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Analyses and descriptions of geochemical samples
from the
Big Branch and Peru Peak Wildernesses
and the
Wilder Mountain Roadless Area,
Rutland and Bennington Counties,
Vermont

by

D.L. Detra¹, J.D. Peper², D.L. Kelley¹, Tom Huyck¹,
M.A. Pokorny¹, L.S. Laudon¹, R.J. Fairfield¹, and E.P. Welsch¹

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¹ Denver, Colorado

² Reston, Virginia

Contents

Abstract.....	1
Introduction.....	1
Sampling Procedures.....	2
Analytical Techniques.....	3
References Cited.....	3

Tables

Table 1. Description of rock samples.....	4
2. Analyses of stream-sediment, soil, and rock samples.....	12

Abstract

This report presents the numerical results of semiquantitative spectrographic analyses for 31 elements in 81 organic-rich stream-sediment samples, 23 soil samples, and 194 rock samples from the Big Branch and Peru Peak Wildernesses and the Wilder Mountain Roadless Area, Green Mountain National Forest, Vermont. Atomic-absorption analyses for zinc and gold in all samples are also provided, as corrected May, 1986. Localities for all samples are given in Universal Transverse Mercator (UTM) coordinates. Brief descriptions of the rocks sampled are given. The rock types and rock units sampled include: quartzite, feldspathic quartzite, and schist of the Cambrian Cheshire Quartzite; quartzite, meta-conglomerate, feldspathic quartzite, fine-grained gneiss, and schist of the Late Proterozoic to Early Cambrian Dalton Formation. Quartzite, meta-quartz conglomerate with schist matrix, garnet-biotite schist, chlorite-amphibole schist, coarse-grained biotite gneiss, calc-silicate gneiss, marble, amphibolite, granite gneiss, granite pegmatite, and vein quartz of the Middle Proterozoic Mount Holly Complex were also sampled.

Introduction

The analyses reported here are on samples collected by J.D. Peper, E.D. Peper, and C.M. Phipps, in August 1984, and by J.D. Peper, D.M. Dimichelis, Debbie Kay, and G.R. Robinson, Jr., in September, 1984, as well as follow-up samples collected by J.D. Peper and Ricardo Lopez in October 1985. The samples were collected as part of a program to assess the mineral resource potential of several U.S. Department of Agriculture (USDA) Forest Service-managed areas that were considered for inclusion in land designated as Wilderness. Topographic maps showing the detailed location of the samples are given by Peper and Downie (in-press), along with an interpretation of the analytical results in the context of the local geology, regional ore-forming processes, and ore deposit models.

The Wilder Mountain Roadless Area, and the Griffith Lake Roadless Area to the south of it, were classified as non-wilderness during the Second Roadless Area Review and Evaluation (RARE II) conducted by the USDA Forest Service, January, 1979. Land in the Wilder Mountain Roadless Area was included in an area of land designated as the White Rocks National Recreation Area by the U.S. Congress (Public Law 98-322, June 19, 1984). This same law created the Big Branch and Peru Peak Wildernesses, formed mostly from land formerly designated as the Griffith Lake Roadless Area.

Sampling Procedures

The studied areas are mostly upland-centered areas, glaciated plateau-like areas with numerous bogs filling small basins spread along glacially deranged drainage pathways. The areas were sampled by collecting material from the numerous small streams traversing the steeper slopes bordering the plateau-like uplands. The streams were sampled by selecting at random, the finest organic-rich sediment from the central part of the stream, in contact with the stream water and away from those areas dominated by slope-wash colluvium. The samples consisted of about 750 ml (about 3 cups) of silt and clay mixed with variable large amounts of finely comminuted organic debris.

The samples of metamorphic rock consisted of chips taken across a measured thickness of relatively homogeneous rock, about 2m (about 6 ft). Grab samples of individual layers or veins of unique lithology were also taken (Table 1). The samples include and are representative of rock types in the area, although the number of samples per rock type are weighted toward quartzites; at the base of the Cheshire Quartzite, at the top of the Dalton Formation, and at the top of the Mount Holly Complex. Most rock exposures in the areas are slightly weathered, but fresh, coherent, and well-indurated samples were obtained from the glaciated natural outcrops and from a few fresh surfaces along road-cuts. Rocks were crushed to about 6 mm (about 0.25 in) and pulverized to about 0.105 mm or 0.004 in (minus 140-mesh) in a vertical grinder with ceramic plates.

Soil samples are grab samples of glacial-till derived soil, taken from below a thin, dark, organic-rich surface soil zone (A horizon). The samples include the A1 and various B horizons. Soils were dried, sieved to about 0.177 mm or 0.007 in (minus 80 mesh), then pulverized to about 0.105 mm or 0.004 in (minus 140-mesh).

Analytical Techniques

Each sample was analyzed semiquantitatively for 31 elements by means of a six-step, DC (direct-current) arc, optical-emission spectrographic method (Grimes and Marranzino, 1968) by D.E. Detra in U.S. Geological Survey (USGS) laboratories, Golden, Colorado. Each sample was further analyzed by means of atomic-absorption (AA) techniques (Ward and others, 1969, p. 20) for gold and zinc. AA analyses on initial rock and soil samples were performed by Tom Huyck

and M.A. Pokorny in July, 1985, and on stream sediment samples by E.P. Welsch and D.L. Kelley in September, 1985. Follow-up rocks samples were analyzed by L.S. Laudon, and by L.S. Laudon and R.J. Fairfield in February, 1986. Previously reported low values for AA gold in the initial samples were rechecked by analyses, and corrected, in May 1986. No sample was found to contain detectable gold at the level of detection of 0.05 ppm.

The semiquantitative spectrographic analyses are reported as six steps per order of magnitude (1., 0.7, 0.5, 0.2, 0.15, or multiples of 10 of these numbers). These are the approximate geometric midpoints of the concentration ranges. The expected percision is within one adjoining interval on each side of the reported value 83 percent of the time, and within two adjoining intervals 96 percent of the time (Motooka and Grimes, 1976).

The visual lower limits of determination for the elements determined spectrographically are as follows:

Given in percent; Calcium, 0.05; Iron, 0.05; Magnesium, 0.02; Titanium, 0.002.

Given in ppm; Arsenic, 200; Barium, 20; Beryllium, 1; Bismuth, 10; Boron, 10; Cadmium, 20; Chromium, 10; Cobalt, 5; Copper, 5; Gold, 10; Lanthanum, 20; Lead, 10; Manganese, 10; Molybdenum, 5; Nickel, 5; Niobium, 20; Scandium, 5; Silver, 0.5; Strontium 100; Thorium 100; Tin, 10; Tungsten, 50; Vanadium, 10; Yttrium, 10; Zinc, 200; Zirconium, 10.

The lower limits of determination for zinc and gold determined in the rock samples by atomic-absorption are 5 ppm and 0.05 ppm respectively.

References Cited

- Grimes, D.J., and Marranzino, A.P., 1968, Direct-current arc and alternating current spark emission spectrographic field methods for the semiquantitative analysis of geologic materials: U.S. Geological Survey Circular 591, 6p.
- Motooka, J.M., and Grimes, D.J., 1976, Analytical precision of one-sixth order semiquantitative spectrographic analysis: U.S. Geological Survey Circular 738, 25p.
- Peper, J.D., and Downie, E.A., (in-press), Geology, Geochemistry, and Mineral Resource Assessment of the Big Branch and Peru Peak Wildernesses and the Wilder Mountain Roadless Area, Rutland and Bennington Counties, Vermont: U.S. Geological Survey Bulletin 1955, ___ p.
- Ward, F.N., Nakagawa, H.M., Harms, T.F., and van Sickle, G.H., 1969, Atomic-absorption methods of analysis useful in geochemical exploration: U.S. Geological Survey Bulletin 1289, 45 p.

Table 1. -- Description of rock samples. [Chip samples are composites of several small chips taken randomly across faint compositional layering of relatively homogeneous rock for the distance specified. Grab samples are fist-sized samples of a particular layer of rock. Composite samples include chips of dissimilar lithology sampled over a distance as designated. Report numbers are the numbers used to locate and discuss the samples in Peper and Downie (in-press). Field numbers, many with letter designators, were used in the field.

Letter symbols designate map unit affinity (Peper and Downie, in-press) as follows: C, Cheshire Quartzite; D, Dalton Formation; QMH, vitreous quartzite unit in Mount Holly Complex; GMH, granite gneiss unit in Mount Holly Complex, SMH, schist unit in Mount Holly Complex; MMH, calc-silicate gneiss and impure marble unit in Mount Holly Complex; HMM, hornblende-gneiss unit in Mount Holly Complex. Gneisses and schists contain quartz and feldspars; distinctive minerals, hyphenated to make rock name, shown decreasing order of abundance in rock.]

Report No. -
Map Unit

- 101 - D 2-m chip sample, lt.- to md. gray vitreous quartzite.
- 102 - D 2-m chip sample, lt. gray vitreous quartzite.
- 103 - D 2-m chip sample, dk. gray vitreous quartzite, minor sulfide.
- 104 - D 2-m chip sample, dk. gray vitreous quartzite.
- 105 - D 2-m chip sample, lt. pinkish gray vitreous quartzite.
- 106 - D 2-m chip sample, dk. gray vitreous quartzite; minor sulfide.
- 107 - SMH 2-m chip sample, white quartzite with schist partings.
- 108 - SMH 2-m chip sample, gray laminated quartzite with garnet and tourmaline.
- 109 - SMH 2-m chip sample, lt. gray quartzite with schist partings.
- 110 - SMH 2-m composite sample, lt. gray quartzite and vein quartz.
- 111 - SMH 2-m chip sample, massive white quartzite.
- 112 - SMH 2-m chip sample, massive white quartzite.
- 113 - SMH 2-m chip sample, massive white quartzite.
- 114 - SMH 1-m chip sample, quartz metaconglomerate with schist matrix.
- 115 - D 2-m chip sample, buff, granular quartzite.
- 116 - C 2-m chip sample, white quartzite, minor sulfide.
- 117 - C 2-m chip sample, white quartzite, minor sulfide.
- 118 - C 2-m chip sample, white quartzite, minor sulfide.

