00 | .300 | 2,000 | N | N | N | 30 | 700 |
| LL2070 | 48 57 57 | 114 56 5 | 10.00 | 1.50 | 5.00 | .500 | 1,000 | .7 | N | N | 70 | 500 |
| LL2071 | 48 57 53 | 114 55 55 | 7.00 | 1.50 | 5.00 | >1.000 | 700 | 1.0 | N | N | 100 | 500 |
| LL2072 | 48 57 46 | 114 55 43 | 10.00 | .07 | <.05 | .070 | 700 | 5.0 | <200 | N | <10 | 50 |
| LL2073 | 48 57 43 | 114 55 48 | 1.00 | .50 | .70 | .050 | 150 | N | N | N | 30 | 300 |
| LL2074 | 48 57 43 | 114 55 48 | .70 | .02 | <.05 | .002 | 10 | N | N | N | 10 | 5,000 |
| LL2078 | 48 57 47 | 114 55 37 | 15.00 | 2.00 | 5.00 | .300 | 2,000 | N | N | N | 20 | 300 |
| LL2080 | 48 58 8 | 114 55 31 | 5.00 | 2.00 | 15.00 | .005 | 2,000 | N | N | N | <10 | 100 |
| LL2081 | 48 58 44 | 114 55 37 | 1.00 | .20 | .20 | .100 | 100 | .5 | N | N | 300 | 300 |
| LL2082 | 48 58 45 | 114 55 57 | 7.00 | 1.50 | .50 | .500 | 150 | 10.0 | N | N | <10 | 150 |
| LL2083 | 48 57 27 | 114 58 12 | 10.00 | 5.00 | 3.00 | .700 | 1,000 | N | N | N | 200 | 700 |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Be-ppm s | Bi-ppm s | Cd-ppm s | Co-ppm s | Cr-ppm s | Cu-ppm s | La-ppm s | Mo-ppm s | Nb-ppm s | Ni-ppm s | Pb-ppm s | Sb-ppm s | Sc-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LL2029 | 2.0 | N | N | 15 | 20 | 15 | 50 | N | N | 15 | 10 | N | 10 |
| LL2031 | 7.0 | N | N | 20 | 50 | <5 | 70 | N | <20 | 30 | 10 | N | 15 |
| LL2032 | 3.0 | N | N | 10 | 30 | 700 | 70 | N | N | 15 | 10 | N | 10 |
| LL2032A | 3.0 | N | N | 15 | 20 | 20 | 70 | N | N | 20 | 10 | N | 10 |
| LL2033 | 1.5 | <10 | N | 7 | 30 | 2,000 | 70 | N | N | 10 | 50 | N | 10 |
| LL2035 | N | N | N | 5 | 10 | 7 | 20 | N | N | 5 | 15 | N | <5 |
| LL2036 | 1.0 | N | N | 20 | 30 | 5 | 50 | N | N | 30 | 10 | N | 7 |
| LL2037 | 10.0 | N | N | 30 | 200 | 10 | 200 | N | 30 | 50 | 70 | N | 50 |
| LL2038 | 1.0 | N | N | 10 | 30 | 7 | 50 | N | N | 15 | 15 | N | 7 |
| LL2039 | 2.0 | N | N | 10 | 15 | 7 | 20 | N | N | 10 | 15 | N | 7 |
| LL2040 | 3.0 | N | N | 7 | 50 | 15 | 70 | N | N | 20 | 30 | N | 15 |
| LL2041 | N | N | N | N | <10 | <5 | 30 | N | N | <5 | <10 | N | <5 |
| LL2043 | 3.0 | N | N | 15 | 30 | 7 | 200 | N | <20 | 20 | 10 | N | 10 |
| LL2044 | 7.0 | N | N | 15 | 70 | <5 | 50 | N | 20 | 50 | 50 | N | 15 |
| LL2045 | N | N | N | 50 | <10 | 150 | N | N | N | <5 | N | N | <5 |
| LL2046 | N | N | N | 10 | <10 | 10 | N | N | N | 5 | N | N | 5 |
| LL2047 | N | N | N | >2,000 | 10 | >20,000 | N | N | N | 1,500 | 200 | N | <5 |
| LL2048 | 2.0 | N | N | 300 | 70 | 7,000 | 50 | N | 20 | 100 | 10 | N | 20 |
| LL2049 | 1.5 | N | N | 300 | 10 | 70 | <20 | N | N | 200 | 10 | N | 5 |
| LL2050 | N | N | N | 20 | <10 | 30 | <20 | N | N | 20 | 15 | N | 7 |
| LL2051 | 3.0 | N | N | 15 | 30 | 30 | 50 | N | <20 | 20 | 50 | N | 7 |
| LL2052 | 2.0 | N | N | 15 | 30 | 5 | 70 | N | N | 20 | 10 | N | 10 |
| LL2053 | 1.0 | N | N | 7 | 30 | 7 | 50 | N | N | 15 | 20 | N | 10 |
| LL2054 | 2.0 | N | N | 5 | 50 | 20 | 70 | N | N | 30 | 70 | N | 15 |
| LL2056 | N | N | N | 5 | <10 | <5 | <20 | N | N | 5 | <10 | N | <5 |
| LL2058 | 1.5 | N | N | 7 | 30 | 7 | 30 | N | N | 20 | 15 | N | 10 |
| LL2059 | 1.0 | N | N | 10 | 30 | 20 | 50 | N | <20 | 30 | 10 | N | 10 |
| LL2060 | N | N | N | 7 | 10 | 7 | 20 | N | N | 7 | N | N | <5 |
| LL2061 | 2.0 | N | N | 5 | 50 | 200 | 50 | N | N | 10 | 10 | N | 10 |
| LL2062 | 3.0 | N | N | 7 | 70 | 10 | 70 | N | N | 20 | 10 | N | 15 |
| LL2063 | 2.0 | <10 | N | 30 | 100 | 200 | 70 | 70 | N | 30 | 150 | N | 15 |
| LL2064 | 5.0 | N | N | 5 | 70 | 200 | 70 | N | N | 20 | 10 | N | 10 |
| LL2066 | N | N | N | 5 | <10 | 5 | 20 | N | N | 5 | 10 | N | <5 |
| LL2068 | N | N | N | 5 | <10 | 7 | 20 | N | N | 5 | <10 | N | <5 |
| LL2069 | 1.0 | N | N | 50 | 10 | 7 | N | 70 | N | 30 | 15 | N | 10 |
| LL2070 | 1.0 | N | N | 100 | 15 | >20,000 | <20 | N | N | 50 | 10 | N | 10 |
| LL2071 | 1.5 | N | N | 70 | 30 | 20,000 | 20 | N | 20 | 20 | 20 | N | 20 |
| LL2072 | 1.0 | N | N | 1,000 | 10 | >20,000 | <20 | 20 | N | 100 | 70 | N | 15 |
| LL2073 | N | N | N | 10 | 10 | 200 | 20 | N | N | 5 | N | N | <5 |
| LL2074 | N | N | N | 5 | <10 | 500 | 20 | N | N | 5 | <10 | N | <5 |
| LL2078 | 1.5 | N | N | 10 | 20 | 150 | 20 | 15 | N | 5 | 15 | N | 15 |
| LL2080 | N | N | N | 7 | <10 | 15 | <20 | N | N | 5 | <10 | N | 5 |
| LL2081 | N | N | N | 20 | 15 | 1,000 | 20 | N | N | 10 | <10 | N | <5 |
| LL2082 | N | N | N | 20 | 10 | 10,000 | 20 | N | N | 20 | <10 | N | 10 |
| LL2083 | 2.0 | N | N | 70 | 70 | 70 | 20 | N | <20 | 70 | 15 | N | 20 |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Sn-ppm s | Sr-ppm s | V-ppm s | W-ppm s | Y-ppm s | Zn-ppm s | Zr-ppm s | Th-ppm s | Au-ppm aa | Hg-ppm inst | Te-ppm aa | As-ppm aa | Zn-ppm aa |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LL2029 | N | 700 | 70 | N | 50 | N | 70 | N | -- | <.02 | -- | <5 | 80 |
| LL2031 | N | <100 | 100 | N | 30 | <200 | 300 | N | -- | <.02 | -- | N | 130 |
| LL2032 | N | N | 70 | N | 20 | N | 150 | N | -- | <.02 | -- | <5 | 65 |
| LL2032A | N | N | 70 | N | 20 | N | 100 | N | -- | <.02 | -- | <5 | 120 |
| LL2033 | N | 300 | 50 | N | 100 | N | 150 | N | -- | <.02 | -- | <5 | 40 |
| LL2035 | N | N | 10 | N | <10 | N | 50 | N | -- | .02 | -- | <5 | 5 |
| LL2036 | N | N | 70 | N | 20 | N | 300 | N | -- | .08 | -- | 5 | 20 |
| LL2037 | 15 | N | 300 | N | 100 | N | 500 | N | -- | .06 | -- | 5 | 40 |
| LL2038 | N | 100 | 50 | N | 100 | N | 300 | N | -- | .04 | -- | <5 | 85 |
| LL2039 | N | <100 | 30 | N | 20 | N | 200 | N | -- | .02 | -- | N | 50 |
| LL2040 | N | 150 | 70 | N | 30 | N | 100 | N | -- | <.02 | -- | <5 | 50 |
| LL2041 | N | 500 | <10 | N | 20 | N | 10 | N | -- | .02 | -- | N | <5 |
| LL2043 | N | N | 50 | N | 50 | N | 300 | N | -- | .02 | -- | N | 35 |
| LL2044 | N | 100 | 100 | N | 50 | N | 300 | N | -- | .04 | -- | <5 | 50 |
| LL2045 | N | >5,000 | <10 | N | N | N | N | N | -- | .04 | -- | N | <5 |
| LL2046 | N | 100 | <10 | N | <10 | N | N | N | -- | .02 | -- | N | 10 |
| LL2047 | N | N | 10 | N | N | N | 50 | N | N | .32 | -- | 1,000 | <5 |
| LL2048 | N | N | 150 | N | 70 | N | 200 | N | N | .06 | -- | <5 | 35 |
| LL2049 | N | N | 150 | N | N | 200 | N | N | -- | .04 | -- | N | 160 |
| LL2050 | N | 500 | 20 | N | 30 | N | N | N | -- | N | -- | N | 30 |
| LL2051 | N | <100 | 50 | N | 30 | N | 200 | N | -- | .02 | -- | <5 | 85 |
| LL2052 | N | 100 | 50 | N | 50 | N | 500 | N | -- | .10 | -- | <5 | 40 |
| LL2053 | N | 150 | 30 | N | 30 | N | 200 | N | -- | N | -- | N | 25 |
| LL2054 | N | <100 | 100 | N | 50 | N | 100 | N | -- | .06 | -- | 25 | 45 |
| LL2056 | N | N | 30 | N | N | N | 200 | N | -- | <.02 | -- | N | <5 |
| LL2058 | N | <100 | 50 | N | 20 | <200 | 200 | N | -- | .08 | -- | 5 | 160 |
| LL2059 | N | N | 70 | N | 50 | N | 300 | N | -- | <.02 | -- | 5 | 30 |
| LL2060 | N | N | 10 | N | 30 | N | 50 | N | -- | .04 | -- | <5 | <5 |
| LL2061 | N | <100 | 50 | N | 30 | N | 300 | N | -- | .06 | -- | <5 | 20 |
| LL2062 | N | 100 | 100 | N | 30 | N | 200 | N | -- | .12 | -- | <5 | 30 |
| LL2063 | N | 100 | 70 | N | 70 | N | 200 | N | -- | .10 | -- | N | 25 |
| LL2064 | N | 100 | 70 | N | 70 | N | 300 | N | -- | .06 | -- | N | 20 |
| LL2066 | N | N | 10 | N | <10 | N | 10 | N | -- | .04 | -- | <5 | <5 |
| LL2068 | N | <100 | 10 | N | 50 | N | 50 | N | -- | <.02 | -- | N | 10 |
| LL2069 | N | 1,000 | 70 | N | 20 | N | 30 | N | -- | .04 | -- | <5 | 45 |
| LL2070 | N | N | 70 | N | 20 | N | 70 | N | -- | .16 | -- | 15 | 15 |
| LL2071 | N | N | 150 | N | 50 | N | 150 | N | N | .12 | -- | 15 | 15 |
| LL2072 | N | N | 30 | N | 20 | N | 10 | N | <.05 | .90 | -- | 400 | 5 |
| LL2073 | N | <100 | 20 | N | <10 | N | 10 | N | -- | .04 | -- | <5 | 5 |
| LL2074 | N | 200 | 10 | N | N | N | N | N | -- | <.02 | -- | <5 | <5 |
| LL2078 | N | <100 | 100 | N | 20 | N | 50 | N | -- | .02 | -- | N | 5 |
| LL2080 | N | 700 | 10 | N | 20 | N | N | N | -- | .02 | -- | N | 15 |
| LL2081 | N | N | 10 | N | 15 | N | 300 | N | -- | .10 | -- | 15 | <5 |
| LL2082 | N | <100 | 70 | N | 10 | N | 70 | N | N | .28 | -- | N | 40 |
| LL2083 | N | 150 | 200 | N | 20 | N | 70 | N | -- | .02 | -- | N | 75 |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Cd-ppm aa | Bi-ppm aa | Sb-ppm aa | SI-F |
|---|---|---|---|---|
| LL2029 | N | N | N | -- |
| LL2031 | N | N | N | -- |
| LL2032 | N | N | N | -- |
| LL2032A | N | N | N | -- |
| LL2033 | N | <2 | N | -- |
| LL2035 | N | N | N | -- |
| LL2036 | N | N | N | -- |
| LL2037 | N | N | N | -- |
| LL2038 | N | N | N | -- |
| LL2039 | N | N | N | -- |
| LL2040 | N | N | N | -- |
| LL2041 | N | N | N | -- |
| LL2043 | .1 | N | N | -- |
| LL2044 | N | N | N | -- |
| LL2045 | N | N | 1 | -- |
| LL2046 | N | N | N | -- |
| LL2047 | .1 | N | 1 | -- |
| LL2048 | N | 2 | N | -- |
| LL2049 | N | N | N | -- |
| LL2050 | .2 | N | N | -- |
| LL2051 | <.1 | N | N | -- |
| LL2052 | N | N | N | -- |
| LL2053 | N | N | N | -- |
| LL2054 | N | N | N | -- |
| LL2056 | N | N | N | -- |
| LL2058 | .5 | N | N | -- |
| LL2059 | N | N | N | -- |
| LL2060 | N | N | N | -- |
| LL2061 | N | N | N | -- |
| LL2062 | N | N | N | -- |
| LL2063 | N | N | N | -- |
| LL2064 | N | N | N | -- |
| LL2066 | N | N | N | -- |
| LL2068 | N | N | N | -- |
| LL2069 | .3 | N | N | -- |
| LL2070 | <.1 | N | N | -- |
| LL2071 | .1 | N | N | -- |
| LL2072 | <.1 | N | N | -- |
| LL2073 | N | N | N | -- |
| LL2074 | N | N | N | -- |
| LL2078 | N | N | N | -- |
| LL2080 | .1 | N | N | -- |
| LL2081 | N | N | N | -- |
| LL2082 | N | N | N | -- |
| LL2083 | <.1 | N | N | -- |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Latitude | Longitude | Fe-pct. s | Mg-pct. s | Ca-pct. s | Ti-pct. s | Mn-ppm s | Ag-ppm s | As-ppm s | Au-ppm s | B-ppm s | Ba-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LL2084 | 48 57 20 | 114 58 30 | 5.00 | 2.00 | .20 | .300 | 300 | N | N | N | 500 | 1,000 |
| LL2085 | 48 58 37 | 114 53 39 | 2.00 | 5.00 | 15.00 | .300 | 5,000 | N | N | N | 1,500 | 2,000 |
| LL2086 | 48 58 3 | 114 48 49 | 3.00 | 5.00 | 7.00 | .300 | 2,000 | N | N | N | 200 | 1,500 |
| LL2088 | 48 59 27 | 114 50 44 | 10.00 | 5.00 | 2.00 | >1.000 | 700 | <.5 | N | N | 70 | 5,000 |
| LL2089 | 48 53 16 | 114 54 40 | 3.00 | 5.00 | 10.00 | .150 | 1,500 | N | N | N | 70 | 700 |
| LL2090 | 48 53 37 | 114 55 15 | 15.00 | 5.00 | 3.00 | 1.000 | 1,000 | N | N | N | 150 | 200 |
| LL2091 | 48 53 40 | 114 55 7 | 2.00 | 5.00 | 15.00 | .100 | 700 | N | N | N | 100 | 300 |
| LL2092 | 48 59 34 | 114 56 58 | 3.00 | .70 | .50 | .300 | 200 | N | N | N | 200 | 200 |
| LL2094 | 48 59 37 | 114 59 2 | 3.00 | 2.00 | .15 | .300 | 150 | N | N | N | 200 | 200 |
| LL2096 | 48 58 36 | 114 41 28 | 10.00 | 2.00 | 1.00 | .300 | 1,000 | 3.0 | N | N | 150 | >5,000 |
| LL2097 | 48 57 30 | 114 55 47 | 10.00 | .20 | <.05 | .500 | 150 | 3.0 | <200 | N | 100 | 5,000 |
| LL2098 | 48 57 30 | 114 55 47 | 3.00 | .20 | .10 | .300 | 50 | 3.0 | N | N | 10 | 2,000 |
| LL2099 | 48 57 21 | 114 55 49 | 1.00 | .30 | .05 | .100 | 15 | N | N | N | 500 | >5,000 |
| LL2100 | 48 57 17 | 114 55 8 | .70 | .20 | .05 | .015 | 50 | N | N | N | 70 | 150 |
| LL2101 | 48 57 22 | 114 53 28 | 10.00 | 3.00 | .15 | .500 | 700 | N | N | N | <10 | 1,000 |
| LL2102 | 48 52 35 | 114 51 7 | 2.00 | 3.00 | >20.00 | .150 | 1,500 | N | N | N | 50 | 300 |
| LL2103 | 48 51 48 | 114 53 9 | 2.00 | 5.00 | 20.00 | .100 | 700 | N | N | N | 150 | 300 |
| LL2104 | 48 51 33 | 114 53 21 | 2.00 | 5.00 | 7.00 | .200 | 500 | N | N | N | 150 | 1,000 |
| LL2105 | 48 59 55 | 114 55 3 | 2.00 | 3.00 | .15 | .300 | 50 | <.5 | N | N | 500 | 700 |
| LL2106 | 48 59 55 | 114 55 3 | .70 | 3.00 | 20.00 | .010 | 1,000 | N | N | N | 20 | <20 |
| LL2108 | 48 58 27 | 114 55 12 | 20.00 | .02 | <.05 | .200 | 70 | N | N | N | <10 | <20 |
| LL2109 | 48 58 7 | 114 55 20 | 5.00 | 2.00 | 5.00 | .150 | 1,000 | N | N | N | <10 | 30 |
| LL2110 | 48 57 57 | 114 55 8 | 3.00 | .70 | 7.00 | .050 | 2,000 | 2.0 | N | N | 20 | 300 |
| LL2111 | 48 58 15 | 114 52 37 | .50 | .10 | .50 | .003 | 1,000 | N | N | N | 10 | 50 |
| LL2112 | 48 58 15 | 114 52 37 | 15.00 | 3.00 | .20 | .500 | 1,500 | N | N | N | <10 | 500 |
| TL001R | 48 54 46 | 114 56 14 | .50 | 1.00 | 1.00 | .150 | 150 | N | N | N | 50 | 700 |
| TL012R | 48 57 4 | 114 52 10 | 3.00 | 1.50 | .50 | .200 | 1,500 | N | N | N | 70 | 500 |
| TL038AR | 48 55 49 | 114 49 29 | 10.00 | .20 | .20 | .500 | 2,000 | N | N | N | <10 | 700 |
| TL038BR | 48 55 49 | 114 49 29 | 3.00 | 2.00 | <.05 | .070 | 700 | N | N | N | 10 | 100 |
| TL052R | 48 58 0 | 114 53 31 | 5.00 | 1.50 | .70 | .200 | 700 | N | N | N | 300 | 1,000 |
| TL060R | 48 57 22 | 114 49 46 | 7.00 | .30 | .10 | .500 | 3,000 | N | N | N | <10 | 700 |
| TL080R | 48 50 54 | 114 50 6 | 1.50 | .70 | .70 | .100 | 3,000 | N | N | N | 50 | >5,000 |
| TP1R | 48 57 52 | 114 55 55 | 15.00 | .30 | .05 | .150 | 100 | 20.0 | N | N | 20 | 200 |
| TP2R | 48 57 57 | 114 56 6 | 10.00 | 1.50 | .15 | .500 | 100 | 2.0 | N | N | 100 | 300 |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Be-ppm s | Bi-ppm s | Cd-ppm s | Co-ppm s | Cr-ppm s | Cu-ppm s | La-ppm s | Mo-ppm s | Nb-ppm s | Ni-ppm s | Pb-ppm s | Sb-ppm s | Sc-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LL2084 | 3.0 | N | N | 15 | 70 | 15 | 50 | N | <20 | 30 | 10 | N | 15 |
| LL2085 | 5.0 | N | N | 7 | 50 | 7 | 70 | N | N | 15 | 100 | N | 10 |
| LL2086 | 1.5 | N | N | 15 | 70 | 30 | 50 | N | <20 | 30 | 50 | N | 10 |
| LL2088 | 2.0 | N | N | 50 | 50 | <5 | N | 10 | 20 | 70 | 15 | N | 20 |
| LL2089 | N | N | N | 10 | 30 | 5 | 20 | N | N | 7 | 10 | N | 7 |
| LL2090 | 2.0 | N | N | 100 | 70 | 100 | 20 | N | N | 70 | 15 | N | 30 |
| LL2091 | 1.0 | N | N | 5 | 20 | 10 | 50 | N | N | 5 | 15 | N | 5 |
| LL2092 | 2.0 | N | N | 15 | 50 | 15 | 50 | N | N | 10 | 10 | N | 7 |
| LL2094 | 5.0 | N | N | 15 | 50 | 10 | 50 | N | <20 | 30 | <10 | N | 10 |
| LL2096 | 2.0 | N | N | 10 | 50 | >20,000 | 70 | 70 | <20 | 20 | 10 | N | 10 |
| LL2097 | 1.5 | 30 | N | 100 | 20 | 1,000 | 30 | 30 | N | 15 | 50 | N | 20 |
| LL2098 | N | N | N | 20 | 10 | 15,000 | <20 | N | N | 10 | <10 | N | 5 |
| LL2099 | <1.0 | N | N | 5 | 15 | 10,000 | <20 | N | N | 7 | N | N | 5 |
| LL2100 | N | N | N | 5 | 10 | 20 | <20 | N | N | 7 | N | N | N |
| LL2101 | 5.0 | N | N | N | 10 | 50 | 150 | N | 50 | N | N | N | 15 |
| LL2102 | 2.0 | N | N | 5 | 30 | 15 | 70 | N | N | 7 | 20 | N | 7 |
| LL2103 | 1.0 | N | N | 5 | 20 | 10 | 30 | N | N | 7 | 20 | N | 5 |
| LL2104 | 3.0 | N | N | 10 | 50 | 10 | 20 | N | N | 15 | 15 | N | 10 |
| LL2105 | 7.0 | N | N | 7 | 70 | 15 | 30 | N | <20 | 15 | 10 | N | 15 |
| LL2106 | N | N | N | <5 | <10 | 7 | 30 | N | N | 5 | 15 | N | <5 |
| LL2108 | N | N | N | N | 10 | 5 | 20 | N | N | 5 | 10 | N | <5 |
| LL2109 | N | N | N | 20 | <10 | 7 | N | N | N | 20 | <10 | N | 15 |
| LL2110 | N | N | N | 50 | 10 | 10,000 | N | N | N | 15 | N | N | 10 |
| LL2111 | 2.0 | N | N | N | 10 | 20 | <20 | N | N | 5 | N | N | <5 |
| LL2112 | 3.0 | N | N | N | 10 | 20 | 100 | N | 30 | <5 | 100 | N | 15 |
| TL001R | 1.5 | N | N | 7 | 20 | 30 | N | N | N | 10 | 20 | N | 5 |
| TL012R | 2.0 | N | N | 20 | 30 | 10 | 30 | N | N | 30 | 200 | N | 5 |
| TL038AR | 2.0 | N | N | <5 | 10 | 20 | 70 | N | 50 | N | 30 | N | 15 |
| TL038BR | 1.0 | N | N | 10 | 15 | 15 | 30 | N | N | 15 | 10 | N | N |
| TL052R | 3.0 | N | N | 20 | 70 | 20 | 50 | N | N | 20 | 50 | N | 10 |
| TL060R | 1.5 | N | N | 5 | N | 200 | 150 | 7 | 30 | N | 50 | N | 10 |
| TL080R | 2.0 | N | N | 7 | 20 | 10 | 50 | N | N | 10 | 30 | N | 5 |
| TP1R | N | N | N | 50 | 15 | >20,000 | 30 | 50 | N | 10 | 30 | N | 15 |
| TP2R | 1.0 | N | N | 70 | 15 | >20,000 | <20 | 50 | N | 30 | <10 | N | 10 |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Sn-ppm s | Sr-ppm s | V-ppm s | W-ppm s | Y-ppm s | Zn-ppm s | Zr-ppm s | Th-ppm s | Au-ppm aa | Hg-ppm inst | Te-ppm aa | As-ppm aa | Zn-ppm aa |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LL2084 | N | N | 150 | N | 30 | N | 200 | N | -- | .02 | -- | <5 | 40 |
| LL2085 | N | 100 | 50 | N | 50 | N | 200 | N | -- | <.02 | -- | 5 | 25 |
| LL2086 | N | <100 | 70 | N | 50 | N | 300 | N | -- | .02 | -- | N | 30 |
| LL2088 | N | <100 | 150 | N | 50 | N | 300 | N | -- | <.02 | -- | <5 | 45 |
| LL2089 | N | <100 | 30 | N | 30 | N | 300 | N | -- | .02 | -- | <5 | 10 |
| LL2090 | N | <100 | 300 | N | 30 | N | 70 | N | -- | <.02 | -- | N | 110 |
| LL2091 | N | 150 | 30 | N | 20 | N | 50 | N | -- | .02 | -- | <5 | 10 |
| LL2092 | N | <100 | 70 | N | 50 | N | 1,000 | N | -- | <.02 | -- | N | 25 |
| LL2094 | N | N | 50 | N | 30 | N | 300 | N | -- | .02 | -- | N | 20 |
| LL2096 | N | 100 | 70 | N | 50 | N | 100 | N | N | .08 | -- | N | 110 |
| LL2097 | N | <100 | 200 | N | 15 | N | 100 | N | N | .32 | -- | 80 | 5 |
| LL2098 | N | N | 30 | N | 10 | N | 70 | N | N | .22 | -- | 10 | 5 |
| LL2099 | N | 500 | 70 | N | 10 | N | 100 | N | -- | <.02 | -- | <5 | <5 |
| LL2100 | N | N | <10 | N | <10 | N | N | N | -- | <.02 | -- | N | <5 |
| LL2101 | N | N | <10 | N | 70 | N | 1,000 | N | -- | .04 | -- | 5 | 80 |
| LL2102 | N | 200 | 30 | N | 30 | N | 50 | N | -- | <.02 | -- | 5 | 20 |
| LL2103 | N | 200 | 30 | N | 20 | N | 50 | N | -- | <.02 | -- | 5 | 35 |
| LL2104 | N | 200 | 70 | N | 20 | N | 150 | N | -- | <.02 | -- | 15 | 10 |
| LL2105 | N | N | 100 | N | 20 | N | 200 | N | -- | .06 | -- | <5 | 25 |
| LL2106 | N | 200 | <10 | N | 15 | 200 | N | N | -- | .34 | -- | <5 | 290 |
| LL2108 | N | N | <10 | N | N | N | N | N | -- | .06 | -- | <5 | <5 |
| LL2109 | N | 300 | 30 | N | 15 | N | <10 | N | -- | .02 | -- | N | 10 |
| LL2110 | N | <100 | 15 | N | 20 | N | N | N | N | .24 | -- | 20 | 35 |
| LL2111 | N | N | <10 | N | 20 | N | N | N | -- | .06 | -- | 10 | 10 |
| LL2112 | N | N | <10 | N | 70 | <200 | 500 | N | -- | .06 | -- | <5 | 230 |
| TL001R | N | N | 30 | N | 10 | N | 300 | N | N | .12 | N | 10 | 25 |
| TL012R | N | N | 50 | N | 30 | N | 500 | N | N | .06 | N | N | 150 |
| TL038AR | N | 200 | <10 | N | 50 | N | 500 | N | N | .06 | N | <10 | 170 |
| TL038BR | N | N | 20 | N | 30 | N | 50 | N | N | .02 | N | <10 | 65 |
| TL052R | N | N | 100 | N | 30 | N | 150 | N | N | .02 | N | 40 | 15 |
| TL060R | N | N | <10 | N | 100 | N | 700 | N | N | .04 | N | <10 | 130 |
| TL080R | N | 150 | 50 | N | 20 | N | 100 | N | N | .06 | N | <10 | 25 |
| TP1R | N | N | 50 | N | 10 | N | 15 | N | -- | 1.30 | -- | 20 | 10 |
| TP2R | N | N | 150 | N | 20 | N | 100 | N | -- | .36 | -- | <10 | 10 |

Table 3 - Spectrographic and Chemical Analysis of Rocks from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Cd-ppm aa | Bi-ppm aa | Sb-ppm aa | SI-F |
|---|---|---|---|---|
| LL2084 | N | N | N | -- |
| LL2085 | N | N | N | -- |
| LL2086 | N | N | N | -- |
| LL2088 | N | N | N | -- |
| LL2089 | N | N | N | -- |
| LL2090 | N | N | N | -- |
| LL2091 | N | N | N | -- |
| LL2092 | N | N | N | -- |
| LL2094 | N | N | N | -- |
| LL2096 | <.1 | N | N | -- |
| LL2097 | N | 6 | N | -- |
| LL2098 | <.1 | N | N | -- |
| LL2099 | N | N | N | -- |
| LL2100 | N | N | N | -- |
| LL2101 | N | N | N | -- |
| LL2102 | <.1 | N | N | -- |
| LL2103 | N | N | N | -- |
| LL2104 | N | N | 4 | -- |
| LL2105 | N | N | N | -- |
| LL2106 | .8 | N | N | -- |
| LL2108 | N | N | N | -- |
| LL2109 | N | N | N | -- |
| LL2110 | N | N | N | -- |
| LL2111 | N | N | N | -- |
| LL2112 | .1 | N | N | -- |
| TL001R | .2 | 1 | 2 | 275 |
| TL012R | .2 | 1 | 2 | 200 |
| TL038AR | .3 | 1 | 3 | 275 |
| TL038BR | .2 | 2 | 2 | 1,100 |
| TL052R | .2 | 2 | 2 | 350 |
| TL060R | 1.0 | 1 | 3 | 225 |
| TL080R | .3 | 1 | 6 | 160 |
| TP1R | .4 | N | N | -- |
| TP2R | N | N | N | -- |