Report No. -
Map Unit

- 119 - C 2-m chip sample, white quartzite.
- 120 - C 2-m chip sample, lt.-gray to white quartzite.
- 121 - C 2-m chip sample, lt.-gray to white quartzite.
- 122 - C 2-m chip sample, lt.-gray to white quartzite.
- 123 - C 2-m chip sample, lt.-gray to white quartzite.
- 124 - C 2-m chip sample, lt.-gray to white quartzite.
- 125 - C 2-m chip sample, lt.-med. gray, vitreous quartzite.
- 126 - C 2-m chip sample, lt.-med. gray, vitreous quartzite.
- 127 - C 2-m chip sample, lt.-med. gray, vitreous quartzite.
- 128 - C 2-m chip sample, med. gray, schistose quartzite.
- 129 - C 2-m chip sample, med. gray, schistose quartzite.
- 130 - SMH 2-m chip sample, chlorite-hornblende schist.
- 131 - SMH 2-m chip sample, muscovite-chlorite schist.
- 132 - SMH 2-m chip sample, muscovite-chlorite schist.
- 133 - SMH 1-m chip sample, hornblende-chlorite schist.
- 134 - SMH 2-m chip sample, muscovite-chlorite schist.
- 135 - SMH 2-m chip sample, chlorite-hornblende schist.
- 136 - SMH 2-m chip sample, chlorite schist.
- 137 - SMH 2-m chip sample, chlorite schist.
- 138 - QMH 2-m chip sample, quartz-pebble metaconglomerate with schist matrix.
- 139 - QMH 1-m chip sample, white, vitreous quartzite.
- 140 - QMH 1-m chip sample, black, vitreous quartzite.
- 141 - QMH 1-m chip sample, thin-bedded, lt.-gray quartzite.
- 142 - QMH 1-m chip sample, white, micaceous and feldspathic quartzite.

Report No.-
Map Unit

- 143 - QMH 2-m composite sample, quartz veins and micaceous quartzite.
- 144 - QMH 2-m chip sample, feldspathic, micaceous quartzite.
- 145 - SMH 2-m chip sample, feldspathic, muscovite-chlorite-biotite schist.
- 146 - SMH 2-m chip sample, lt. green, muscovite-biotite gneiss, minor sulfide.
- 147 - SMH 2-m chip sample, lt. gray, chlorite-biotite-muscovite gneiss.
- 148 - SMH 2-m chip sample, lt. gray, feldspathic, muscovite-chlorite schist.
- 149 - SMH 2-m chip sample, lt. gray, feldspathic, biotite-muscovite schist.
- 150 - SMH 2-m chip sample, biotite-muscovite schist, trace sulfide and garnet.
- 151 - SMH 2-m composite, 1-3 cm quartz veins in chlorite-biotite schist.
- 152 - SMH 2-m chip sample, feldspathic, biotite-chlorite schist.
- 153 - SMH 2-m chip sample, quartzite with muscovite-chlorite schist partings.
- 154 - SMH 2-m composite, biotite-muscovite schist with pegmatite stringers.
- 155 - SMH 2-m chip sample, hornblende-plagioclase-(chlorite) amphibolite.
- 156 - SMH 2-m chip sample, white, vitreous quartzite.
- 157 - SMH 2-m chip sample, feldspathic, muscovite-biotite gneiss.
- 158 - GMH 2-m chip sample, pinkish gray, fine-grained, biotite gneiss.
- 159 - GMH 2-m chip sample, med.-gray, vitrious quartzite; (inclusion).
- 160 - GMH 2-m chip sample, microcline-quartz-biotite-(chlorite) gneiss.
- 161 - GMH 2-m chip sample, weakly layered granite gneiss.
- 162 - GMH 2-m chip sample, weakly layered granite gneiss.
- 163 - GMH 2-m chip sample, weakly layered granite gneiss.
- 164 - GMH 2-m chip sample, weakly layered granite gneiss.
- 165 - GMH 2-m chip sample, weakly layered granite gneiss.
- 166 - D 3-m chip sample, quartz-epidote veins in biotite-chlorite schist.
- 167 - D 3-m chip sample, quartz-epidote veins in biotite-chlorite schist.
- 168 - D 2-m chip sample, quartz-epidote veins in muscovite-chlorite schist.

Report No.-
Map unit

- 169 - D 2-m chip sample, feldspathic, muscovite-biotite-chlorite schist.
- 170 - D 2-m chip sample, boulder metaconglomerate with schist matrix.
- 171 - D 2-m chip sample, feldspathic chlorite-biotite schist (metagraywacke).
- 172 - D 2-m chip sample, 3-m white quartz vein in feldspathic schist.
- 173 - SMH 2-m chip sample, 3-m vitreous quartzite layer in schist.
- 174 - SMH 2-m composite, amphibolite interlayered with hornblende-biotite gneiss.
- 201 - HMH Grab sample, lt.-gray, biotite-hornblende gneiss spotted with chlorite.
- 203 - HMH Grab sample, dk.-gray, biotite-hornblende gneiss.
- 207 - HMH Grab sample, lt.-gray, hornblende-biotite augen gneiss.
- 209 - HMH Grab sample, hornblende-biotite-chlorite amphibolite.
- 213 - SMH Grab sample, gray-green, hornblende-biotite-chlorite schist.
- 214A- HMH Grab sample, 30-cm chlorite schist layer in hornblende gneiss.
- 215A- SMH Grab sample, gray-green biotite-hornblende gneiss.
- 216 - SMH Grab sample, rusty, quartzofeldspathic biotite-chlorite schist.
- 217A1 SMH Grab sample, buff-gray quartzofeldspathic schist.
- 217A2 SMH Grab sample, buff-gray biotite-chlorite schist; minor sulfide.
- 217B- SMH Grab sample, buff-gray biotite-chlorite-garnet schist.
- 218 - QMH Grab sample, yellow-buff, fine-grained micaceous quartzite.
- 219 - QMH Grab sample, white to dk.-gray, vitreous quartzite.
- 220 - QMH Grab sample, biotite-muscovite-chlorite quartz schist.
- 222C- SMH Grab sample, chlorite-biotite-actinolite quartz schist, tr. sulfide.
- 223 - MMH Grab sample, tremolite-carbonate-epidote schist.
- 225 - MMH Grab sample, fine-grained, diopside-plagioclase-quartz-carbonate gn.
- 226 - HMH Grab sample, quartzofeldspathic biotite-chlorite gneiss.
- 228 - HMH Grab sample, quartzofeldspathic biotite gneiss.

Report No.-
Map unit

- 229 - C Grab sample, white, fine-grained, granular quartzite.
- 230 - C Grab sample, white, fine-grained, granular quartzite.
- 233 - SMH Grab sample, greenish-gray, biotite-chlorite schist.
- 234 - SMH Grab sample, lead-gray, muscovite-chlorite-biotite schist.
- 235 - SMH Grab sample, gray-green, muscovite-biotite schist.
- 236 - SMH Grab sample, gray-green, biotite-chlorite schist.
- 241 - QMH Grab sample, dark gray, fine-grained, vitreous quartzite.
- 242 - C Grab sample, light-gray, medium-grained quartzite.
- 243 - C Grab sample, white, vitreous quartzite.
- 244 - SMH Grab sample, hornblende-biotite amphibolite.
- 245 - SMH Grab sample, quartzofeldspathic chlorite-biotite schist, minor sulfide.
- 247A- SMH Grab sample, quartzofeldspathic biotite-chlorite schist.
- 247B- SMH Grab sample, biotite-chlorite schist.
- 253 - HMH Grab sample, biotite gneiss.
- 254 - SMH Grab sample, quartzofeldspathic biotite-chlorite schist.
- 255 - MMH Grab sample, lt. gray, actinolite-hornblende-biotite-chlorite gneiss.
- 256A- QMH Grab sample, silvery muscovite-biotite vitreous quartzite.
- 256B- QMH Grab sample, silvery muscovite-biotite vitreous quartzite.
- 257 - D Grab sample, tan, fine-grained, feldspathic quartzite.
- 258 - C Grab sample, white, fine-grained to vitreous quartzite.
- 260 - QMH Grab sample, white to lt.-pink, vitreous quartzite.
- 261 - QMH Grab sample, pink, schistose quartzite.
- 262 - QMH Grab sample, biotite-muscovite-quartz gneiss.
- 263A- SMH Grab sample, biotite-chlorite-garnet schist.
- 263B- SMH Grab sample, biotite-chlorite-garnet schist.