Table 4 - Spectrographic and Chemical Analysis of Stream Sediments from the Ten Lakes Wilderness Study Area, Lincoln County, Montana

[N, not detected at limit of determination (cf. tables 1 and 2). <, detected but less than the limit of determination. >, greater than the listed value. ---, not determined]

| Sample | Latitude | Longitude | Fe-pct. s | Mg-pct. s | Ca-pct. s | Ti-pct. s | Mn-ppm s | Ag-ppm s | As-ppm s | Au-ppm s | B-ppm s | Ba-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL001SS | 48 54 46 | 114 56 14 | 3.0 | 2.0 | 1.0 | .3 | 1,000 | N | N | N | 150 | 700 |
| TL002SS | 48 53 42 | 114 55 48 | 5.0 | 1.5 | .7 | .5 | 700 | N | N | N | 200 | 1,000 |
| TL003SS | 48 54 7 | 114 53 13 | 3.0 | 2.0 | 1.0 | .3 | 1,000 | N | N | N | 100 | 700 |
| TL004SS | 48 54 11 | 114 54 49 | 5.0 | 1.5 | .7 | .5 | 1,500 | N | N | N | 150 | 1,000 |
| TL005SS | 48 53 40 | 114 53 8 | 5.0 | 1.5 | .3 | .5 | 700 | N | N | N | 100 | 700 |
| TL006SS | 48 52 51 | 114 52 59 | 3.0 | 1.5 | 2.0 | .3 | 700 | N | N | N | 150 | 700 |
| TL007SS | 48 56 40 | 114 54 23 | 5.0 | 2.0 | 1.0 | .7 | 1,500 | N | N | N | 100 | 700 |
| TL008SS | 48 56 42 | 114 54 20 | 5.0 | 2.0 | 1.0 | .7 | 1,000 | N | N | N | 150 | 700 |
| TL009SS | 48 56 22 | 114 53 38 | 5.0 | 2.0 | .7 | .5 | 2,000 | N | N | N | 100 | 700 |
| TL010SS | 48 56 28 | 114 52 56 | 5.0 | 2.0 | .5 | .5 | 1,000 | N | N | N | 100 | 700 |
| TL011SS | 48 56 28 | 114 52 25 | 3.0 | 1.5 | .7 | .3 | 2,000 | N | N | N | 70 | 700 |
| TL012SS | 48 57 4 | 114 52 10 | 5.0 | 1.5 | .7 | .5 | 700 | 1.0 | N | N | 100 | 1,500 |
| TL013SS | 48 57 48 | 114 51 10 | 3.0 | 1.5 | .7 | .3 | 1,500 | N | N | N | 70 | 1,000 |
| TL014SS | 48 59 44 | 114 41 53 | 3.0 | 1.5 | .5 | .3 | 1,000 | N | N | N | 200 | 1,000 |
| TL015SS | 48 59 50 | 114 42 49 | 3.0 | 1.5 | .7 | .3 | 1,500 | N | N | N | 200 | 2,000 |
| TL016SS | 48 59 45 | 114 43 56 | 2.0 | 1.5 | .5 | .3 | 500 | N | N | N | 100 | 1,000 |
| TL017SS | 48 56 29 | 114 44 40 | 3.0 | 2.0 | .3 | .5 | 2,000 | N | N | N | 200 | 1,000 |
| TL018SS | 48 55 48 | 114 45 5 | 2.0 | 1.5 | .3 | .3 | 700 | N | N | N | 150 | 1,000 |
| TL019SS | 48 55 10 | 114 45 38 | 1.5 | .7 | .3 | .2 | 500 | N | N | N | 200 | 1,000 |
| TL020SS | 48 54 38 | 114 46 11 | 2.0 | 1.0 | 1.0 | .3 | 1,500 | N | N | N | 100 | 1,000 |
| TL021SS | 48 53 18 | 114 48 4 | 5.0 | 2.0 | 1.0 | .5 | 1,000 | N | N | N | 150 | 1,000 |
| TL022SS | 48 52 43 | 114 48 23 | 2.0 | 1.0 | 1.0 | .3 | 1,000 | N | N | N | 100 | 700 |
| TL023SS | 48 59 19 | 115 0 16 | 5.0 | 1.5 | .7 | .5 | 1,000 | N | N | N | 200 | 1,500 |
| TL024SS | 48 59 7 | 115 0 15 | 3.0 | 1.0 | .5 | .5 | 1,000 | 1.5 | N | N | 200 | 700 |
| TL025SS | 48 58 48 | 115 0 5 | 5.0 | 1.0 | .3 | .7 | 500 | N | N | N | 200 | 500 |
| TL026SS | 48 58 34 | 115 0 1 | 5.0 | 2.0 | .7 | 1.0 | 700 | N | N | N | 200 | 1,000 |
| TL027SS | 48 58 10 | 114 59 52 | 3.0 | 1.0 | .7 | .5 | 1,500 | N | N | N | 150 | 1,000 |
| TL028SS | 48 57 53 | 114 59 48 | 5.0 | 1.5 | 1.0 | .7 | 500 | N | N | N | 150 | 1,000 |
| TL029SS | 48 57 38 | 114 59 55 | 3.0 | 1.0 | .2 | .5 | 700 | N | N | N | 200 | 700 |
| TL030SS | 48 57 23 | 114 59 38 | 3.0 | 1.0 | .5 | .5 | 500 | N | N | N | 200 | 700 |
| TL031SS | 48 57 9 | 114 59 43 | 3.0 | 1.5 | .3 | .5 | 500 | N | N | N | 150 | 700 |
| TL032SS | 48 50 31 | 114 52 38 | 3.0 | 1.0 | 1.0 | .5 | 700 | N | N | N | 150 | 700 |
| TL033SS | 48 50 56 | 114 52 56 | 2.0 | 1.0 | .7 | .3 | 700 | N | N | N | 100 | 700 |
| TL034SS | 48 51 21 | 114 53 21 | 2.0 | 1.0 | .7 | .3 | 1,000 | N | N | N | 100 | 700 |
| TL035SS | 48 52 42 | 114 52 54 | 3.0 | 1.5 | 1.5 | .3 | 700 | N | N | N | 100 | 700 |
| TL036SS | 48 52 38 | 114 52 56 | 3.0 | 1.5 | .7 | .5 | 1,000 | N | N | N | 100 | 700 |
| TL037SS | 48 55 40 | 114 49 46 | 5.0 | 2.0 | 1.0 | .3 | 2,000 | N | N | N | 70 | 1,000 |
| TL038SS | 48 55 49 | 114 49 29 | 5.0 | 1.5 | .7 | .3 | 2,000 | N | N | N | 50 | 1,000 |
| TL039SS | 48 55 48 | 114 48 24 | 3.0 | 1.5 | .5 | .3 | 1,500 | N | N | N | 200 | 1,000 |
| TL040SS | 48 55 25 | 114 49 38 | 5.0 | 1.5 | .7 | .3 | 3,000 | N | N | N | 50 | 1,000 |
| TL041SS | 48 55 3 | 114 47 36 | 5.0 | 1.0 | .5 | .5 | 700 | N | N | N | 150 | 700 |
| TL042SS | 48 55 23 | 114 47 51 | 5.0 | 1.5 | .7 | .3 | 1,500 | N | N | N | 150 | 2,000 |
| TL043SS | 48 54 21 | 114 50 40 | 3.0 | 1.0 | 1.0 | .3 | 1,500 | N | N | N | 100 | 700 |
| TL044SS | 48 54 24 | 114 50 34 | 3.0 | 1.5 | .7 | .3 | 1,500 | N | N | N | 100 | 700 |
| TL045SS | 48 53 28 | 114 49 55 | 5.0 | 1.5 | 1.0 | .5 | 1,500 | N | N | N | 100 | 700 |

Table 4 - Spectrographic and Chemical Analysis of Stream Sediments from the Ten Lakes Wilderness Study Area, Lincoln County, Montana

[N, not detected at limit of determination (cf. tables 1 and 2). <, detected but less than the limit of determination. >, greater than the listed values. ---, not determined]