Report No.-
Map Unit

- 264A- QMH Grab sample, muscovite-tourmaline-quartz schist.
- 264C- QMH Grab sample, muscovite-quartz schist.
- 270 - SMH Grab sample, feldspathic biotite-chlorite gneiss.
- 271 - SMH Grab sample, rusty, biotite-muscovite-chlorite schist.
- 273A- SMH Grab sample, lt. grayish green, biotite-hornblende-chlorite schist.
- 273B- SMH Grab sample, dk. gray, biotite-hornblende-gneiss.
- 273C- SMH Grab sample, lt. gray, feldspathic biotite-muscovite-chlorite schist.
- 275 - SMH Grab sample, 3-m layer hornblende-plagioclase amphibolite in schist.
- 276 - SMH Grab sample, layered, lt.-dk. gray, hornblende-biotite gneiss.
- 279 - SMH Grab sample, gray-green to silvery, muscovite-biotite-chlorite schist.
- 284 - SMH Grab sample, lt. gray, coarse-grained, biotite-chlorite gneiss.
- 288 - SMH Grab sample, white, medium-grained, feldspathic biotite schist.
- 292 - SMH Grab sample, gray, fine-grained, biotite-chlorite schist.
- 293 - SMH Grab sample, gray, fine-grained, biotite-chlorite gneiss.
- 295 - C Grab sample, buff, granular, biotite quartzite.
- 298 - D Grab sample, lt. pink- buff, medium-grained, feldspathic biotite schist.
- 298M-MMH Grab sample, lt. pink - yellow-buff, coarse-grained, dolomitic marble.
- 305 - C Grab sample, white, vitreous, meta-orthoquartzite.
- 306 - C Grab sample, white, vitreous, meta-orthoquartzite.
- 310 - C Grab sample, orange-buff, granular, meta-orthoquartzite
- 314 - C Grab sample, lt. pinkish buff, granular, meta-orthoquartzite.
- 315 - C Grab sample, lt. gray, vitreous quartzite; layered 2 - 4 cm.
- 318 - C Grab sample, lt. yellow buff, micaceous quartzite.
- 319 - C Grab sample, lt orange buff - gray, micaceous quartzite.
- 320 - SMH Grab sample, lt. gray, feldspathic biotite-chlorite schist.

Report No.-
Map Unit

- 321 - SMH Grab sample, dk. greenish gray, biotite-chlorite gneiss.
- 322 - SMH Grab sample, lead-gray, muscovite-biotite-garnet-chlorite schist.
- 328 - SMH Grab sample, dk. gray, coarse-grained, hornblende-biotite gneiss.
- 330 - HMM Grab sample, lt. gray, feldspathic, biotite-hornblende gneiss.
- 334 - SMH Grab sample, lt. grayish green, chlorite-biotite-quartz schist.
- 335 - D Grab sample, lead-gray, fine-grained muscovite-biotite schist.
- 338 - D Grab sample, lt. gray to lt.-pink, frosted to vitreous quartzite.
- 341 - SMH Grab sample, lead-gray, muscovite-biotite-garnet schist.
- 342 - SMH Grab sample, grayish green, biotite-chlorite schist.
- 343 - GMH Grab sample, lt. gray to white, coarse-grained, biotite augen gneiss.
- 344 - SMH Grab sample, gray, coarse-grained, feldspathic biotite gneiss.
- 345 - HMM 3-m composite, amphibolite interleaved with biotite-hornblende gneiss.
- 402 - D Grab sample, quartzofeldspathic biotite-chlorite schist.
- 403 - D Grab sample, white, muscovite-chlorite-quartz schist.
- 404 - D Grab sample, white quartz-feldspar-biotite gneiss.
- 405 - C Grab sample, lt. tan granular quartzite.
- 406 - C Grab sample, white, vitreous quartzite.
- 501 - HMM Grab sample, gray, vitreous quartzite.
- 502 - SMH Grab sample, biotite-hornblende-chlorite gneiss.
- 503 - SMH Grab sample, feldspathic biotite schist.
- 504 - SMH Grab sample, feldspathic biotite schist.
- 505 - SMH Grab sample, lt. gray, biotite-muscovite-biotite granite gneiss.
- 506 - SMH Grab sample, amphibolite layer in schistose gneiss.
- 507 - SMH Grab sample, muscovite-biotite-chlorite schist.
- 508 - HMM Grab sample, feldspathic biotite-hornblende augen gneiss.

Report No.
Map unit

509 - D Grab sample, muscovite-biotite-quartz schist.
510 - D Grab sample, muscovite schist.
511 - SMH Grab sample, grayish-green, biotite-chlorite gneiss.
513 - HMH Grab sample, lead-gray, biotite-muscovite schist.
514 - HMH Grab sample, grayish-green, hornblende-chlorite gneiss.
515 - HMH Grab sample, biotite-hornblende-chlorite gneiss.
516 - HMH Grab sample, fine-grained, chlorite-biotite-hornblende gneiss.
517 - SMH Grab sample, lt. gray, feldspathic biotite-chlorite schist.
518 - SMH Grab sample, lt. gray, feldspathic biotite schist.
519 - SMH Grab sample, sheared, feldspathic biotite-garnet schist.
520 - SMH Grab sample, feldspathic biotite-muscovite-chlorite schist.
521 - D Grab sample, silvery-gray, muscovite-quartz schist.
522 - D Grab sample, silvery-gray, muscovite-quartz schist.
523 - D Grab sample, feldspathic muscovite-quartz schist.
524 - D Grab sample, gray, feldspathic muscovite-biotite gneiss.
526 - C Grab sample, buff, medium-grained quartzite.
527 - C Grab sample, white, vitreous quartzite.

Table 2 -- Analyses of stream-sediment, soil, and rock samples.

[The table shows the results of geochemical analyses of stream-sediment, soil, and rock samples from the Big Branch and Peru Peak Wildernesses and the Wilder Mountain Roadless Area, Vermont.

The report numbers are the numbers used to locate and discuss the samples in a descriptive and interpretive report on the mineral resource potential of the areas by Peper and Downie (in-press). A different set of sample numbers, many with letter designators, were used to locate the samples in the field.

The x and y coordinates are the Universal Transverse Mercator (UTM) grid. The x coordinate is the easting value in meters and the y coordinate is the northing value in meters to the nearest 10 meters (about 32.8 feet).

Iron, magnesium, calcium, and titanium concentrations are reported in percent (%); all other values are in parts per million (ppm). Letters to the left of the chemical element symbols indicate the method of analysis: S, six-step semiquantitative spectrographic method; AA, atomic-absorption method.

Other symbols used in the table are: N, not detected; --, not determined; L, amount detected is below the lowest limit of determination (See text - Analytical techniques, p. 3 - this report); + or G, amount detected is above the highest limit of determination.

Elements looked for spectroscopically but not found, except as noted, and the lower limits of detection in ppm, are as follows: As (200), Au (10), Bi (10), Cd (20), Sb (100), Sn (10), and W (50). Exceptions, Sn: rock samples 138, 143, stream sediment sample 613, reported 50, 30, 10 ppm respectively.]