| Sample | Be-ppm S | Bi-ppm S | Cd-ppm S | Co-ppm S | Cr-ppm S | Cu-ppm S | La-ppm S | Mo-ppm S | Nb-ppm S | Ni-ppm S | Pb-ppm S | Sb-ppm S | Sc-ppm S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL001SS | 2.0 | N | N | 10 | 50 | 50 | 50 | N | <20 | 20 | 50 | N | 10 |
| TL002SS | 1.5 | N | N | 10 | 50 | 50 | 50 | N | <20 | 20 | 20 | N | 10 |
| TL003SS | 2.0 | N | N | 10 | 50 | 30 | 50 | N | <20 | 20 | 50 | N | 10 |
| TL004SS | 1.5 | N | N | 15 | 70 | 50 | 50 | 5 | <20 | 30 | 30 | N | 10 |
| TL005SS | 1.5 | N | N | 10 | 70 | 30 | 50 | N | <20 | 20 | 50 | N | 10 |
| TL006SS | 1.5 | N | N | 7 | 50 | 30 | 30 | N | <20 | 30 | 50 | N | 7 |
| TL007SS | 1.0 | N | N | 10 | 50 | 50 | 70 | N | 20 | 20 | 50 | N | 10 |
| TL008SS | 1.0 | N | N | 10 | 70 | 70 | 30 | N | <20 | 30 | 50 | N | 10 |
| TL009SS | 1.5 | N | N | 10 | 50 | 50 | 30 | N | <20 | 20 | 70 | N | 10 |
| TL010SS | 1.0 | N | N | 10 | 50 | 50 | 50 | N | <20 | 20 | 50 | N | 7 |
| TL011SS | 1.5 | N | N | 7 | 70 | 30 | 30 | N | <20 | 30 | 100 | N | 7 |
| TL012SS | 2.0 | N | N | 10 | 50 | 70 | 50 | N | <20 | 20 | 70 | N | 10 |
| TL013SS | 2.0 | N | N | 7 | 50 | 50 | 50 | N | <20 | 30 | 50 | N | 10 |
| TL014SS | 3.0 | N | N | 7 | 70 | 50 | 50 | 7 | <20 | 30 | 50 | N | 10 |
| TL015SS | 3.0 | N | N | 10 | 50 | 50 | 50 | N | <20 | 20 | 50 | N | 10 |
| TL016SS | 2.0 | N | N | 7 | 30 | 15 | 50 | N | <20 | 10 | 30 | N | 7 |
| TL017SS | 2.0 | N | N | 10 | 100 | 100 | 70 | N | <20 | 30 | 70 | N | 10 |
| TL018SS | 3.0 | N | N | 7 | 50 | 30 | 50 | N | <20 | 20 | 50 | N | 10 |
| TL019SS | 1.5 | N | N | 7 | 30 | 20 | 30 | N | N | 10 | 20 | N | 5 |
| TL020SS | 2.0 | N | N | 7 | 50 | 30 | 20 | N | N | 10 | 20 | N | 7 |
| TL021SS | 2.0 | N | N | 10 | 70 | 70 | 50 | N | N | 30 | 30 | N | 15 |
| TL022SS | 1.5 | N | N | 7 | 30 | 50 | 20 | N | N | 15 | 20 | N | 7 |
| TL023SS | 1.5 | N | N | 15 | 100 | 100 | 50 | N | <20 | 30 | 20 | N | 10 |
| TL024SS | 1.5 | N | N | 15 | 50 | 50 | 30 | N | <20 | 20 | 20 | N | 7 |
| TL025SS | 1.0 | N | N | 15 | 70 | 50 | 30 | 5 | <20 | 50 | 20 | N | 10 |
| TL026SS | 1.0 | N | N | 20 | 70 | 100 | 50 | N | 20 | 30 | 20 | N | 10 |
| TL027SS | 1.0 | N | N | 10 | 50 | 70 | 30 | 15 | <20 | 20 | 20 | N | 10 |
| TL028SS | 1.0 | N | N | 10 | 50 | 100 | 30 | N | <20 | 20 | 15 | N | 10 |
| TL029SS | 1.5 | N | N | 10 | 50 | 30 | 50 | N | 20 | 20 | 20 | N | 7 |
| TL030SS | 1.5 | N | N | 10 | 70 | 50 | 30 | N | 20 | 30 | 30 | N | 10 |
| TL031SS | 1.0 | N | N | 7 | 50 | 20 | 50 | N | 20 | 15 | 20 | N | 10 |
| TL032SS | 1.5 | N | N | 7 | 50 | 50 | 50 | N | <20 | 20 | 50 | N | 10 |
| TL033SS | 1.0 | N | N | 7 | 50 | 30 | 50 | <5 | <20 | 20 | 30 | N | 7 |
| TL034SS | 2.0 | N | N | 7 | 50 | 50 | 50 | 20 | <20 | 20 | 70 | N | 10 |
| TL035SS | 2.0 | N | N | 7 | 50 | 50 | 50 | 7 | <20 | 30 | 50 | N | 10 |
| TL036SS | 2.0 | N | N | 10 | 70 | 50 | 50 | N | <20 | 20 | 30 | N | 10 |
| TL037SS | 2.0 | N | N | 10 | 50 | 70 | 50 | N | <20 | 20 | 100 | N | 10 |
| TL038SS | 2.0 | N | N | 7 | 50 | 50 | 100 | 5 | 20 | 20 | 100 | N | 10 |
| TL039SS | 2.0 | N | N | 10 | 70 | 50 | 50 | N | <20 | 20 | 70 | N | 10 |
| TL040SS | 2.0 | N | N | 15 | 50 | 100 | 50 | N | N | 30 | 100 | N | 10 |
| TL041SS | 1.0 | N | N | 7 | 50 | 50 | 50 | N | <20 | 20 | 20 | N | 7 |
| TL042SS | 1.5 | N | N | 7 | 70 | 30 | 50 | N | 20 | 15 | 50 | N | 7 |
| TL043SS | 2.0 | N | N | 10 | 50 | 50 | 50 | 10 | <20 | 30 | 70 | N | 10 |
| TL044SS | 2.0 | N | N | 7 | 50 | 50 | 50 | N | N | 20 | 70 | N | 10 |
| TL045SS | 2.0 | N | N | 10 | 50 | 50 | 70 | N | <20 | 20 | 50 | N | 10 |

Table 4 - Spectrographic and Chemical Analysis of Stream Sediments from the Ten Lakes Wilderness Study Area, Lincoln County, Montana

[N, not detected at limit of determination (cf. tables 1 and 2). <, detected but less than the limit of determination. >, greater than the listed values. ---, not determined]

| Sample | Sn-ppm s | Sr-ppm s | V-ppm s | W-ppm s | Y-ppm s | Zn-ppm s | Zr-ppm s | Th-ppm s | Hg-ppm inst | As-ppm aa | Zn-ppm aa | Cd-ppm aa | Bi-ppm aa | Sb-ppm aa |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL001SS | N | 100 | 100 | N | 70 | N | 300 | N | .26 | N | 55 | .2 | N | N |
| TL002SS | N | 100 | 100 | N | 20 | N | 300 | N | .04 | N | 50 | .1 | N | N |
| TL003SS | N | <100 | 100 | N | 50 | N | 200 | N | .06 | N | 100 | .4 | N | 1 |
| TL004SS | N | 100 | 100 | N | 20 | N | 200 | N | .06 | N | 110 | .2 | N | N |
| TL005SS | N | <100 | 100 | N | 70 | N | 300 | N | .06 | N | 60 | .1 | N | 2 |
| TL006SS | N | 100 | 100 | N | 70 | N | 300 | N | .10 | N | 55 | .2 | N | N |
| TL007SS | N | 100 | 150 | N | 70 | N | 200 | N | .06 | N | 120 | .4 | N | N |
| TL008SS | N | 100 | 100 | N | 50 | N | 300 | N | .26 | N | 70 | .4 | N | N |
| TL009SS | N | 100 | 100 | N | 70 | N | 200 | N | .08 | 10 | 120 | .3 | N | N |
| TL010SS | N | 100 | 100 | N | 50 | N | 300 | N | .10 | N | 60 | .1 | N | N |
| TL011SS | N | <100 | 70 | N | 50 | N | 200 | N | .10 | 30 | 65 | .7 | 1 | N |
| TL012SS | N | 150 | 100 | N | 30 | N | 200 | N | .06 | N | 100 | .2 | N | N |
| TL013SS | N | 100 | 100 | N | 50 | N | 200 | N | .06 | N | 85 | .4 | N | N |
| TL014SS | N | <100 | 100 | N | 50 | N | 500 | N | .10 | N | 70 | .1 | N | N |
| TL015SS | N | <100 | 100 | N | 70 | N | 300 | N | .04 | N | 35 | .1 | N | N |
| TL016SS | N | 100 | 70 | N | 50 | N | 200 | N | .18 | N | 50 | .1 | N | N |
| TL017SS | N | <100 | 100 | N | 70 | N | 500 | N | .14 | N | 70 | .5 | N | N |
| TL018SS | N | <100 | 100 | N | 30 | N | 500 | N | .26 | N | 20 | .1 | N | N |
| TL019SS | N | <100 | 70 | N | 30 | N | 300 | N | .32 | 10 | 35 | .2 | N | N |
| TL020SS | N | 100 | 70 | N | 20 | N | 200 | N | .14 | N | 90 | .4 | N | N |
| TL021SS | N | <100 | 100 | N | 70 | N | 200 | N | .08 | 20 | 90 | .3 | N | N |
| TL022SS | N | <100 | 70 | N | 30 | N | 150 | N | .12 | 20 | 80 | .2 | N | N |
| TL023SS | N | 100 | 100 | N | 70 | N | 500 | N | .06 | 10 | 30 | N | N | N |
| TL024SS | N | 100 | 100 | N | 20 | N | 300 | N | .04 | 10 | 60 | N | N | N |
| TL025SS | N | <100 | 100 | N | 30 | N | 300 | N | .04 | 20 | 45 | .1 | 2 | N |
| TL026SS | N | 100 | 100 | N | 30 | N | 200 | N | .08 | 10 | 45 | N | 1 | N |
| TL027SS | N | 100 | 100 | N | 20 | N | 200 | N | .08 | 10 | 170 | .2 | 1 | N |
| TL028SS | N | 100 | 100 | N | 20 | N | 200 | N | .26 | 10 | 35 | .1 | N | N |
| TL029SS | N | <100 | 100 | N | 30 | N | 300 | N | .14 | 10 | 20 | N | N | N |
| TL030SS | N | <100 | 100 | N | 30 | N | 300 | N | .10 | 10 | 45 | N | 2 | N |
| TL031SS | N | 100 | 100 | N | 20 | N | 300 | N | .10 | N | 40 | N | N | N |
| TL032SS | N | 100 | 100 | N | 20 | N | 200 | N | .04 | N | 70 | .2 | N | 2 |
| TL033SS | N | 100 | 100 | N | 20 | N | 200 | N | .04 | N | 65 | .2 | N | N |
| TL034SS | N | <100 | 100 | <50 | 20 | N | 200 | N | .04 | 10 | 110 | .2 | N | N |
| TL035SS | N | <100 | 100 | N | 30 | N | 200 | N | .04 | 20 | 70 | .2 | N | 2 |
| TL036SS | N | 100 | 100 | N | 50 | N | 300 | N | .04 | 10 | 50 | N | N | 1 |
| TL037SS | N | 100 | 70 | N | 50 | N | 200 | N | .06 | 40 | 140 | .6 | N | 1 |
| TL038SS | N | 100 | 70 | N | 70 | N | 200 | N | .06 | 10 | 95 | .4 | N | N |
| TL039SS | N | <100 | 100 | N | 50 | N | 300 | N | .14 | 10 | 70 | .2 | 3 | N |
| TL040SS | N | 100 | 100 | N | 70 | N | 150 | N | .52 | 20 | 160 | .6 | N | N |
| TL041SS | N | 100 | 100 | N | 30 | N | 300 | N | .08 | 10 | 65 | N | N | N |
| TL042SS | N | 100 | 70 | N | 30 | N | 300 | N | .04 | 10 | 65 | .7 | N | N |
| TL043SS | N | 100 | 100 | N | 50 | N | 150 | N | .04 | 30 | 110 | .2 | N | N |
| TL044SS | N | <100 | 70 | N | 30 | N | 150 | N | .04 | 30 | 110 | .2 | N | N |
| TL045SS | N | 100 | 100 | N | 30 | N | 200 | N | .04 | 20 | 80 | .2 | N | N |

Table 4 - Spectrographic and Chemical Analysis of Stream Sediments from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Latitude | Longitude | Fe-pct. s | Mg-pct. s | Ca-pct. s | Ti-pct. s | Mn-ppm s | Ag-ppm s | As-ppm s | Au-ppm s | B-ppm s | Ba-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL046SS | 48 53 19 | 114 49 36 | 5.0 | 2.0 | .7 | .3 | 1,500 | N | N | N | 100 | 700 |
| TL047SS | 48 56 54 | 114 59 30 | 5.0 | 1.5 | .7 | .7 | 1,000 | N | N | N | 150 | 700 |
| TL048SS | 48 56 55 | 114 58 43 | 5.0 | 2.0 | 1.0 | .5 | 500 | N | N | N | 100 | 700 |
| TL049SS | 48 56 55 | 114 57 49 | 3.0 | 1.5 | .7 | .3 | 500 | N | N | N | 200 | 700 |
| TL050SS | 48 56 55 | 114 57 40 | 3.0 | 1.5 | 1.5 | .5 | 1,000 | <.5 | N | N | 150 | 1,000 |
| TL051SS | 48 56 51 | 114 57 31 | 3.0 | 1.5 | 1.0 | .7 | 1,000 | N | N | N | 200 | 1,000 |
| TL052SS | 48 58 0 | 114 53 31 | 3.0 | 2.0 | 1.0 | .7 | 1,500 | N | N | N | 150 | 700 |
| TL053SS | 48 57 55 | 114 53 29 | 3.0 | 2.0 | 1.0 | .7 | 700 | N | N | N | 100 | 500 |
| TL054SS | 48 57 9 | 114 53 18 | 3.0 | 2.0 | .7 | .5 | 1,000 | N | N | N | 500 | 500 |
| TL055SS | 48 58 30 | 114 52 0 | 2.0 | 1.5 | .7 | .3 | 700 | N | N | N | 100 | 700 |
| TL056SS | 48 58 47 | 114 51 7 | 3.0 | 1.0 | .7 | .5 | 700 | N | N | N | 100 | 1,000 |
| TL057SS | 48 59 46 | 114 49 32 | 3.0 | 1.5 | 1.0 | .7 | 2,000 | N | N | N | 150 | 700 |
| TL058SS | 48 59 16 | 114 50 7 | 3.0 | 1.5 | 1.0 | .3 | 2,000 | N | N | N | 150 | 700 |
| TL059SS | 48 59 31 | 114 49 52 | 5.0 | 1.0 | 1.0 | .5 | 2,000 | N | N | N | 100 | 700 |
| TL060SS | 48 57 22 | 114 49 46 | 5.0 | 1.0 | .7 | .5 | 2,000 | N | N | N | 100 | 1,000 |
| TL061SS | 48 57 26 | 114 49 39 | 3.0 | 1.0 | .5 | .5 | 1,000 | N | N | N | 150 | 1,000 |
| TL062SS | 48 58 36 | 114 41 29 | 3.0 | 1.0 | .7 | .5 | 2,000 | N | N | N | 200 | 1,000 |
| TL063SS | 48 58 55 | 114 44 1 | 2.0 | .7 | .7 | .3 | 1,000 | N | N | N | 200 | 1,500 |
| TL064SS | 48 58 49 | 114 44 7 | 2.0 | 1.0 | .7 | .3 | 1,000 | N | N | N | 150 | 1,500 |
| TL065SS | 48 57 46 | 114 44 8 | 2.0 | 1.0 | .7 | .3 | 1,500 | N | N | N | 150 | 1,000 |
| TL066SS | 48 56 45 | 114 43 9 | 2.0 | .7 | .5 | .3 | 1,000 | N | N | N | 150 | 1,000 |
| TL067SS | 48 56 48 | 114 43 6 | 2.0 | 1.0 | .7 | .3 | 1,000 | N | N | N | 200 | 700 |
| TL068SS | 48 55 11 | 114 57 25 | 3.0 | 1.5 | .7 | .7 | 1,000 | N | N | N | 150 | 500 |
| TL069SS | 48 55 38 | 114 58 18 | 1.5 | 1.0 | 1.0 | .2 | 700 | N | N | N | 100 | 500 |
| TL070SS | 48 55 46 | 114 58 41 | 3.0 | 1.5 | .5 | .5 | 1,500 | N | N | N | 200 | 700 |
| TL071SS | 48 56 21 | 114 59 23 | 3.0 | 1.5 | .7 | .5 | 700 | N | N | N | 100 | 700 |
| TL072SS | 48 56 42 | 114 58 44 | 3.0 | 1.5 | .5 | .5 | 500 | N | N | N | 150 | 700 |
| TL073SS | 48 55 16 | 114 54 39 | 2.0 | 1.0 | 1.0 | .2 | 700 | N | N | N | 70 | 300 |
| TL074SS | 48 55 38 | 114 54 34 | 3.0 | 2.0 | 1.0 | .5 | 1,000 | N | N | N | 150 | 500 |
| TL075SS | 48 55 40 | 114 54 42 | 2.0 | 1.5 | 1.0 | .3 | 1,500 | N | N | N | 100 | 500 |
| TL076SS | 48 55 40 | 114 55 9 | 3.0 | 1.5 | .7 | .5 | 1,000 | N | N | N | 150 | 500 |
| TL077SS | 48 54 40 | 114 55 9 | 3.0 | 1.0 | .5 | .5 | 700 | N | N | N | 70 | 1,000 |
| TL078SS | 48 50 43 | 114 51 9 | 3.0 | 1.0 | .7 | .5 | 1,000 | N | N | N | 150 | 700 |
| TL080SS | 48 50 54 | 114 50 6 | 3.0 | 1.0 | .5 | .5 | 1,500 | N | N | N | 70 | 1,000 |
| TL081SS | 48 51 21 | 114 49 54 | 3.0 | 1.5 | 2.0 | .5 | 700 | N | N | N | 70 | 1,000 |
| TL082SS | 48 51 37 | 114 49 37 | 2.0 | 1.0 | .7 | .3 | 1,500 | N | N | N | 100 | 1,000 |
| TL083SS | 48 51 45 | 114 48 34 | 3.0 | 1.5 | 2.0 | .5 | 700 | N | N | N | 150 | 1,000 |
| TL084SS | 48 58 33 | 114 57 4 | 2.0 | .7 | 1.0 | .5 | 1,000 | N | N | N | 70 | 700 |
| TL085SS | 48 58 6 | 114 57 16 | 5.0 | 1.5 | 1.0 | 1.0 | 1,500 | 1.0 | N | N | 100 | 1,000 |
| TL086SS | 48 58 13 | 114 57 18 | 5.0 | 1.5 | .2 | 1.0 | 1,000 | N | N | N | 200 | 1,000 |
| TL087SS | 48 58 23 | 114 57 57 | 3.0 | 1.0 | 1.0 | .5 | 3,000 | <.5 | N | N | 150 | 1,500 |
| TL088SS | 48 58 41 | 114 58 23 | 2.0 | .7 | .5 | .7 | 500 | N | N | N | 150 | 500 |
| TL089SS | 48 59 8 | 114 53 11 | 1.5 | 1.0 | .5 | .2 | 1,500 | N | N | N | 100 | 300 |
| TL090SS | 48 59 14 | 114 53 55 | 3.0 | 2.0 | .7 | .3 | 1,500 | N | N | N | 200 | 500 |
| TL091SS | 48 59 37 | 114 54 12 | 5.0 | 2.0 | .5 | .3 | 1,000 | N | N | N | 200 | 500 |

Table 4 - Spectrographic and Chemical Analysis of Stream Sediments from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Be-ppm s | Bi-ppm s | Cd-ppm s | Co-ppm s | Cr-ppm s | Cu-ppm s | La-ppm s | Mo-ppm s | Nb-ppm s | Ni-ppm s | Pb-ppm s | Sb-ppm s | Sc-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL046SS | 2.0 | N | N | 10 | 50 | 50 | 50 | <5 | <20 | 30 | 50 | N | 10 |
| TL047SS | 1.5 | N | N | 10 | 50 | 50 | 30 | N | 20 | 20 | 20 | N | 10 |
| TL048SS | 2.0 | N | N | 10 | 50 | 50 | 50 | N | <20 | 30 | 30 | N | 10 |
| TL049SS | 1.5 | N | N | 15 | 50 | 100 | 20 | 5 | N | 30 | 15 | N | 7 |
| TL050SS | 1.5 | N | N | 15 | 50 | 100 | 30 | N | N | 20 | 20 | N | 10 |
| TL051SS | 2.0 | N | N | 30 | 50 | 200 | 30 | N | <20 | 20 | 30 | N | 15 |
| TL052SS | 1.5 | N | N | 10 | 30 | 70 | 50 | N | <20 | 15 | 50 | N | 15 |
| TL053SS | 1.5 | N | N | 10 | 30 | 20 | 50 | N | <20 | 15 | 20 | N | 10 |
| TL054SS | 1.5 | N | N | 10 | 50 | 50 | 50 | N | N | 20 | 50 | N | 10 |
| TL055SS | 2.0 | N | N | 7 | 30 | 30 | 30 | N | N | 10 | 20 | N | 7 |
| TL056SS | 2.0 | N | N | 7 | 50 | 30 | 30 | 5 | <20 | 20 | 50 | N | 10 |
| TL057SS | 2.0 | N | N | 10 | 50 | 50 | 50 | N | <20 | 20 | 30 | N | 10 |
| TL058SS | 2.0 | N | N | 10 | 50 | 50 | 50 | N | <20 | 20 | 70 | N | 10 |
| TL059SS | 2.0 | N | N | 15 | 50 | 70 | 70 | N | <20 | 30 | 50 | N | 15 |
| TL060SS | 2.0 | N | N | 10 | 30 | 50 | 50 | N | 20 | 15 | 50 | N | 10 |
| TL061SS | 1.5 | N | N | 7 | 70 | 20 | 70 | 5 | <20 | 20 | 20 | N | 10 |
| TL062SS | 2.0 | N | N | 10 | 70 | 30 | 50 | N | N | 15 | 30 | N | 10 |
| TL063SS | 3.0 | N | N | 7 | 20 | 30 | 50 | N | N | 10 | 50 | N | 7 |
| TL064SS | 3.0 | N | N | 10 | 20 | 30 | 50 | N | <20 | 10 | 50 | N | 7 |
| TL065SS | 5.0 | N | N | 7 | 20 | 30 | 50 | N | <20 | 10 | 50 | N | 10 |
| TL066SS | 7.0 | N | N | 10 | 30 | 20 | 50 | N | <20 | 15 | 30 | N | 7 |
| TL067SS | 2.0 | N | N | 10 | 50 | 20 | 50 | N | <20 | 15 | 50 | N | 7 |
| TL068SS | 1.5 | N | N | 15 | 70 | 100 | 50 | N | N | 50 | 50 | N | 10 |
| TL069SS | 1.5 | N | N | 7 | 30 | 20 | 20 | N | N | 20 | 70 | N | 7 |
| TL070SS | 2.0 | N | N | 15 | 70 | 50 | 50 | N | <20 | 30 | 50 | N | 10 |
| TL071SS | 1.5 | N | N | 10 | 30 | 30 | 30 | N | <20 | 30 | 30 | N | 10 |
| TL072SS | 1.5 | N | N | 10 | 50 | 30 | 50 | N | <20 | 20 | 30 | N | 10 |
| TL073SS | 2.0 | N | N | 7 | 20 | 30 | 50 | N | N | 15 | 30 | N | 10 |
| TL074SS | 2.0 | N | N | 15 | 50 | 50 | 50 | N | <20 | 20 | 50 | N | 15 |
| TL075SS | 1.5 | N | N | 10 | 30 | 30 | 30 | N | N | 15 | 30 | N | 10 |
| TL076SS | 2.0 | N | N | 15 | 50 | 50 | 50 | N | <20 | 20 | 70 | N | 10 |
| TL077SS | 2.0 | N | N | 10 | 30 | 30 | 70 | N | <20 | 15 | 70 | N | 10 |
| TL078SS | 1.5 | N | N | 10 | 50 | 20 | 30 | 10 | <20 | 20 | 20 | N | 10 |
| TL080SS | 2.0 | N | N | 10 | 50 | 50 | 50 | N | <20 | 15 | 70 | N | 10 |
| TL081SS | 3.0 | N | N | 10 | 30 | 50 | 50 | N | 20 | 15 | 50 | N | 10 |
| TL082SS | 2.0 | N | N | 10 | 20 | 50 | 50 | N | <20 | 15 | 30 | N | 10 |
| TL083SS | 2.0 | N | N | 10 | 30 | 20 | 50 | 20 | 20 | 20 | 20 | N | 10 |
| TL084SS | 2.0 | N | N | 15 | 20 | 100 | 20 | N | <20 | 15 | 20 | N | 10 |
| TL085SS | 2.0 | N | N | 20 | 50 | 150 | 50 | N | <20 | 30 | 30 | N | 20 |
| TL086SS | 2.0 | N | N | 15 | 70 | 70 | 70 | N | 20 | 20 | 20 | N | 15 |
| TL087SS | 3.0 | N | N | 15 | 70 | 150 | 30 | N | N | 30 | 20 | N | 20 |
| TL088SS | 1.0 | N | N | 5 | 50 | 20 | 50 | 7 | <20 | 15 | 20 | N | 7 |
| TL089SS | 2.0 | N | N | 15 | 20 | 30 | 50 | N | N | 15 | 70 | N | 10 |
| TL090SS | 3.0 | N | N | 15 | 50 | 30 | 70 | N | N | 20 | 70 | N | 15 |
| TL091SS | 3.0 | N | N | 15 | 50 | 30 | 30 | N | N | 20 | 70 | N | 10 |

Table 4 - Spectrographic and Chemical Analysis of Stream Sediments from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Sn-ppm s | Sr-ppm s | V-ppm s | W-ppm s | Y-ppm s | Zn-ppm s | Zr-ppm s | Th-ppm s | Hg-ppm inst | As-ppm aa | Zn-ppm aa | Cd-ppm aa | Bi-ppm aa | Sb-ppm aa |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL046SS | N | 100 | 100 | N | 50 | N | 300 | N | .04 | 20 | 70 | .1 | N | N |
| TL047SS | N | 100 | 100 | N | 30 | N | 300 | N | .04 | 10 | 50 | .3 | N | N |
| TL048SS | N | 200 | 100 | N | 50 | N | 200 | N | .06 | 20 | 120 | N | N | N |
| TL049SS | 10 | <100 | 70 | N | 20 | N | 150 | N | .44 | 20 | 35 | N | N | N |
| TL050SS | N | 100 | 100 | N | 30 | N | 200 | N | .46 | 20 | 25 | N | N | N |
| TL051SS | N | 100 | 150 | N | 50 | N | 300 | N | .14 | <10 | 75 | .1 | N | 4 |
| TL052SS | N | <100 | 150 | N | 50 | N | 200 | N | .64 | N | 80 | .1 | N | 2 |
| TL053SS | N | 150 | 150 | N | 50 | N | 200 | N | .06 | 20 | 60 | N | N | 2 |
| TL054SS | N | <100 | 100 | N | 50 | N | 300 | N | .12 | 20 | 75 | N | N | 3 |
| TL055SS | N | 100 | 100 | N | 30 | N | 300 | N | .06 | <10 | 130 | N | N | 2 |
| TL056SS | N | 100 | 100 | N | 20 | N | 200 | N | .02 | <10 | 45 | N | N | 3 |
| TL057SS | N | 100 | 100 | N | 50 | N | 300 | N | .12 | <10 | 170 | N | N | 2 |
| TL058SS | N | <100 | 100 | N | 50 | N | 200 | N | .12 | <10 | 170 | N | N | 3 |
| TL059SS | N | 200 | 100 | N | 100 | N | 200 | N | .10 | <10 | 150 | N | N | 1 |
| TL060SS | N | <100 | 100 | N | 50 | N | 500 | N | .08 | <10 | 180 | .1 | N | 2 |
| TL061SS | N | <100 | 100 | N | 50 | N | 500 | N | .08 | N | 40 | N | N | N |
| TL062SS | N | 100 | 100 | N | 50 | N | 500 | N | .63 | N | 60 | N | N | N |
| TL063SS | N | <100 | 70 | N | 50 | N | 300 | N | .08 | N | 30 | N | N | N |
| TL064SS | N | 100 | 100 | N | 70 | N | 300 | N | .10 | <10 | 45 | N | N | N |
| TL065SS | N | <100 | 100 | N | 70 | N | 300 | N | .08 | <10 | 40 | N | N | N |
| TL066SS | N | <100 | 100 | N | 30 | N | 300 | N | .04 | N | 70 | N | N | N |
| TL067SS | N | <100 | 70 | N | 50 | N | 300 | N | .22 | N | 55 | N | N | N |
| TL068SS | N | 100 | 150 | N | 50 | N | 500 | N | .12 | 10 | 80 | N | N | N |
| TL069SS | N | <100 | 70 | N | 20 | N | 200 | N | .16 | <10 | 150 | N | N | N |
| TL070SS | N | 100 | 150 | N | 50 | N | 300 | N | .02 | 10 | 140 | N | N | N |
| TL071SS | N | 150 | 100 | N | 30 | 200 | 200 | N | .06 | <10 | 200 | N | N | N |
| TL072SS | N | 100 | 100 | N | 30 | N | 300 | N | .40 | N | 35 | N | N | N |
| TL073SS | N | <100 | 70 | N | 50 | N | 100 | N | .07 | <10 | 120 | .1 | N | N |
| TL074SS | N | <100 | 100 | N | 70 | N | 200 | N | .12 | 10 | 85 | N | N | N |
| TL075SS | N | <100 | 70 | N | 50 | N | 100 | N | .08 | 10 | 120 | .1 | N | N |
| TL076SS | N | <100 | 150 | N | 70 | N | 200 | N | .04 | <10 | 130 | .1 | N | N |
| TL077SS | N | <100 | 100 | N | 50 | N | 200 | N | .06 | N | 85 | N | N | N |
| TL078SS | N | 100 | 100 | N | 50 | N | 200 | N | .02 | <10 | 110 | N | N | N |
| TL080SS | N | 150 | 100 | N | 50 | N | 200 | N | .08 | <10 | 200 | N | N | N |
| TL081SS | N | 100 | 70 | N | 50 | N | 200 | N | .12 | <10 | 95 | N | N | 1 |
| TL082SS | N | 150 | 100 | N | 50 | N | 200 | N | .16 | 10 | 60 | N | N | 1 |
| TL083SS | N | <100 | 100 | N | 70 | N | 300 | N | .04 | 10 | 85 | N | N | N |
| TL084SS | N | 200 | 100 | N | 20 | N | 150 | N | .08 | N | 35 | .1 | N | N |
| TL085SS | N | 200 | 150 | N | 50 | N | 200 | N | .10 | N | 60 | .2 | N | N |
| TL086SS | N | <100 | 150 | N | 50 | N | 300 | N | .12 | N | 15 | .1 | N | N |
| TL087SS | N | 150 | 100 | N | 50 | N | 200 | N | .08 | N | 40 | .1 | N | N |
| TL088SS | N | 150 | 100 | N | 50 | N | 300 | N | .02 | N | 25 | .1 | N | N |
| TL089SS | N | <100 | 70 | N | 50 | N | 150 | N | .26 | 40 | 160 | 1.7 | N | 2 |
| TL090SS | N | 100 | 100 | N | 70 | 200 | 150 | N | .12 | <10 | 160 | .5 | N | N |
| TL091SS | N | <100 | 100 | N | 50 | N | 200 | N | .08 | <10 | 100 | .3 | N | 3 |