Report Number	STREAM SEDIMENT										STREAM SEDIMENT										STREAM SEDIMENT										X Easting	Y Northing		
	S-Fe	S-Mg	S-Ca	S-Ti	S-Mn	S-Ag	S-B	S-Ba	S-Be	S-Co	S-Cr	S-Cu	S-La	S-Mo	S-Nb	S-Ni	S-Pb	S-Sc	S-Sr	S-V	S-Y	S-Zn	S-Zr	S-Th	AA-Zn									
594	1.5	2	.3	.2	200	N	70	300	2	5	20	10	30	N	N	5	20	7	100	70	20	N	500	N	25	666980	479791							
595	2	.5	1	.3	1000	N	100	300	1.5	15	30	7	L	N	N	5	10	10	200	100	20	N	500	N	70	669580	480137							
596	3	1	2	.5	1000	N	100	300	2	15	30	30	L	N	N	10	10	15	300	100	30	N	500	N	90	668450	479150							
597	.7	.2	.7	.2	300	N	50	150	1.5	5	20	5	L	N	N	L	15	5	N	70	15	N	200	N	50	665300	479463							
598	2	.5	L	1	150	N	200	500	1.5	5	50	L	30	N	L	N	15	7	100	70	20	N	700	N	5	665450	479985							
599	1	.2	.7	.3	700	N	200	300	2	10	20	L	20	N	N	5	15	5	100	70	20	N	500	N	90	664840	479743							
600	2	.5	1.5	.3	700	N	100	200	2	15	30	5	20	N	N	5	15	15	100	70	20	N	500	N	45	665750	479603							
601	1	.2	.2	.7	300	N	70	500	2	N	50	5	L	N	L	N	30	10	100	100	10	N	500	N	20	665350	479977							
602	3	1	.5	.7	1000	N	100	1500	1.5	15	30	10	100	N	N	10	30	7	N	70	50	200	700	N	230	663300	479720							
603	3	.7	.7	.7	1500	N	200	500	2	15	30	7	50	N	N	7	20	10	100	100	300	N	1000	N	80	664100	480791							
604	3	.7	2	.7	700	N	200	500	2	10	30	15	30	N	N	7	20	15	300	100	20	N	1000	N	150	662010	478540							
605	.7	.3	1	.3	200	N	30	200	3	5	20	5	L	N	N	L	20	10	150	70	10	N	300	N	35	666630	479574							
606	5	1.5	3	.7	1000	N	70	200	2	15	50	15	20	N	N	7	15	20	300	150	30	N	500	N	60	670200	479565							
607	2	.5	1	.5	300	N	20	200	2	10	30	5	L	N	N	5	30	10	200	100	20	N	700	N	40	665430	479452							
608	5	1.5	2	.7	700	N	100	300	2	15	50	20	500	N	N	7	30	20	200	150	50	N	1000	N	30	668010	479964							
609	2	.7	2	.5	700	N	200	300	1.5	10	30	20	30	N	N	5	50	15	200	100	20	N	500	N	40	666820	479788							
610	3	1	2	.7	1000	N	200	300	1.5	10	50	10	50	N	L	5	15	15	150	100	20	N	1000	N	55	663410	478718							
611	3	1.5	3	.5	500	N	150	300	1.5	10	50	20	L	N	N	10	20	15	300	100	20	N	300	N	75	668810	479180							
612	2	.5	1.5	.2	1000	N	200	500	2	15	30	20	50	N	N	7	30	10	300	70	30	N	1000	N	95	663450	479252							
613	3	1	2	.5	1000	N	100	200	1.5	15	50	10	L	N	N	10	10	15	200	100	20	N	500	N	55	665950	480258							
614	5	2	5	1	2000	N	30	300	1.5	15	50	10	L	N	N	10	30	30	500	150	50	N	500	N	45	671650	480747							
615	.2	.02	.2	.15	50	N	50	200	1	N	15	L	L	N	N	L	10	N	N	30	10	N	500	N	10	665730	480361							
616	5	1.5	5	1	1000	N	70	300	1.5	15	100	20	30	N	N	15	50	10	300	150	50	N	300	N	60	669758	479625							
617	1.5	.3	.7	.3	1000	N	70	200	1.5	15	15	5	L	N	N	5	20	7	100	100	100	N	200	N	95	666880	480344							
618	3	1	1.5	1	1000	N	200	200	1	15	50	7	L	N	N	7	15	15	200	100	30	N	100	N	30	666220	479177							
619	5	2	3	.5	1000	L	50	500	1.5	20	50	30	50	N	N	10	50	20	300	150	20	N	200	N	130	668450	479150							
620	2	.7	2	.5	1000	N	100	200	2	15	30	10	20	N	N	7	50	20	500	150	20	N	300	N	60	669115	479466							
621	3	.7	.5	.5	2000	N	500	300	2	20	30	10	20	N	N	7	30	10	100	100	20	N	500	N	45	665910	480301							
622	3	7	1	.5	1000	N	100	300	1.5	10	30	10	20	N	N	7	20	15	200	150	30	N	700	N	45	665080	480405							
623	3	1.5	2	.7	1000	N	30	200	1.5	15	50	15	20	N	N	7	20	15	300	100	30	N	500	N	60	670030	480272							
624	1	.3	.2	.3	300	N	100	500	1.5	10	20	L	50	N	N	5	15	5	100	50	20	N	700	N	35	664930	480415							
625	3	1.5	2	.5	1000	N	100	300	1.5	15	50	10	50	N	N	7	50	20	500	150	20	N	300	N	45	669023	479420							
626	3	1	2	.5	700	N	100	300	1.5	15	30	20	20	N	N	7	30	15	200	100	30	N	500	N	45	669560	480140							
627	3	1	2	.5	500	N	150	300	1.5	15	30	15	20	N	N	7	20	15	200	100	30	N	500	N	45	668445	480590							
628	3	1	2	.7	2000	N	100	200	1.5	15	30	20	7	N	N	5	50	20	200	150	20	N	200	N	40	667720	479979							
629	1.5	.2	.15	.3	5000	N	100	500	1	20	20	7	L	N	N	5	50	5	100	50	20	N	200	N	55	665910	480087							
630	3	1	2	.7	1000	N	200	300	2	10	30	10	20	N	N	7	15	15	200	100	30	N	1000	N	170	666530	480299							
631	2	.5	L	1	200	N	300	1000	2	5	50	N	50	N	L	L	15	10	200	70	30	N	1000	N	80	665910	480301							
632	1.5	.02	L	.07	+5000	N	50	150	2	20	50	20	10	N	N	L	50	N	N	20	10	N	50	N	85	664920	480481							
633	5	1	2	+1	1500	N	200	300	1	15	50	5	20	N	N	7	30	20	300	100	30	N	500	N	60	667890	480830							

STREAM SEDIMENT

STREAM SEDIMENT

STREAM SEDIMENT

Report Number	S-Fe	S-Mg	S-Ca	S-Ti	S-Mn	S-Ag	S-B	S-Ba	S-Be	S-Co	S-Cr	S-Cu	S-La	S-Mo	S-Nb	S-Ni	S-Pb	S-Sc	S-Sr	S-V	S-Y	S-Zn	S-Zr	S-Th	AA-Zn	X Easting	Y Northing
634	5	.5	2	1	1000	N	100	500	1.5	15	50	20	20	N	L	10	50	10	200	150	30	N	500	N	90	664120	479959
635	1.5	.5	1	.2	1000	N	150	300	2	10	30	15	50	N	N	5	30	10	100	70	20	N	100	N	210	664180	480049
636	3	1	2	.1	1000	N	50	300	2	10	70	20	20	N	N	10	30	20	150	150	30	N	200	N	100	671593	480841
637	.5	.2	.7	.15	700	N	20	200	1	10	30	7	L	N	N	L	30	L	N	70	10	N	100	N	120	668880	480637
638	2	.7	1.5	.3	500	L	50	200	1.5	10	30	10	20	N	N	5	30	15	500	100	20	N	200	N	45	668490	479293
639	3	1	1.5	.5	1000	N	150	500	2	10	30	10	20	N	N	5	30	30	300	100	20	N	150	N	130	667110	480379
640	.3	.1	.5	.2	200	N	50	200	1.5	5	10	L	L	N	N	5	30	L	100	50	10	N	500	N	40	669690	480155
641	1.5	.5	.7	.5	500	N	50	200	1.5	10	30	10	L	N	N	7	20	10	150	100	20	N	500	N	50	668400	460385
642	1	.2	.2	.3	1500	N	300	500	1	15	15	L	L	N	L	10	15	5	100	30	20	N	700	N	110	667620	480338
643	2	.5	1.5	.3	700	N	20	300	1	10	50	10	L	L	N	7	15	10	200	100	20	N	300	N	90	671590	479943
644	3	.3	.3	1	700	N	150	500	1	10	30	10	30	N	L	10	15	7	100	70	30	N	700	N	35	662890	480703
645	2	.5	.5	.5	700	N	100	500	1	10	20	15	20	N	L	10	30	7	100	50	20	N	700	N	85	663250	481720
646	3	1.5	2	1	2000	N	20	300	1.5	10	50	15	20	N	L	15	30	20	200	150	30	N	700	N	80	669580	480137
647	1.5	.3	.2	.2	2000	N	300	300	2	20	20	15	50	N	N	7	20	10	N	70	50	N	700	N	80	670200	479565
648	1	.2	.7	.2	1000	N	20	200	1.5	10	30	20	50	N	N	5	50	L	N	100	20	N	100	N	180	668445	480590
649	1	.2	.2	.2	1000	N	150	500	2	15	15	10	70	N	N	5	30	5	100	50	30	L	500	N	190	669400	480332
650	2	.5	1.5	.5	2000	N	20	300	2	20	30	15	20	N	N	10	50	15	200	100	20	N	300	N	160	665270	480502
651	2	.7	1.5	.3	300	N	20	200	1.5	10	30	20	L	N	N	7	30	10	150	100	20	N	200	N	45	670500	480809
652	.05	L	.2	.1	200	N	10	150	1	5	10	L	L	N	N	5	L	N	N	20	10	N	30	N	70	668050	480539
653	2	.5	1.5	.2	2000	.5	50	300	2	15	30	10	L	N	N	10	30	15	200	100	20	N	200	N	70	665670	480611
654	3	1	3	1	1000	N	30	200	1.5	15	50	10	50	L	N	10	20	20	500	150	30	N	500	N	50	671530	479771
655	2	.7	1	.7	1000	N	200	200	1.5	10	20	10	20	N	N	5	20	15	300	100	20	N	500	N	50	665810	480738
656	3	1.5	1.5	.5	2000	N	30	200	1.5	20	50	15	20	N	N	10	30	15	200	150	20	N	300	N	35	670020	480272
657	.7	.2	L	.15	300	N	50	200	1.5	10	20	5	20	N	N	5	30	N	N	30	10	N	500	N	40	665930	480215
658	1.5	.3	2	.2	500	N	50	200	2	10	20	10	20	N	N	7	30	10	200	100	20	N	100	N	70	662810	480660
659	1	.15	.1	.2	700	N	70	300	2	10	20	5	20	N	N	5	20	L	100	50	30	N	500	N	35	666645	480841
660	2	1	2	.7	700	L	20	200	1	15	50	20	50	L	N	10	30	15	200	100	20	N	500	N	70	667870	480058
661	2	.5	.7	.2	1500	N	100	200	1.5	15	30	15	50	N	N	10	30	7	150	70	15	N	1000	N	110	671700	479916
662	1	.2	.2	.3	500	N	150	300	1.5	7	10	L	20	N	N	7	15	N	100	30	10	N	1000	N	20	667930	480751
663	1.5	.3	.3	.2	1500	N	150	300	2	15	20	5	100	N	N	L	50	5	100	50	20	N	500	N	25	670110	480272
664	2	1	2	.5	700	N	200	200	2	15	20	10	50	N	N	10	15	15	200	100	50	N	700	N	40	671590	479943
665	3	1	1.5	.5	1000	N	150	200	1.5	15	30	10	50	N	N	10	30	15	200	100	150	N	300	N	65	667520	480751
666	2	.5	.7	.3	1500	N	30	150	1	20	20	5	L	N	N	5	30	10	200	70	20	N	500	N	50	667730	480534
667	3	1	1	.7	1000	N	30	150	2	10	30	10	20	N	N	10	15	10	200	100	20	N	300	N	40	670110	480262
668	2	.3	.5	.15	1000	N	50	200	1.5	10	20	10	L	N	N	10	30	5	100	50	10	N	50	N	170	671590	479943
669	2	.5	1	.2	700	N	100	150	1	7	20	L	L	N	N	5	20	10	200	70	20	N	200	N	30	667520	480751
670	3	1	1.5	.5	1000	N	30	200	1.5	15	30	20	30	N	N	15	20	15	200	100	20	N	150	N	55	667730	480534
671	3	.7	1.5	.7	700	N	20	100	1.5	10	30	20	50	N	N	15	15	10	200	150	20	N	1000	N	15	665670	480611
672	2	.7	.7	.3	700	L	100	300	1.5	7	20	7	20	N	N	5	50	7	100	70	30	N	300	N	40	666995	480474
673	3	1	2	.5	1000	N	50	200	1.5	15	50	10	20	N	N	15	15	15	200	150	20	N	500	N	55	666650	480828
674	.2	.1	.5	.07	50	N	10	100	1	5	20	L	L	N	N	5	15	N	N	20	10	N	20	N	55	668680	480494