Table 4 - Spectrographic and Chemical Analysis of Stream Sediments from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Latitude | Longitude | Fe-pct. s | Mg-pct. s | Ca-pct. s | Ti-pct. s | Mn-ppm s | Ag-ppm s | As-ppm s | Au-ppm s | B-ppm s | Ba-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL092SS | 48 59 42 | 114 54 43 | 3.0 | 1.5 | .7 | .5 | 1,000 | N | N | N | 200 | 700 |
| TL093SS | 48 49 26 | 114 51 36 | 3.0 | 1.5 | 2.0 | .5 | 700 | <.5 | N | N | 100 | 1,500 |
| TL094SS | 48 59 21 | 114 57 54 | 5.0 | 1.5 | 1.5 | 1.0 | 1,000 | <.5 | N | N | 200 | 1,500 |
| TL095SS | 48 50 46 | 114 51 41 | 3.0 | 1.0 | 1.0 | .3 | 3,000 | .5 | N | N | 150 | 700 |

| Sample | Be-ppm s | Bi-ppm s | Cd-ppm s | Co-ppm s | Cr-ppm s | Cu-ppm s | La-ppm s | Mo-ppm s | Nb-ppm s | Ni-ppm s | Pb-ppm s | Sb-ppm s | Sc-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL092SS | 3.0 | N | N | 20 | 50 | 30 | 50 | N | N | 20 | 50 | N | 15 |
| TL093SS | 3.0 | N | N | 10 | 50 | 30 | 50 | N | N | 15 | 70 | N | 10 |
| TL094SS | 2.0 | N | N | 20 | 70 | 70 | 30 | N | <20 | 20 | 20 | N | 15 |
| TL095SS | 7.0 | N | N | 15 | 50 | 150 | 70 | N | N | 20 | 100 | N | 10 |

| Sample | Sn-ppm s | Sr-ppm s | V-ppm s | W-ppm s | Y-ppm s | Zn-ppm s | Zr-ppm s | Th-ppm s | Hg-ppm inst | As-ppm aa | Zn-ppm aa | Cd-ppm aa | Bi-ppm aa | Sb-ppm aa |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL092SS | N | <100 | 100 | N | 50 | N | 300 | N | .08 | <10 | 50 | N | N | N |
| TL093SS | N | 200 | 70 | N | 30 | N | 200 | N | .06 | N | 60 | N | N | N |
| TL094SS | N | 100 | 150 | N | 30 | N | 300 | N | .10 | N | 30 | N | N | N |
| TL095SS | N | 150 | 100 | N | 70 | N | 200 | N | .20 | N | 130 | 1.1 | N | N |

Table 5 - Spectrographic Analysis of Oxalic-acid-soluble iron-manganese oxide fractions of Stream Sediments from the Ten Lakes Wilderness Study Area, Lincoln County, Montana

[N, not detected at limit of determination (cf. tables 1 and 2). <, detected but less than the limit of determinatior >, greater than the listed value. ---, not determined]

| Sample | Latitude | Longitude | Fe-pct. s | Mg-pct. s | Ca-pct. s | Ti-pct. s | Mn-ppm s | Ag-ppm s | As-ppm s | Au-ppm s | B-ppm s | Ba-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL001X | 48 54 46 | 114 56 14 | 20 | 5.0 | 3.0 | .070 | 7,000 | 1.0 | N | N | 500 | 1,500 |
| TL002X | 48 53 42 | 114 55 48 | 20 | 5.0 | 2.0 | .050 | 7,000 | 5.0 | N | N | 100 | 2,000 |
| TL003X | 48 54 7 | 114 53 13 | 30 | 5.0 | 7.0 | .050 | >10,000 | 3.0 | N | N | 700 | 1,500 |
| TL004X | 48 54 11 | 114 54 49 | 20 | 3.0 | 7.0 | .070 | >10,000 | N | N | N | 150 | 3,000 |
| TL005X | 48 53 40 | 114 53 8 | 30 | 5.0 | 7.0 | .030 | >10,000 | N | N | N | 70 | 2,000 |
| TL006X | 48 52 51 | 114 52 59 | 30 | 7.0 | 3.0 | .020 | 7,000 | N | N | N | 700 | 1,000 |
| TL007X | 48 56 40 | 114 54 23 | 20 | 3.0 | 10.0 | .100 | >10,000 | N | N | N | 300 | 2,000 |
| TL008X | 48 56 42 | 114 54 20 | 30 | 7.0 | 7.0 | .070 | >10,000 | N | N | N | 1,000 | 2,000 |
| TL009X | 48 56 22 | 114 53 38 | 30 | 3.0 | 10.0 | .070 | >10,000 | N | N | N | 150 | 2,000 |
| TL010X | 48 56 28 | 114 52 56 | 30 | 3.0 | 10.0 | .070 | >10,000 | N | N | N | 300 | 2,000 |
| TL011X | 48 56 28 | 114 52 25 | 30 | 3.0 | 7.0 | .070 | >10,000 | N | N | N | 700 | 2,000 |
| TL012X | 48 57 4 | 114 52 10 | 30 | 3.0 | 15.0 | .070 | 10,000 | N | N | N | 100 | 10,000 |
| TL013X | 48 57 48 | 114 51 10 | 30 | 5.0 | 10.0 | .070 | >10,000 | N | N | N | 300 | 10,000 |
| TL014X | 48 59 44 | 114 41 53 | 30 | 5.0 | 5.0 | .070 | >10,000 | N | N | N | 300 | >10,000 |
| TL015X | 48 59 50 | 114 42 49 | 20 | 5.0 | 5.0 | .050 | >10,000 | N | N | N | 500 | >10,000 |
| TL016X | 48 59 45 | 114 43 56 | 20 | 5.0 | 5.0 | .100 | 3,000 | <1.0 | N | N | 100 | 10,000 |
| TL017X | 48 56 29 | 114 44 40 | 30 | 3.0 | 7.0 | .070 | >10,000 | N | N | N | 200 | >10,000 |
| TL018X | 48 55 48 | 114 45 5 | 30 | 5.0 | 7.0 | .070 | >10,000 | 1.5 | N | N | 200 | >10,000 |
| TL019X | 48 55 10 | 114 45 38 | 30 | 5.0 | 7.0 | .100 | >10,000 | N | N | N | 1,500 | >10,000 |
| TL020X | 48 54 38 | 114 46 11 | 20 | 3.0 | 7.0 | .050 | >10,000 | N | N | N | 1,000 | >10,000 |
| TL021X | 48 53 18 | 114 48 4 | 20 | 5.0 | 5.0 | .070 | 10,000 | N | N | N | 1,500 | 7,000 |
| TL022X | 48 52 43 | 114 48 23 | 20 | 5.0 | 7.0 | .050 | >10,000 | 2.0 | N | N | 1,000 | 5,000 |
| TL023X | 48 59 19 | 115 0 16 | 30 | 5.0 | 5.0 | .070 | 10,000 | N | N | N | 200 | >10,000 |
| TL024X | 48 59 7 | 115 0 15 | 30 | 3.0 | 3.0 | .150 | >10,000 | N | N | N | 100 | 5,000 |
| TL025X | 48 58 48 | 115 0 5 | 30 | 3.0 | 5.0 | .100 | 10,000 | N | N | N | 70 | 3,000 |
| TL026X | 48 58 34 | 115 0 1 | 30 | 5.0 | 5.0 | .050 | >10,000 | N | N | N | 150 | 7,000 |
| TL027X | 48 58 10 | 114 59 52 | 20 | 2.0 | 7.0 | .070 | >10,000 | N | N | N | 100 | 10,000 |
| TL028X | 48 57 53 | 114 59 48 | 20 | 5.0 | 5.0 | .070 | 7,000 | N | N | N | 1,000 | 10,000 |
| TL029X | 48 57 38 | 114 59 55 | 30 | 5.0 | 5.0 | .100 | >10,000 | N | N | N | 150 | 3,000 |
| TL030X | 48 57 23 | 114 59 38 | 30 | 5.0 | 5.0 | .070 | 10,000 | N | N | N | 1,500 | 2,000 |
| TL031X | 48 57 9 | 114 59 43 | 20 | 5.0 | 3.0 | .150 | >10,000 | N | N | N | 150 | 5,000 |
| TL032X | 48 59 31 | 114 52 38 | 30 | 7.0 | 3.0 | .050 | 10,000 | N | N | N | 300 | 2,000 |
| TL033X | 48 50 56 | 114 52 56 | 20 | 5.0 | 5.0 | .070 | >10,000 | N | N | N | 500 | 3,000 |
| TL034X | 48 51 21 | 114 53 21 | 30 | 3.0 | 7.0 | .030 | >10,000 | N | N | N | 200 | 2,000 |
| TL035X | 48 52 42 | 114 52 54 | 30 | 5.0 | 5.0 | .020 | 10,000 | N | N | N | 200 | 2,000 |
| TL036X | 48 52 38 | 114 52 56 | 20 | 3.0 | 10.0 | .070 | >10,000 | N | N | N | 300 | 2,000 |
| TL037X | 48 55 40 | 114 49 46 | 20 | 2.0 | 10.0 | .050 | >10,000 | N | N | N | 200 | 5,000 |
| TL038X | 48 55 49 | 114 49 29 | 30 | 3.0 | 7.0 | .030 | >10,000 | N | N | N | 300 | 10,000 |
| TL039X | 48 55 48 | 114 48 24 | 30 | 5.0 | 7.0 | .070 | >10,000 | N | N | N | 300 | >10,000 |
| TL040X | 48 55 25 | 114 49 38 | 15 | 2.0 | 10.0 | .050 | >10,000 | 7.0 | N | N | 150 | 10,000 |
| TL041X | 48 55 3 | 114 47 36 | 20 | .7 | 1.0 | .300 | 7,000 | N | N | N | 50 | 2,000 |
| TL042X | 48 55 23 | 114 47 51 | 20 | 5.0 | 5.0 | .050 | >10,000 | 1.0 | N | N | 100 | >10,000 |
| TL043X | 48 54 21 | 114 50 40 | 30 | 5.0 | 10.0 | .070 | >10,000 | N | N | N | 200 | 1,500 |
| TL044X | 48 54 24 | 114 50 34 | 30 | 5.0 | 7.0 | .050 | >10,000 | N | N | N | 1,000 | 1,500 |
| TL045X | 48 53 28 | 114 49 55 | 20 | 5.0 | 10.0 | .050 | 10,000 | N | N | N | 150 | 1,500 |

Table 5 - Spectrographic Analysis of Oxalic-acid-soluble iron-manganese oxide fractions of Stream Sediments from the Ten Lakes Wilderness Study Area, Lincoln County, Montana

[N, not detected at limit of determination (cf. tables 1 and 2). <, detected but less than the limit of determination. >, greater than the listed value. ---, not determined]

| Sample | Be-ppm s | Bi-ppm s | Cd-ppm s | Co-ppm s | Cr-ppm s | Cu-ppm s | La-ppm s | Mo-ppm s | Nb-ppm s | Ni-ppm s | Pb-ppm s | Sb-ppm s | Sc-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL001X | 10 | N | N | 100 | 300 | 200 | <50 | N | N | 70 | 50 | N | <10 |
| TL002X | 10 | N | N | 100 | 150 | 500 | N | N | N | 150 | 30 | N | <10 |
| TL003X | 10 | N | N | 150 | 100 | 300 | <50 | N | N | 150 | 200 | N | <10 |
| TL004X | 10 | N | N | 150 | 100 | 200 | N | N | N | 100 | 200 | N | <10 |
| TL005X | 15 | N | N | 200 | 150 | 500 | 200 | N | N | 150 | 50 | N | 15 |
| TL006X | 10 | N | N | 150 | 150 | 200 | <50 | N | N | 150 | 20 | N | N |
| TL007X | 20 | N | N | 150 | 150 | 300 | 70 | N | N | 100 | 200 | N | 10 |
| TL008X | 15 | N | N | 200 | 200 | 700 | 50 | N | N | 150 | 150 | N | <10 |
| TL009X | 15 | N | N | 100 | 200 | 200 | 150 | N | N | 100 | 700 | N | <10 |
| TL010X | 20 | N | N | 150 | 150 | 150 | 100 | N | N | 100 | 300 | N | 10 |
| TL011X | 10 | N | N | 150 | 200 | 700 | 50 | N | N | 150 | 1,000 | N | 10 |
| TL012X | 30 | N | N | 150 | 200 | 200 | <50 | N | N | 70 | 300 | N | 10 |
| TL013X | 20 | N | N | 150 | 200 | 300 | 50 | 15 | N | 70 | 500 | N | <10 |
| TL014X | 70 | N | N | 150 | 300 | 700 | <50 | N | N | 200 | 300 | N | <10 |
| TL015X | 50 | N | N | 150 | 300 | 1,000 | N | N | N | 150 | 300 | N | <10 |
| TL016X | 30 | N | N | 70 | 200 | 200 | 100 | N | N | 150 | 300 | N | <10 |
| TL017X | 50 | N | N | 200 | 300 | 700 | 50 | N | N | 150 | 1,000 | N | 10 |
| TL018X | 50 | N | N | 200 | 200 | 700 | <50 | N | N | 200 | 500 | N | <10 |
| TL019X | 70 | N | N | 200 | 200 | 700 | N | N | N | 200 | 300 | N | <10 |
| TL020X | 15 | N | N | 100 | 300 | 150 | N | N | N | 100 | 100 | N | <10 |
| TL021X | 10 | N | N | 150 | 150 | 500 | <50 | N | N | 150 | 100 | N | <10 |
| TL022X | 15 | N | N | 150 | 200 | 500 | <50 | N | N | 100 | 1,000 | N | <10 |
| TL023X | 15 | N | N | 200 | 200 | 700 | <50 | N | N | 150 | 100 | N | <10 |
| TL024X | 15 | N | N | 200 | 200 | 500 | 70 | N | N | 200 | 1,500 | N | 10 |
| TL025X | 15 | N | N | 200 | 200 | 700 | 50 | N | N | 200 | 200 | N | 15 |
| TL026X | 10 | N | N | 150 | 200 | 1,000 | N | N | N | 100 | 70 | N | <10 |
| TL027X | 10 | N | N | 150 | 100 | 500 | <50 | 10 | N | 150 | 100 | N | 10 |
| TL028X | 15 | N | N | 150 | 300 | 1,000 | N | N | N | 100 | 70 | N | <10 |
| TL029X | 15 | N | N | 200 | 200 | 500 | 100 | N | N | 200 | 500 | N | 10 |
| TL030X | 15 | N | N | 200 | 200 | 700 | N | N | N | 200 | 100 | N | 10 |
| TL031X | 15 | N | N | 100 | 200 | 200 | <50 | N | N | 150 | 200 | N | 10 |
| TL032X | 10 | N | N | 150 | 200 | 300 | <50 | N | N | 150 | 70 | N | <10 |
| TL033X | 10 | N | N | 100 | 150 | 300 | <50 | N | N | 150 | 100 | N | <10 |
| TL034X | 10 | N | N | 200 | 100 | 300 | <50 | N | N | 200 | 300 | N | 10 |
| TL035X | 15 | N | N | 200 | 100 | 500 | <50 | N | N | 200 | 30 | N | <10 |
| TL036X | 10 | N | N | 150 | 300 | 200 | 50 | N | N | 150 | 200 | N | <10 |
| TL037X | 15 | N | N | 150 | 150 | 700 | N | N | N | 100 | 300 | N | <10 |
| TL038X | 15 | N | N | 100 | 150 | 500 | 100 | 20 | N | 70 | 500 | N | <10 |
| TL039X | 20 | N | N | 300 | 300 | 700 | N | N | N | 200 | 1,000 | N | <10 |
| TL040X | 20 | N | N | 200 | 300 | 500 | 50 | N | N | 150 | 1,500 | N | 10 |
| TL041X | 15 | N | N | 70 | 100 | 50 | N | N | N | 70 | 100 | N | <10 |
| TL042X | 10 | N | N | 70 | 300 | 200 | N | N | N | 70 | 150 | N | <10 |
| TL043X | 15 | N | N | 150 | 150 | 300 | N | N | N | 200 | 300 | N | 10 |
| TL044X | 10 | N | N | 150 | 150 | 500 | N | N | N | 150 | 300 | N | 10 |
| TL045X | 10 | N | N | 150 | 150 | 300 | N | N | N | 150 | 300 | N | 10 |

Table 5 - Spectrographic Analysis of Oxalic-acid-soluble iron-manganese oxide fractions of Stream Sediments from the Ten Lakes Wilderness Study Area, Lincoln County, Montana

[N, not detected at limit of determination (cf. tables 1 and 2). < , detected but less than the limit of determination. > , greater than the listed value. ---, not determined]

| Sample | Sn-ppm s | Sr-ppm s | V-ppm s | W-ppm s | Y-ppm s | Zn-ppm s | Zr-ppm s | Th-ppm s |
|---|---|---|---|---|---|---|---|---|
| TL001X | N | <200 | 150 | N | N | 500 | 70 | N |
| TL002X | N | N | 200 | N | N | 700 | 100 | N |
| TL003X | N | <200 | 100 | N | N | 1,000 | 100 | N |
| TL004X | N | <200 | 200 | N | N | 700 | 150 | N |
| TL005X | N | <200 | 150 | N | 500 | 700 | 500 | N |
| TL006X | N | <200 | 100 | N | N | 700 | 20 | N |
| TL007X | N | 200 | 200 | N | 70 | 1,500 | 150 | N |
| TL008X | N | <200 | 300 | N | N | 1,000 | 100 | N |
| TL009X | N | <200 | 150 | N | 150 | 1,000 | 200 | N |
| TL010X | N | 200 | 200 | N | 100 | 700 | 500 | N |
| TL011X | N | <200 | 150 | N | 100 | 1,000 | 100 | N |
| TL012X | N | 200 | 200 | N | 20 | N | 100 | N |
| TL013X | N | 700 | 300 | N | 70 | 500 | 150 | N |
| TL014X | N | <200 | 200 | N | 50 | 1,000 | 150 | N |
| TL015X | N | 200 | 150 | N | 30 | <500 | 100 | N |
| TL016X | N | <200 | 150 | N | 70 | 500 | 100 | N |
| TL017X | N | N | 300 | N | 200 | 1,000 | 150 | N |
| TL018X | N | <200 | 150 | N | 50 | 700 | 200 | N |
| TL019X | N | 300 | 200 | N | <20 | 1,000 | 150 | N |
| TL020X | N | <200 | 200 | N | N | 500 | 100 | N |
| TL021X | N | <200 | 200 | N | N | 500 | 150 | N |
| TL022X | N | 200 | 200 | N | N | 500 | 150 | N |
| TL023X | N | 200 | 200 | N | N | N | 200 | N |
| TL024X | N | <200 | 300 | N | 100 | 700 | 300 | N |
| TL025X | N | N | 500 | N | 30 | 700 | 150 | N |
| TL026X | N | 200 | 300 | N | N | <500 | 100 | N |
| TL027X | N | 200 | 200 | N | <20 | 2,000 | 200 | N |
| TL028X | N | 300 | 300 | N | N | N | 150 | N |
| TL029X | N | N | 500 | N | 150 | 1,000 | 150 | N |
| TL030X | N | N | 300 | N | <20 | 700 | 150 | N |
| TL031X | N | <200 | 200 | N | 20 | 1,000 | 150 | N |
| TL032X | N | 200 | 200 | N | N | 1,000 | 150 | N |
| TL033X | N | 200 | 200 | N | N | 700 | 150 | N |
| TL034X | N | N | 300 | N | N | 1,500 | 150 | N |
| TL035X | N | N | 150 | N | N | 1,000 | 70 | N |
| TL036X | N | 200 | 100 | N | 50 | <500 | 300 | N |
| TL037X | N | <200 | 150 | N | 20 | 1,000 | 150 | N |
| TL038X | N | 300 | 150 | N | 30 | 1,000 | 100 | N |
| TL039X | N | N | 300 | N | 20 | 1,500 | 150 | N |
| TL040X | N | 200 | 200 | N | 150 | 1,000 | 200 | N |
| TL041X | N | <200 | 200 | N | 20 | N | 500 | N |
| TL042X | N | 200 | 200 | N | <20 | 500 | 100 | N |
| TL043X | N | <200 | 100 | N | 20 | 1,500 | 200 | N |
| TL044X | N | <200 | 100 | N | 20 | 1,000 | 150 | N |
| TL045X | N | <200 | 100 | N | <20 | 1,000 | 200 | N |

Table 5 - Spectrographic Analysis of Oxalic-acid-soluble iron-manganese oxide fractions of Stream Sediments from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Latitude | Longitude | Fe-pct. s | Mg-pct. s | Ca-pct. s | Ti-pct. s | Mn-ppm s | Ag-ppm s | As-ppm s | Au-ppm s | B-ppm s | Ba-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL046X | 48 53 19 | 114 49 36 | 30 | 3.0 | 10.0 | .100 | >10,000 | N | N | N | 100 | 2,000 |
| TL047X | 48 56 54 | 114 59 30 | 30 | 3.0 | 2.0 | .100 | 10,000 | N | N | N | 300 | 3,000 |
| TL048X | 48 56 55 | 114 58 43 | 20 | 2.0 | 7.0 | .200 | 3,000 | N | N | N | 150 | 2,000 |
| TL049X | 48 56 55 | 114 57 49 | 30 | 5.0 | 5.0 | .050 | 10,000 | N | N | N | 300 | 5,000 |
| TL050X | 48 56 55 | 114 57 40 | 30 | 5.0 | 5.0 | .015 | >10,000 | <1.0 | N | N | 500 | 7,000 |
| TL051X | 48 56 51 | 114 57 31 | 30 | 7.0 | 5.0 | .020 | >10,000 | N | N | N | 500 | 7,000 |
| TL052X | 48 58 0 | 114 53 31 | 30 | 5.0 | 7.0 | .050 | >10,000 | N | N | N | 200 | 2,000 |
| TL053X | 48 57 55 | 114 53 29 | 20 | 5.0 | 5.0 | .150 | 10,000 | N | N | N | 150 | 1,500 |
| TL054X | 48 58 9 | 114 53 18 | 30 | 5.0 | 7.0 | .050 | >10,000 | N | N | N | 150 | 1,500 |
| TL055X | 48 58 30 | 114 52 0 | 30 | 7.0 | 5.0 | .030 | >10,000 | N | N | N | 1,000 | 7,000 |
| TL056X | 48 58 47 | 114 51 7 | 30 | 5.0 | 5.0 | .030 | 10,000 | N | N | N | 70 | 5,000 |
| TL057X | 48 59 46 | 114 49 32 | 20 | 7.0 | 7.0 | .020 | >10,000 | N | N | N | 300 | 3,000 |
| TL058X | 48 59 16 | 114 50 7 | 30 | 5.0 | 7.0 | .020 | >10,000 | N | N | N | 200 | 5,000 |
| TL059X | 48 59 31 | 114 49 52 | 15 | 2.0 | 7.0 | .030 | >10,000 | N | N | N | 300 | 2,000 |
| TL060X | 48 57 22 | 114 49 46 | 30 | 5.0 | 7.0 | .300 | >10,000 | N | N | N | 1,500 | 10,000 |
| TL061X | 48 57 26 | 114 49 39 | 30 | 5.0 | 7.0 | .200 | >10,000 | N | N | N | 300 | >10,000 |
| TL062X | 48 58 36 | 114 41 29 | 30 | 5.0 | 7.0 | .150 | >10,000 | N | N | N | 200 | >10,000 |
| TL063X | 48 58 55 | 114 44 1 | 20 | 5.0 | 5.0 | .050 | >10,000 | N | N | N | 200 | >10,000 |
| TL064X | 48 58 49 | 114 44 7 | 30 | 5.0 | 7.0 | .070 | >10,000 | N | N | N | 150 | >10,000 |
| TL065X | 48 57 46 | 114 44 8 | 30 | 5.0 | 7.0 | .100 | >10,000 | N | N | N | 150 | >10,000 |
| TL066X | 48 56 45 | 114 43 9 | 20 | 3.0 | 7.0 | .100 | >10,000 | N | N | N | 300 | >10,000 |
| TL067X | 48 56 48 | 114 43 6 | 30 | 7.0 | 7.0 | .100 | >10,000 | N | N | N | 200 | 10,000 |
| TL068X | 48 55 11 | 114 57 25 | 30 | 5.0 | 5.0 | .150 | 10,000 | N | N | N | 1,000 | 2,000 |
| TL069X | 48 55 38 | 114 58 18 | 30 | 7.0 | 5.0 | .150 | 10,000 | N | N | N | 1,500 | 2,000 |
| TL070X | 48 55 46 | 114 58 41 | 30 | 3.0 | 7.0 | .070 | >10,000 | N | N | N | 70 | 3,000 |
| TL071X | 48 56 21 | 114 59 23 | 20 | 2.0 | 5.0 | .100 | 7,000 | N | N | N | 70 | 5,000 |
| TL072X | 48 56 42 | 114 58 44 | 20 | 2.0 | 3.0 | .100 | 5,000 | N | N | N | 30 | 2,000 |
| TL073X | 48 55 16 | 114 54 39 | 20 | 5.0 | 7.0 | .070 | >10,000 | N | N | N | 1,000 | 1,000 |
| TL074X | 48 55 38 | 114 54 34 | 20 | 5.0 | 7.0 | .050 | 10,000 | N | N | N | 200 | 1,000 |
| TL075X | 48 55 40 | 114 54 42 | 30 | 5.0 | 7.0 | .070 | >10,000 | N | N | N | 1,000 | 2,000 |
| TL076X | 48 55 40 | 114 55 9 | 30 | 5.0 | 7.0 | .070 | >10,000 | N | N | N | 500 | 2,000 |
| TL077X | 48 54 40 | 114 55 9 | 30 | 5.0 | 10.0 | .020 | 7,000 | N | N | N | 300 | 5,000 |
| TL078X | 48 50 43 | 114 51 9 | 20 | 3.0 | 5.0 | .100 | >10,000 | N | N | N | 150 | 3,000 |
| TL080X | 48 50 54 | 114 50 6 | 30 | 3.0 | 5.0 | .100 | >10,000 | N | N | N | 100 | 5,000 |
| TL081X | 48 51 21 | 114 49 54 | 30 | 15.0 | 3.0 | .015 | 10,000 | N | N | N | 300 | 3,000 |
| TL082X | 48 51 37 | 114 49 37 | 20 | 5.0 | 10.0 | .300 | >10,000 | N | N | N | 2,000 | 7,000 |
| TL083X | 48 51 45 | 114 48 34 | 30 | 10.0 | 1.0 | .030 | 10,000 | <1.0 | N | N | 150 | 2,000 |
| TL084X | 48 58 33 | 114 57 4 | 15 | 3.0 | 10.0 | .070 | >10,000 | N | N | N | 150 | 10,000 |
| TL085X | 48 58 6 | 114 57 16 | 15 | 2.0 | 10.0 | .070 | >10,000 | N | N | N | 300 | 10,000 |
| TL086X | 48 58 13 | 114 57 18 | 30 | 2.0 | 5.0 | .150 | >10,000 | N | N | N | 100 | 10,000 |
| TL087X | 48 58 23 | 114 57 57 | 20 | 3.0 | 7.0 | .200 | >10,000 | N | N | N | 1,500 | >10,000 |
| TL088X | 48 58 41 | 114 58 23 | 30 | 1.5 | 1.5 | .200 | 10,000 | 1.5 | N | N | 150 | 2,000 |
| TL089X | 48 59 8 | 114 53 11 | 30 | 5.0 | 7.0 | .200 | >10,000 | N | 2,000 | N | 500 | 2,000 |
| TL090X | 48 59 14 | 114 53 55 | 20 | 5.0 | 7.0 | .150 | >10,000 | N | N | N | 150 | 1,500 |
| TL091X | 48 59 37 | 114 54 12 | 30 | 3.0 | 7.0 | .200 | >10,000 | N | N | N | 100 | 3,000 |