Report Number	SOIL										SOIL										SOIL										Y Northing
	S-Fe %	S-Mg %	S-Ca %	S-Ti %	S-Mn ppm	S-Ag ppm	S-B ppm	S-Ba ppm	S-Be 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-Sc ppm	S-Sr ppm	S-V ppm	S-Y ppm	S-Zn ppm	S-Zr ppm	S-Th ppm	AA-Zn ppm	X Easting					
801	3	.5	.2	1	200	N	150	500	1.5	10	50	10	50	N	L	10	30	10	150	100	50	N	500	N	10	665770	480088				
802	3	.7	.7	.7	300	N	100	300	1.5	10	30	20	20	N	N	10	20	10	N	100	20	N	500	N	40	668995	480316				
803	.7	1	.05	.2	1000	N	100	200	1.5	15	20	10	20	N	N	7	30	L	N	20	20	N	500	N	40	663310	480316				
804	1.5	.2	.07	.5	200	N	150	300	1	5	20	10	70	N	N	5	30	5	N	70	20	N	500	N	30	662370	480462				
805	1	.3	.3	.5	700	N	100	300	1	5	20	10	20	N	N	7	20	5	N	30	30	N	1000	N	40	662810	480660				
806	5	2	.3	1	700	N	30	200	1	20	70	30	30	N	N	20	20	20	300	200	50	N	200	N	50	667300	480862				
807	2	.5	.3	.3	300	N	200	500	1.5	5	20	5	20	N	N	5	20	7	N	50	30	N	500	N	50	667190	480379				
808	2	.5	.5	.5	500	N	200	200	1	10	20	10	30	N	N	10	20	10	100	70	30	N	700	N	55	667620	480338				
809	2	.7	2	.3	3000	L	20	300	1.5	15	50	20	100	7	N	20	20	20	N	100	100	N	100	N	130	666490	479293				
810	2	.3	.1	.7	2000	N	70	300	1	10	30	10	100	N	N	5	20	7	100	70	20	N	61000	N	30	662670	480613				
811	1	.2	.5	.15	2000	N	70	200	1.5	10	20	10	20	N	N	7	20	L	N	30	30	N	500	N	130	665720	480360				
812	1	.2	.3	.2	3000	N	100	300	1.5	10	20	10	30	N	N	5	30	5	N	50	30	N	200	N	100	666350	480351				
813	1	.3	.5	.2	300	N	150	300	1	7	20	L	20	N	N	5	30	7	100	50	30	N	500	N	45	666650	480392				
814	1.5	.3	1	.3	200	L	70	200	1	7	50	15	20	N	N	10	30	10	150	100	20	N	200	N	20	668000	480064				
815	1.5	.5	1	.5	200	N	30	200	1	10	30	15	30	N	N	10	30	7	150	70	20	N	200	N	45	667110	480379				
816	.7	.15	.1	.3	200	N	50	300	1.5	10	20	L	30	N	N	10	20	5	100	50	50	N	700	N	40	665170	487921				
817	1.5	.2	.15	1	100	N	150	300	1.5	N	20	L	20	N	N	7	15	7	100	70	30	N	500	N	15	665410	480391				
818	.3	.03	L	.15	15	N	50	150	1	N	20	L	30	N	N	5	20	N	N	30	10	N	700	N	10	665250	480017				
819	2	.5	.5	.5	200	N	30	200	1.5	5	20	5	20	N	N	5	30	7	N	70	10	N	100	N	20	665650	479702				
820	1.5	.2	1	.7	200	N	100	200	1	5	20	L	N	N	N	N	20	7	150	100	10	N	200	N	5	668640	479167				
821	3	.5	2	.7	500	N	20	200	1	7	50	10	N	N	N	10	30	20	300	100	30	N	200	N	40	665630	480148				
822	.2	.07	.2	.15	30	N	30	50	1.5	N	20	10	20	N	N	5	50	N	N	50	10	N	100	N	20	663840	480029				
823	1.5	.15	.2	.3	300	L	100	300	1	N	30	10	20	N	N	7	50	5	100	70	30	N	1000	N	20	667420	479746				

Report Number	ROCK										ROCK										ROCK					Y Northing			
	S-Fe %	S-Mg %	S-Ca %	S-Ti %	S-Mn ppm	S-Ag ppm	S-B ppm	S-8a ppm	S-Be 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-Sc ppm	S-Sr ppm	S-V ppm	S-Y ppm	S-Zn ppm	S-Zr ppm	S-Th ppm	AA-Zn ppm	X Easting	Y		
101	.1	L	N	.03	50	N	10	50	L	N	10	N	N	N	N	N	N	N	N	N	10	N	N	N	N	5	657050	480662	
102	.2	L	N	.03	65000	N	15	500	L	15	L	L	N	N	N	N	10	N	N	N	15	L	N	N	N	5	657100	480662	
103	.5	.07	L	.1	300	N	10	200	L	N	10	L	N	N	N	N	20	N	N	N	10	L	N	N	L	5	657200	480657	
104	.5	.02	N	.1	200	N	100	200	L	N	10	L	N	N	N	N	15	N	N	N	15	10	N	300	N	5	67400	480657	
105	.1	L	N	.07	700	N	15	200	L	N	20	15	N	N	N	L	15	N	N	N	10	L	N	200	N	5	657800	480653	
106	.2	.02	N	.07	3000	N	20	500	L	15	L	N	N	N	N	N	N	N	N	N	L	L	N	1000	N	5	658000	480652	
107	.7	.7	L	.5	300	N	100	700	L	N	30	N	20	N	N	N	10	7	100	50	20	N	1000	N	L	5	659000	480608	
108	3	.3	N	.7	200	N	200	700	2	10	30	N	70	N	N	5	10	10	150	70	50	N	1000	N	10	5	660950	480569	
109	2	.3	N	.7	30	N	1000	700	1.5	5	30	L	50	N	N	N	10	7	150	50	30	N	1000	N	5	5	660625	480564	
110	.7	.07	N	.3	100	N	30	300	L	N	10	N	N	N	N	N	N	N	N	N	20	N	1000	N	N	N	5	660115	480558
111	.1	.02	N	.2	30	N	15	200	L	N	10	N	N	N	N	N	N	L	N	N	15	N	1000	N	N	N	5	659850	480554
112	.7	.02	N	.2	50	N	15	300	L	N	10	N	N	N	N	N	N	N	N	N	15	N	1000	N	N	N	5	659450	480556
113	.5	.02	N	.15	50	N	15	300	L	N	10	N	N	N	N	N	N	N	N	N	15	10	N	1000	N	N	5	659430	480556
114	2	.02	N	.5	300	N	20	300	L	7	20	7	1000	N	N	10	10	L	100	50	50	N	1000	100	5	5	659420	480556	
115	.5	.02	N	.15	500	N	50	100	L	N	15	7	N	N	N	5	N	N	N	N	10	L	N	1000	N	N	5	658750	480549
116	.7	.02	N	.2	70	N	50	300	L	N	L	N	N	N	N	10	10	N	N	N	15	N	1000	N	L	N	5	665295	479986
117	.5	.03	N	.2	50	N	15	300	L	N	10	N	50	N	N	N	N	N	N	N	20	15	N	500	N	N	5	665305	479986
118	.3	.02	L	.2	20	N	30	300	L	N	L	N	N	N	N	N	N	N	N	N	15	N	700	N	N	N	5	665315	479986
119	.7	L	N	.15	700	N	20	150	L	N	20	15	N	N	N	N	N	N	N	N	15	N	700	N	N	N	5	665325	479986
120	.2	.03	N	.15	150	N	70	300	L	N	10	N	N	N	N	N	N	N	N	N	15	N	500	N	N	N	5	665290	479965
121	.3	.02	L	.1	30	N	70	300	L	N	L	N	N	N	N	N	N	N	N	N	15	N	700	N	N	N	5	665295	479965
122	.15	.03	N	.15	15	N	50	300	L	N	10	N	N	N	N	N	N	N	N	N	15	N	500	N	N	N	5	665300	479965
123	.3	.02	L	.1	30	N	2	200	L	N	10	L	N	N	N	N	N	N	N	N	15	N	1000	N	N	N	5	665305	479965
124	.1	.02	N	.15	50	N	15	200	L	N	10	N	N	N	N	N	N	N	N	N	15	N	500	N	N	N	5	665310	479965
125	.15	.07	N	.2	30	N	70	300	1.5	N	15	N	N	N	N	N	N	N	N	N	20	10	N	1000	N	N	5	665315	479965
126	.1	.03	N	.2	30	N	50	200	L	N	10	N	N	N	N	N	N	N	N	N	20	15	N	1000	N	N	5	665320	479965
127	.15	.02	N	.15	150	N	10	200	L	N	15	L	N	N	N	N	N	N	N	N	15	N	1000	N	N	N	5	665325	479965
128	.5	.1	N	.1	70	N	30	200	L	N	10	N	30	N	N	N	N	N	N	N	20	N	700	N	N	5	665455	479930	
229	3	1.5	1.5	1.5	1000	N	50	500	L	20	70	10	50	N	N	20	50	20	150	100	50	L	300	N	90	5	665345	479901	
130	3	1	1	.3	1000	N	30	200	L	15	70	15	N	N	N	20	100	15	150	70	20	L	200	N	100	5	665347	479901	
131	2	1	1	.2	1000	N	70	1000	1.5	5	20	10	70	N	N	5	70	15	150	50	50	N	300	N	30	5	665349	479901	
132	5	1	.7	.2	700	N	50	200	L	15	50	15	N	N	N	20	70	10	100	70	15	N	100	N	80	5	665351	479901	
133	10	7	10	1	2000	N	L	100	N	50	100	100	N	N	N	30	15	30	200	200	20	N	100	N	302	5	666735	480250	
134	3	.5	.3	.3	500	N	50	300	L	10	50	5	20	N	N	10	10	10	10	70	50	N	300	N	35	5	666725	480229	
135	10	10	10	1	2000	N	15	300	L	50	50	15	N	N	N	50	15	20	100	200	50	N	50	N	60	5	666745	480207	
136	15	5	5	1	1000	N	20	100	N	30	100	30	N	N	N	20	10	50	N	200	20	N	70	N	45	5	666715	480205	
137	10	2	3	1	1500	N	70	100	N	30	100	L	N	N	N	20	15	30	200	150	50	N	200	N	50	5	666675	480203	
138	10	.2	L	.5	30	N	500	100	2	10	50	N	30	N	N	L	10	20	N	70	30	N	200	N	L	5	666520	480200	
139	5	.5	L	1	300	N	70	200	2	7	50	N	N	N	N	5	10	10	10	100	20	N	500	N	L	5	666520	480200	
140	1	.07	N	1	300	N	10	150	1	N	15	N	N	N	N	N	N	N	N	N	20	N	150	N	N	5	666180	480200	