Table 5 - Spectrographic Analysis of Oxalic-acid-soluble iron-manganese oxide fractions of Stream Sediments from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Be-ppm s | Bi-ppm s | Cd-ppm s | Co-ppm s | Cr-ppm s | Cu-ppm s | La-ppm s | Mo-ppm s | Nb-ppm s | Ni-ppm s | Pb-ppm s | Sb-ppm s | Sc-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL046X | 15 | N | N | 150 | 100 | 500 | 100 | N | V | 100 | 500 | N | 10 |
| TL047X | 10 | N | N | 200 | 100 | 500 | N | N | V | 150 | 20 | N | <10 |
| TL048X | 15 | N | N | 100 | 100 | 300 | 150 | N | V | 150 | 500 | N | 10 |
| TL049X | 15 | N | N | 300 | 300 | 2,000 | <50 | N | V | 150 | 100 | N | <10 |
| TL050X | 15 | N | N | 200 | 300 | 1,000 | <50 | N | V | 100 | 50 | N | <10 |
| TL051X | 20 | N | N | 500 | 300 | 5,000 | <50 | N | V | 150 | 100 | N | <10 |
| TL052X | 20 | N | N | 200 | 200 | 700 | 50 | N | V | 100 | 200 | N | 10 |
| TL053X | 20 | N | N | 150 | 200 | 500 | <50 | N | V | 100 | 150 | N | 10 |
| TL054X | 20 | N | N | 200 | 150 | 700 | 50 | N | V | 150 | 300 | N | <10 |
| TL055X | 50 | N | N | 150 | 300 | 700 | <50 | 15 | V | 100 | 200 | N | <10 |
| TL056X | 15 | N | N | 150 | 200 | 500 | <50 | N | V | 150 | 700 | N | 10 |
| TL057X | 10 | N | N | 150 | 200 | 300 | <50 | N | V | 150 | 200 | N | <10 |
| TL058X | 15 | N | N | 150 | 200 | 700 | 50 | N | V | 100 | 300 | N | 10 |
| TL059X | 15 | N | N | 200 | 200 | 300 | 100 | N | V | 100 | 100 | N | 15 |
| TL060X | 20 | N | N | 70 | 200 | 700 | 200 | 30 | V | 70 | 700 | N | 10 |
| TL061X | 20 | N | N | 100 | 300 | 700 | 70 | N | V | 100 | 200 | N | 10 |
| TL062X | 20 | N | N | 150 | 300 | 700 | 50 | 10 | V | 100 | 300 | N | 10 |
| TL063X | 70 | N | N | 100 | 500 | 1,000 | <50 | N | V | 150 | 500 | N | <10 |
| TL064X | 70 | N | N | 150 | 300 | 700 | 70 | <10 | V | 150 | 700 | N | <10 |
| TL065X | 70 | N | N | 200 | 300 | 700 | 70 | 10 | V | 100 | 500 | N | 10 |
| TL066X | 100 | N | N | 200 | 200 | 500 | 70 | N | V | 150 | 1,000 | N | 10 |
| TL067X | 50 | N | N | 200 | 300 | 700 | <50 | N | V | 150 | 300 | N | 10 |
| TL068X | 15 | N | N | 200 | 200 | 700 | <50 | N | V | 150 | 300 | N | 10 |
| TL069X | 10 | N | N | 150 | 200 | 700 | <50 | N | V | 150 | 200 | N | <10 |
| TL070X | 15 | N | N | 150 | 150 | 500 | 150 | N | V | 150 | 300 | N | 10 |
| TL071X | 10 | N | N | 70 | 150 | 200 | 70 | N | V | 150 | 300 | N | 10 |
| TL072X | 15 | N | N | 100 | 100 | 200 | 100 | N | V | 150 | 300 | N | <10 |
| TL073X | 15 | N | N | 200 | 150 | 700 | <50 | N | V | 150 | 150 | N | <10 |
| TL074X | 15 | N | N | 200 | 150 | 1,000 | <50 | N | V | 150 | 300 | N | <10 |
| TL075X | 15 | N | N | 200 | 300 | 700 | <50 | N | V | 150 | 200 | N | 10 |
| TL076X | 10 | N | N | 200 | 150 | 1,000 | 100 | N | V | 150 | 2,000 | N | 10 |
| TL077X | 15 | N | N | 200 | 150 | 500 | 50 | N | V | 200 | 2,000 | N | 10 |
| TL078X | 15 | N | N | 150 | 150 | 200 | <50 | N | V | 100 | 200 | N | <10 |
| TL080X | 15 | N | N | 150 | 100 | 500 | 100 | N | V | 100 | 1,500 | N | 10 |
| TL081X | 10 | N | N | 200 | 100 | 700 | <50 | N | V | 150 | 50 | N | N |
| TL082X | 15 | N | N | 100 | 150 | 700 | 50 | N | V | 100 | 300 | N | 10 |
| TL083X | 15 | N | N | 200 | 100 | 700 | <50 | N | V | 100 | 30 | N | N |
| TL084X | 15 | N | N | 200 | 150 | 1,000 | <50 | N | V | 70 | 70 | N | 10 |
| TL085X | 20 | N | N | 150 | 150 | 500 | 50 | N | V | 70 | 50 | N | 10 |
| TL086X | 20 | N | N | 200 | 200 | 1,000 | 50 | N | V | 200 | 1,000 | N | 20 |
| TL087X | 20 | N | N | 150 | 300 | 1,000 | 50 | N | V | 150 | 150 | N | 15 |
| TL088X | 7 | N | N | 70 | 200 | 300 | <50 | N | 50 | 100 | 500 | N | <10 |
| TL089X | 10 | N | N | 200 | 300 | 1,000 | <50 | 20 | V | 200 | 1,000 | N | <10 |
| TL090X | 15 | N | N | 150 | 150 | 500 | 50 | 20 | V | 100 | 200 | N | 10 |
| TL091X | 20 | N | N | 150 | 200 | 700 | 70 | N | V | 100 | 500 | N | 10 |

Table 5 - Spectrographic Analysis of Oxalic-acid-soluble iron-manganese oxide fractions of Stream Sediments from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Sn-ppm s | Sr-ppm s | V-ppm s | W-ppm s | Y-ppm s | Zn-ppm s | Zr-ppm s | Th-ppm s |
|---|---|---|---|---|---|---|---|---|
| TL046x | N | <200 | 150 | N | 200 | 700 | 500 | N |
| TL047x | N | <200 | 300 | N | N | 700 | 150 | N |
| TL048x | N | 200 | 100 | N | 100 | 500 | 500 | N |
| TL049x | N | 500 | 200 | N | N | 500 | 50 | N |
| TL050x | N | 300 | 300 | N | N | <500 | 20 | N |
| TL051x | N | 300 | 300 | N | N | <500 | 50 | N |
| TL052x | N | <200 | 200 | N | 20 | 1,500 | 150 | N |
| TL053x | N | 200 | 200 | N | <20 | 1,000 | 200 | N |
| TL054x | N | <200 | 150 | N | 20 | 1,000 | 150 | N |
| TL055x | N | 500 | 200 | N | <20 | 700 | 100 | N |
| TL056x | 100 | 200 | 150 | N | 20 | 1,500 | 200 | N |
| TL057x | N | N | 100 | N | N | 500 | 100 | N |
| TL058x | N | <200 | 150 | N | 20 | 1,500 | 100 | N |
| TL059x | N | <200 | 70 | N | 300 | N | 300 | N |
| TL060x | N | 200 | 150 | N | 200 | 1,000 | 150 | N |
| TL061x | N | <200 | 200 | N | 100 | 500 | 200 | N |
| TL062x | N | 300 | 300 | N | 70 | 700 | 200 | N |
| TL063x | N | 200 | 150 | N | 50 | 700 | 100 | N |
| TL064x | N | 300 | 200 | N | 70 | 700 | 150 | N |
| TL065x | N | 200 | 200 | N | 150 | 700 | 200 | N |
| TL066x | N | 300 | 200 | N | 150 | 2,000 | 150 | N |
| TL067x | N | <200 | 200 | N | 20 | 1,500 | 150 | N |
| TL068x | N | <200 | 200 | N | <20 | 1,000 | 150 | N |
| TL069x | N | 200 | 150 | N | <20 | 1,500 | 70 | N |
| TL070x | N | 200 | 200 | N | 200 | 1,000 | 200 | N |
| TL071x | N | 300 | 150 | N | 50 | 1,500 | 300 | N |
| TL072x | N | <200 | 200 | N | 150 | 1,000 | 200 | N |
| TL073x | N | <200 | 200 | N | 20 | 2,000 | 100 | N |
| TL074x | N | N | 150 | N | <20 | 1,500 | 100 | N |
| TL075x | N | 200 | 200 | N | <20 | 1,500 | 100 | N |
| TL076x | N | <200 | 150 | N | 150 | 2,000 | 200 | N |
| TL077x | N | 200 | 100 | N | 100 | 1,500 | 300 | N |
| TL078x | N | <200 | 200 | N | <20 | 1,000 | 100 | N |
| TL080x | N | 200 | 200 | N | 100 | 1,500 | 500 | N |
| TL081x | N | <200 | 100 | N | <20 | 1,500 | 30 | N |
| TL082x | N | 200 | 100 | N | 20 | 500 | 150 | N |
| TL083x | N | N | 100 | N | <20 | 700 | 30 | N |
| TL084x | N | 500 | 200 | N | 20 | N | 200 | N |
| TL085x | N | 500 | 300 | N | 50 | N | 200 | N |
| TL086x | N | <200 | 200 | N | 100 | N | 300 | N |
| TL087x | N | <200 | 200 | N | 30 | N | 500 | N |
| TL088x | N | <200 | 700 | N | 30 | 500 | 200 | N |
| TL089x | N | 200 | 200 | N | <20 | 2,000 | 300 | N |
| TL090x | N | N | 200 | N | 50 | 2,000 | 200 | N |
| TL091x | N | <200 | 200 | N | 100 | 1,000 | 200 | N |

Table 5 - Spectrographic Analysis of Oxalic-acid-soluble iron-manganese oxide fractions of Stream Sediments from the Ten Lakes Wilderness Study Area, Lincoln County, Montana--continued

| Sample | Latitude | Longitude | Fe-pct. s | Mg-pct. s | Ca-pct. s | Ti-pct. s | Mn-ppm s | Ag-ppm s | As-ppm s | Au-ppm s | B-ppm s | Ba-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL092X | 48 59 42 | 114 54 43 | 20 | 5.0 | 5.0 | .070 | >10,000 | N | N | N | 200 | 7,000 |
| TL093X | 48 49 26 | 114 51 36 | 10 | 20.0 | 2.0 | .020 | 5,000 | N | N | N | 500 | 5,000 |
| TL094X | 48 59 21 | 114 57 54 | 20 | 3.0 | 5.0 | .100 | 7,000 | N | N | N | 200 | 7,000 |
| TL095X | 48 50 46 | 114 51 41 | 15 | 1.5 | 5.0 | .050 | >10,000 | N | N | N | 150 | 3,000 |

| Sample | Be-ppm s | Bi-ppm s | Cd-ppm s | Co-ppm s | Cr-ppm s | Cu-ppm s | La-ppm s | Mo-ppm s | Nb-ppm s | Ni-ppm s | Pb-ppm s | Sb-ppm s | Sc-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TL092X | 15 | N | N | 200 | 200 | 700 | <50 | N | N | 100 | 200 | N | <10 |
| TL093X | N | N | N | 70 | 300 | 100 | N | N | N | 100 | 20 | N | <10 |
| TL094X | 10 | N | N | 100 | 300 | 300 | <50 | N | N | 50 | 70 | N | 10 |
| TL095X | 50 | N | N | 200 | 100 | 500 | 150 | N | N | 100 | 300 | N | 10 |

| Sample | Sn-ppm s | Sr-ppm s | V-ppm s | W-ppm s | Y-ppm s | Zn-ppm s | Zr-ppm s | Th-ppm s |
|---|---|---|---|---|---|---|---|---|
| TL092X | N | <200 | 150 | N | 20 | 700 | 150 | N |
| TL093X | N | 200 | 50 | N | <20 | N | 20 | N |
| TL094X | N | 500 | 200 | N | <20 | N | 70 | N |
| TL095X | N | <200 | 200 | N | 150 | 1,500 | 70 | N |