Report Number	ROCK										ROCK										ROCK										X Easting	Y Northing
	S-Fe %	S-Mg %	S-Ca %	S-Ti %	S-Mn ppm	S-Ag ppm	S-B ppm	S-Ba ppm	S-Be 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-Sc ppm	S-Sr ppm	S-V ppm	S-Y ppm	S-Zn ppm	S-Zr ppm	S-Th ppm	AA-Zn ppm							
141	1	.07	N	.1	300	N	10	100	L	N	15	L	N	N	N	N	N	N	N	30	15	N	150	N	N	666180	480200					
142	1.5	.15	N	.15	500	N	20	200	1	N	15	N	N	N	N	N	7	N	N	30	L	N	300	N	N	666180	480200					
143	2	.3	N	.3	1000	N	100	200	3	N	30	N	N	N	N	10	N	10	N	50	70	N	300	N	N	666480	480197					
144	2	.1	N	.07	500	N	100	150	L	7	15	L	N	N	N	N	N	N	N	50	10	N	100	N	5	666480	480197					
145	1.5	.15	.5	.1	500	N	L	500	1	N	L	N	20	N	N	N	15	L	100	10	50	N	70	N	10	671680	480814					
146	1.5	.3	.3	.15	300	N	10	300	1.5	7	10	L	N	N	N	5	10	L	100	30	15	N	200	N	20	671680	480812					
147	2	.5	.5	.2	300	N	L	200	1.5	5	10	N	N	N	N	5	10	5	150	50	15	N	200	N	30	671680	480810					
148	2	.3	.7	.2	500	N	10	1000	2	7	10	N	30	N	N	L	10	5	150	30	20	N	200	N	20	671680	480810					
149	2	.5	.5	.3	500	N	10	700	1.5	10	10	N	30	N	N	L	20	7	150	30	20	N	200	N	25	671680	480800					
150	2	.3	1	.3	300	N	10	700	1.5	7	L	N	30	N	N	N	10	7	200	30	20	N	300	N	30	671680	480800					
151	2	1.5	1	.5	1000	N	10	300	1.5	15	15	15	N	N	N	15	15	7	200	100	10	N	100	N	45	666810	470815					
152	3	.2	2	.5	700	N	15	700	1.5	30	30	30	30	N	N	20	15	10	300	100	20	N	100	N	45	666810	470815					
153	.5	.05	L	.05	200	N	20	50	L	N	10	L	N	N	N	L	N	N	N	10	N	N	150	N	5	470837	666850					
154	2	.5	.2	.2	500	N	10	500	1.5	N	L	5	N	N	N	N	20	7	100	20	50	N	200	N	35	666970	470865					
155	15	.5	7	.1	1000	N	L	150	N	50	150	50	N	N	N	30	15	50	150	200	20	N	100	N	20	665920	470889					
156	.2	.05	L	.1	70	N	70	100	L	N	10	N	N	N	N	N	N	N	N	10	L	N	500	N	N	470893	665890					
157	1.5	.3	.7	.15	200	N	10	300	2	5	10	N	N	N	N	L	N	L	200	30	10	N	100	N	10	470907	665570					
158	1.5	.3	.7	.1	200	N	15	300	2	5	10	N	N	N	N	N	10	L	200	30	10	N	100	N	15	470912	665450					
159	.5	L	L	.07	300	N	10	100	L	N	20	7	N	N	N	N	N	N	N	10	L	N	700	N	N	665400	470914					
160	1.5	.5	.7	.1	500	N	20	700	3	N	L	N	50	N	N	5	20	5	300	20	20	N	200	N	5	666090	470999					
161	1	.3	.2	.07	1000	N	15	500	3	N	L	N	70	N	N	N	15	N	100	15	15	N	100	N	5	666080	470899					
162	1	.7	.5	.07	1000	N	20	200	1.5	7	15	30	70	N	N	5	20	N	N	20	20	N	N	N	10	470899	666070					
163	5	1	.2	.3	2000	N	50	1000	3	7	15	L	70	N	N	5	20	20	100	30	20	N	500	N	10	470898	666060					
164	2	.5	.5	.2	300	N	20	300	2	5	L	N	70	N	N	5	20	10	200	20	15	N	200	N	10	470898	666050					
165	5	.7	.7	.5	700	N	50	700	3	10	L	N	50	N	N	N	20	15	200	20	20	N	700	N	5	470898	666040					
166	.5	.1	.1	.05	50	N	15	300	1	5	L	N	N	N	N	N	10	N	100	10	50	N	50	N	5	480998	666410					
167	1	.3	.3	.1	100	N	20	300	1	5	15	N	N	N	N	7	10	N	150	20	20	N	100	N	5	480998	666408					
168	3	1.5	1.5	.2	500	N	50	1000	1.5	10	20	N	30	N	N	10	30	7	200	50	20	N	100	N	5	480998	666406					
169	1.5	.5	.1	.15	500	L	10	100	1	7	10	50	30	N	N	5	10	5	100	20	20	N	100	N	40	481004	666340					
170	3	.7	.7	.5	200	N	1000	1000	1.5	10	50	N	50	N	L	20	N	15	N	100	30	N	300	N	20	666440	484036					
171	1	.5	.15	.1	500	N	500	200	1	10	20	N	20	N	N	20	15	5	150	30	L	N	30	N	10	666530	481103					
172	1	1	1	.1	500	N	700	200	L	5	N	N	N	N	N	N	7	N	100	30	L	N	150	N	5	666530	481103					
173	.2	1	L	.07	300	N	10	150	L	N	N	7	N	N	N	L	N	N	N	L	N	N	300	N	N	5	667089	480898				
174	15	7	15	.61	1500	N	L	150	N	50	L	100	L	N	N	30	15	30	200	200	20	N	150	N	35	667090	480898					

Report Number	ROCK										ROCK										ROCK										X Easting	Y Northing
	S-Fe	S-Mg	S-Ca	S-Ti	S-Mn	S-Ag	S-B	S-Ba	S-Be	S-Co	S-Cr	S-Cu	S-La	S-Mo	S-Nb	S-Ni	S-Pb	S-Sc	S-Sr	S-V	S-Y	S-Zn	S-Zr	S-Th	AA-Zn							
402	.5	.05	L	.1	20	N	100	300	1	N	10	N	20	N	N	N	N	N	N	20	50	N	700	N	5	666440	481036					
403	3	.2	N	.2	500	N	100	300	1.5	7	30	20	20	N	N	5	10	7	N	50	20	N	1000	N	10	666350	480994					
404	1.5	.5	1	.15	300	N	15	300	2	5	10	N	L	N	N	10	15	5	300	70	10	N	200	N	20	666350	480994					
405	.05	.7	1	.2	200	N	20	300	3	7	10	N	70	N	N	10	15	5	300	70	15	N	50	N	20	665140	480883					
406	.05	L	.015	.20	200	N	10	70	L	N	10	N	N	N	N	N	N	N	N	10	20	N	N	N	L5	665010	480856					
501	1	.15	.05	.02	200	N	10	200	L	5	10	L	50	N	N	N	N	N	100	15	20	N	N	N	15	669560	470139					
502	3	.7	1.5	.7	300	N	15	200	1	15	50	50	70	N	L	20	15	15	200	100	50	N	1000	N	55	669810	480038					
503	3	2	.2	.2	700	N	20	1000	L	15	15	20	N	N	N	10	30	7	500	100	15	N	15	N	60	669940	480027					
504	1	.5	3	.1	300	N	10	300	2	5	10	N	N	N	N	5	N	5	500	50	10	N	15	N	20	670420	479961					
505	2	.5	1	.61	500	N	15	300	L	10	30	7	N	N	N	15	N	7	N	100	20	N	100	N	35	670350	479952					
506	5	2	3	1	700	N	10	100	L	15	70	20	N	N	N	20	10	20	300	200	50	N	70	N	25	670070	479912					
507	2	1	1.5	.2	300	N	30	500	2	10	10	N	50	N	N	5	20	7	200	70	10	N	50	N	20	670070	480014					
508	2	.3	L	.2	50	N	100	500	2	7	10	N	20	N	L	5	N	5	N	50	20	N	150	N	L5	671135	479960					
509	1.5	.5	.1	.5	100	N	70	500	1.5	N	30	N	50	N	20	5	N	7	150	70	30	N	1000	N	5	665920	480181					
510	2	.7	L	.5	100	N	150	700	1.5	N	30	10	70	N	N	N	20	10	100	70	30	N	200	N	5	662270	480447					
511	3	1.5	2	.3	500	N	10	300	1.5	15	150	30	20	N	N	20	10	15	200	100	30	N	70	N	35	662340	480482					
513	3	.5	.05	.3	500	N	20	300	1.5	10	50	5	5	N	L	5	10	10	N	70	70	N	300	N	50	668620	479372					
514	2	.3	.07	.5	500	N	20	300	1.5	10	50	5	5	N	L	7	N	10	N	70	30	N	300	N	30	668420	479370					
515	7	.5	5	.61	1500	N	20	200	1.5	20	100	30	20	N	N	50	20	30	700	300	50	N	100	N	85	668080	479373					
516	2	.7	.2	.1	200	N	50	1000	3	10	10	L	N	N	N	7	10	7	100	70	10	N	50	N	5	667740	479383					
517	5	1	.1	.1	500	N	30	300	1.5	15	100	7	N	N	L	15	L	20	150	150	70	N	500	N	25	659950	480688					
518	7	.5	.7	.7	1000	N	10	150	1.5	20	100	20	20	N	N	20	15	30	200	200	50	N	50	N	55	669520	480586					
519	5	.5	.2	.1	700	N	20	300	1.5	10	70	15	N	N	L	10	L	15	100	100	50	N	1000	N	5	669380	480664					
520	1	.2	.5	.15	50	N	10	700	1.5	N	10	L	30	N	N	N	10	--	200	50	10	N	50	N	N	668850	480879					
521	2	.7	.5	.2	300	N	30	1000	2	10	15	N	20	N	N	5	15	--	200	70	10	N	70	N	15	668300	480927					
522	1	1	.05	.07	200	N	50	2000	7	7	10	N	20	N	N	10	L	--	100	50	10	N	50	N	5	666340	480931					
523	1	.3	.5	.07	100	N	15	300	2	5	L	7	30	N	N	N	L	--	200	30	20	N	30	N	10	666283	480943					
524	2	1	.5	.15	200	N	30	500	2	10	10	5	20	N	N	5	10	--	200	50	15	N	50	N	10	666250	480942					
525	.2	L	L	.1	200	N	15	200	L	N	10	N	N	N	N	N	L	--	N	20	10	N	20	N	N	10	666130	480940				
526	5	1	L	.7	200	N	500	1000	1.5	10	100	15	70	N	N	15	10	--	100	150	50	N	150	N	10	665350	480887					
527	2	.3	L	.5	300	N	200	1000	2	7	20	5	50	N	N	10	10	--	100	70	50	N	70	N	10	665060	480873					
201	3	1.5	2	.3	500	N	10	1000	1.5	15	15	15	20	L	N	10	20	--	300	100	70	N	100	N	60	667150	479119					
203	2	1.5	3	.2	700	N	10	200	1.5	10	10	L	N	N	N	5	10	--	300	70	20	N	70	N	65	667130	479196					
207	3	1	2	.7	300	N	30	1000	2	15	10	7	N	N	N	5	10	--	200	70	10	N	70	N	40	667310	479303					
209	5	1.5	5	1	1500	L	20	1000	1	15	200	30	20	N	N	30	50	--	300	200	50	N	200	N	60	666310	479352					
213	7	.5	2	.5	3000	N	15	20	3	10	L	70	70	N	L	N	10	--	100	10	100	N	10	N	45	665900	480311					
214A	2	.5	.05	.5	700	N	20	200	1	10	50	10	50	N	N	10	15	--	N	100	50	N	100	N	25	670030	480272					
214C	15	5	5	1	1000	L	20	70	1	20	150	70	50	N	N	100	20	--	200	200	50	N	200	N	40	670030	480272					
215A	2	1.5	3	.5	500	N	10	500	1.5	15	15	N	20	N	N	7	20	--	500	100	20	N	100	N	90	668450	480135					
216	3	.5	.5	.5	700	N	70	700	2	15	50	N	50	N	N	10	10	--	N	70	70	N	70	N	65	668300	480113					

Report Number	ROCK										ROCK										ROCK										X Easting	Y Northing
	S-Fe %	S-Mg %	S-Ca %	S-Ti %	S-Mn ppm	S-Ag ppm	S-B ppm	S-Ba ppm	S-Be 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-Sc ppm	S-Sr ppm	S-V ppm	S-Y ppm	S-Zn ppm	S-Zr ppm	S-Th ppm	AA-Zn ppm							
217A1	1	.1	.2	.3	100	N	20	500	1	7	20	N	20	N	N	N	20	--	N	30	30	N	GI000	N	30	667870	479990					
217A2	1	.1	.2	.1	200	N	20	500	1.5	7	15	10	N	N	N	N	20	--	150	20	10	N	300	N	10	667870	479990					
217B	5	1	.1	.7	1000	N	70	300	1.5	15	70	10	20	N	N	15	30	--	N	100	70	N	500	N	45	667860	479981					
218	.3	.07	L	.05	20	N	20	100	1	N	10	N	N	N	N	5	N	--	N	20	L	N	100	N	N	666090	480154					
219	.7	.1	L	.3	30	N	10	200	1	N	20	N	50	N	N	N	N	N	N	50	15	N	1000	N	L	666190	480181					
220	15	2	5	.61	1000	N	15	200	2	20	70	30	N	10	N	20	10	50	150	200	70	N	700	N	120	666340	480249					
222	1.5	.5	.5	.2	200	L	15	300	2	10	10	30	N	N	N	5	N	L	150	30	15	N	70	N	20	667090	480220					
223	2	.610	10	.07	700	N	N	N	L	7	15	N	N	N	N	5	N	N	200	30	10	N	20	N	40	666590	480295					
225	7	3	5	1	500	N	200	1000	1	20	100	N	20	N	N	30	L	15	150	100	30	N	150	N	90	666630	480297					
226	1.5	.610	G20	.03	1000	N	L	N	1	7	10	5	N	N	N	N	N	N	150	10	10	N	50	N	60	666730	480300					
228	2	1	.2	.2	300	N	10	1000	1	10	15	N	20	N	N	7	10	5	500	50	L	N	70	N	25	668590	479130					
229	.3	.5	.05	1.5	20	N	200	100	1.5	N	20	N	20	N	N	N	N	5	100	70	20	N	GI000	N	L	665220	480108					
230	.2	.02	L	.05	100	N	50	200	1	N	10	N	20	N	N	N	N	N	N	20	10	N	GI000	N	L	665180	479994					
232B	.7	.610	G20	.05	200	N	10	30	L	N	15	5	N	N	N	5	20	N	100	20	10	N	30	N	15	663020	478928					
232C	.7	.610	G20	.05	300	N	10	20	L	5	15	L	N	N	N	5	20	N	N	15	10	N	20	N	15	663020	478928					
232F	.7	.10	G20	.05	500	N	10	300	1	N	10	N	20	N	N	L	7	15	L	100	70	30	N	700	N	25	663020	478928				
233	.7	.2	.1	.1	100	N	62000	200	5	N	L	L	N	N	N	N	30	L	100	20	30	N	20	N	L	665020	479375					
234	.7	1	.05	.1	700	N	100	300	1.5	15	100	5	N	N	N	L	30	10	15	N	100	10	N	200	N	75	665000	479389				
235	5	.5	.05	1	300	N	50	300	1.5	10	70	5	N	N	N	L	15	10	15	N	150	15	N	300	N	20	664530	479443				
236	1.5	.7	.2	.2	300	N	30	300	2	7	15	N	30	N	N	5	10	N	300	50	10	N	100	N	30	664770	479517					
241	2	1	.2	.2	500	N	20	500	1.5	10	10	L	20	N	N	5	L	L	200	50	15	N	150	N	25	664700	479761					
242	1	.07	L	.3	30	N	20	200	1	7	10	N	20	N	N	N	N	7	N	30	10	N	150	N	N	664290	479740					
243	.5	.07	.05	.15	100	N	100	200	L	7	10	N	N	N	N	N	N	N	N	15	10	N	500	N	N	664120	479740					
244	3	.5	.5	.5	500	N	50	500	3	15	20	N	100	L	20	15	10	15	N	150	70	N	300	N	35	666970	479790					
245	7	.2	5	.7	1500	N	70	200	1.5	20	50	15	20	N	N	15	20	100	300	200	70	N	500	N	120	667190	479784					
247A	2	.5	.2	.2	200	N	20	300	3	N	L	7	N	N	N	N	10	7	100	50	30	N	200	N	20	666510	479796					
247B	2	.5	.2	.15	700	N	30	300	3	10	L	10	50	N	N	N	L	7	150	20	50	N	200	N	30	666510	479796					
253	5	1	.7	.61	300	L	30	300	3	10	100	15	30	N	N	10	L	30	N	150	30	N	200	N	105	667330	479548					
254	3	.07	.05	1	100	N	30	300	1.5	15	70	N	30	N	N	L	20	N	20	N	100	20	N	300	N	25	667350	479534				
255	7	.5	.5	.61	700	N	10	150	1	20	100	100	20	N	N	30	10	50	200	200	50	N	200	N	40	665720	479598					
256A	2	.3	.2	.7	500	N	300	700	1.5	10	50	15	30	N	N	10	10	10	200	70	50	N	500	N	10	664370	479926					
256B	2	1	.2	.3	500	N	30	300	3	10	10	N	20	N	N	5	10	15	200	50	30	N	150	N	75	664370	479926					
257	1	.3	.05	.3	50	N	50	700	2	5	20	N	30	N	N	N	15	7	100	50	70	N	500	N	5	664310	479932					
258	.7	.2	L	.2	70	N	70	300	1.5	5	10	N	30	N	N	N	N	N	N	30	10	N	500	N	L	664070	480157					
260	1.5	.15	.15	.2	50	N	10	200	L	5	10	N	N	N	N	5	N	5	N	30	15	N	700	N	10	664430	479930					
261	1.5	.02	N	.7	200	N	50	50	L	5	10	N	N	N	N	L	N	L	N	50	10	N	GI000	N	N	664380	479919					
262	2	1	1	.2	500	N	30	1000	1	7	15	15	50	N	N	5	50	15	150	50	50	N	200	N	(10)L	664290	479902					
263A	15	.7	1	.61	2000	L	15	200	L	20	50	20	N	N	N	20	50	70	N	300	50	300	150	N	230	664270	479892					
263B	7	2	1	1	1000	N	20	300	1	15	70	10	20	N	N	20	30	20	100	70	50	N	200	N	10	664270	479882					
264A	3	.3	L	1	100	N	G2000	200	150	15	50	N	100	N	N	L	20	N	15	N	100	15	N	1000	N	L	664240	479857				
264C	1	.1	N	.2	20	N	500	100	1.5	5	15	N	50	N	N	N	N	N	N	30	20	N	GI000	N	N	664240	479857					

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Report Number	S-Fe	S-Mg	S-Ca	S-Ti	S-Mn	S-Ag	S-B	S-Ba	S-Be	S-Co	S-Cr	S-Cu	S-La	S-Mo	S-Nb	S-Ni	S-Pb	S-Sc	S-Sr	S-V	S-Y	S-Zn	S-Zr	S-Th	AA-Zn	X	Y	
	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	Eastng	Horthing	
270	1.5	.15	.3	.1	300	N	20	500	2	N	L	10	100	10	20	N	20	L	150	10	70	N	300	N	35	666820	480011	
271	5	1	1.5	.1	700	N	50	300	1.5	15	20	10	30	N	N	20	10	20	200	100	50	N	200	N	80	666760	480063	
273A	2	.5	.2	.5	700	N	30	500	2	15	20	15	30	N	N	15	L	15	N	100	70	N	N	N	60	667410	480185	
273B	3	.5	.2	.7	700	N	30	700	2	15	30	15	50	N	N	20	L	15	N	100	70	N	N	N	55	667410	480185	
273C	10	5	5	.61	1000	N	15	200	1	20	70	100	20	N	N	50	L	50	N	200	50	N	N	N	50	667410	480185	
275	10	2	10	.61	1500	L	10	100	1	20	50	100	20	5	N	50	L	30	200	300	50	N	200	N	20	667890	479937	
276	5	.7	.3	.7	500	N	50	300	1.5	10	30	20	30	N	N	15	L	10	150	70	20	N	N	N	45	667870	479925	
279	10	2	2	.61	2000	N	10	300	1	20	20	50	20	N	N	15	10	30	150	200	30	N	150	N	150	667100	479785	
284	15	5	10	.61	1500	N	10	100	2	20	200	5	30	N	N	70	20	50	100	300	70	N	100	N	90	667240	479852	
288	5	1	1	.5	1500	N	70	700	1.5	10	50	15	70	N	N	15	10	20	150	100	50	N	150	N	65	666670	480174	
292	1.5	.3	.05	.1	300	N	20	500	2	N	10	L	50	N	N	N	10	5	N	50	30	N	N	N	75	666900	480122	
293	2	.3	L	.5	300	N	200	1000	1.5	7	30	L	20	N	N	10	10	7	200	50	20	N	200	N	5	665550	480140	
295	2	.5	.05	.7	100	N	150	1000	1.5	5	50	L	50	N	N	7	10	10	200	70	50	N	200	N	L	665390	480198	
298	1.5	5	10	.1	300	N	700	200	L	10	50	N	N	N	N	10	N	5	N	100	20	N	N	N	35	665420	480323	
298M	2	.610	20	.05	1000	N	15	N	L	5	L	N	N	N	N	N	N	N	150	10	10	N	150	N	10	665420	480323	
305	1.5	5	.15	.1	2000	N	70	1500	1	20	100	200	N	N	20	20	10	20	100	50	50	N	N	N	35	665610	480732	
306	1.5	.5	.2	.1	200	N	10	200	1.5	7	10	7	N	N	N	N	10	5	100	50	15	N	100	N	15	664390	480317	
310	.2	.03	L	.15	100	N	10	200	1	N	10	5	30	N	N	N	N	N	N	30	15	N	N	N	N	5	663860	450374
314	.7	.1	L	.3	500	N	300	300	1	5	10	N	20	N	N	N	10	5	100	20	20	N	100	N	5	664060	480434	
315	1.5	.3	.05	.5	50	N	150	300	1	5	20	N	20	N	L	N	10	10	N	70	30	N	N	N	N	664500	480581	
318	1.5	.7	L	.2	100	N	30	500	1	5	10	N	20	N	N	N	10	N	100	30	20	N	700	N	5	664960	480524	
319	2	.5	N	.5	100	N	200	700	1.5	N	50	L	50	N	N	N	15	10	150	70	30	N	500	N	5	664910	480479	
320	3	1	1	.5	700	N	30	500	2	15	30	15	50	N	N	20	20	15	200	100	30	N	200	N	60	667700	480574	
321	7	.7	.2	1	1500	N	50	300	1.5	15	100	20	30	L	N	20	10	20	N	100	50	N	300	N	40	668300	479908	
322	10	5	5	.61	1000	N	15	200	L	20	150	50	30	N	N	70	10	30	200	200	30	N	200	N	30	668330	479848	
328	10	5	7	.61	1500	N	15	20	L	20	70	20	30	7	N	50	N	50	150	150	30	N	200	N	25	669820	497775	
330	5	5	3	.2	700	N	20	500	L	20	500	N	20	N	N	100	N	15	300	300	20	N	200	N	80	669980	479774	
334	2	1.5	2	.5	500	N	15	500	1.5	15	15	20	20	N	N	10	20	7	500	500	15	N	150	N	60	666680	480732	
335	1.5	.7	.5	.1	300	N	50	500	2	7	L	N	50	N	N	5	15	N	300	300	10	N	100	N	15	665440	480732	
338	.3	.02	L	.1	50	N	20	200	L	N	10	N	N	N	N	N	10	N	N	N	N	N	N	N	N	L	665780	480653
341	5	.2	.05	.7	200	N	2000	1000	2	15	50	5	20	N	L	20	10	15	N	N	30	N	200	N	25	666220	480640	
342	10	5	5	.61	1500	N	10	100	1	20	100	30	20	5	N	50	15	50	200	200	50	N	100	N	50	667150	480718	
343	1.5	.5	.3	.2	200	N	10	500	1.5	7	L	10	50	N	N	N	15	L	N	N	15	N	300	N	20	670250	480604	
344	5	.3	.5	.61	700	N	15	200	1	15	50	5	20	N	20	7	10	15	N	N	20	N	200	N	20	670700	480586	
345	.7	.15	.5	.07	70	N	10	500	1.5	N	L	N	20	N	N	N	10	5	150	150	20	N	700	N	5	670810	480604	
346	1.5	.3	1	.2	150	N	10	500	1.5	N	L	5	30	N	N	5	N	7	100	100	50	N	200	N	10	670650	480823	
348	5	2	.7	.5	500	N	15	700	L	15	50	50	30	7	N	15	10	15	150	150	20	N	100	N	50	671440	480832	
357	1	.15	L	.1	10	N	100	500	3	N	10	5	N	N	N	N	10	N	150	150	20	N	200	N	L	664850	480772	
358	3	1	5	.3	500	N	20	700	2	10	15	10	20	N	N	10	15	7	500	500	15	N	100	N	60	663350	480781	