|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Ba (ppm)** | **Nb (ppm)** | **Zr (ppm)** | **Sr (ppm)** | **Rb (ppm)** |
| **Sample** | **Basin** | Meas. | Error +/- | Meas. | Error +/- | Meas. | Error +/- | Meas. | Error +/- | Meas. | Error +/- |
| SC-01 | Tweed | 309 | 122 | bdl |   | 106 | 2 | 9 | 3 | bdl |   |
| SC-02 | Tweed | 323 | 113 | bdl |   | 62 | 1 | 8 | 4 | bdl |   |
| SC-03 | Tweed | 326 | 109 | bdl |   | 43 | 1 | 8 | 3 | 8 | 2 |
| SC-04 | Tweed | 310 | 120 | bdl |   | 41 | 1 | 9 | 2 | bdl |   |
| SC-05 | Tweed | 313 | 120 | 3 | 1 | 202 | 2 | 12 | 2 | bdl |   |
| SC-06 | Tweed | 311 | 125 | bdl |   | 117 | 2 | 13 | 2 | 6 | 2 |
| SC-07 | Tweed | 326 | 103 | bdl |   | 104 | 1 | 7 | 4 | bdl |   |
| SC-08 | Tweed | 303 | 147 | bdl |   | 138 | 2 | 8 | 3 | bdl |   |
| SC-09 | Tweed | 313 | 126 | bdl |   | 138 | 2 | 9 | 3 | bdl |   |
| SC-10 | Tweed | 326 | 106 | bdl |   | 123 | 2 | 5 |   | bdl |   |
| SC-11 | Tweed | 302 | 137 | bdl |   | 80 | 1 | 9 | 3 | bdl |   |
| SC-12 | Tweed | 320 | 124 | bdl |   | 215 | 2 | 9 | 3 | bdl |   |
| SC-13 | Tweed | 296 | 132 | bdl |   | 97 | 1 | 8 | 3 | bdl |   |
| SC-14 | Tweed | 321 | 107 | bdl |   | 80 | 1 | 8 | 4 | bdl |   |
| SC-15 | Tweed | 334 | 94 | bdl |   | 75 | 1 | 9 | 3 | bdl |   |
| MUR-01 | Tweed | 343 | 91 | bdl |   | 53 | 1 | 12 | 2 | 10 | 2 |
| MUR-02 | Tweed | 334 | 104 | 2 | 1 | 102 | 2 | 9 | 3 | 9 | 2 |
| MUR-03 | Tweed | 350 | 89 | bdl |   | 57 | 1 | 11 | 2 | 8 | 2 |
| MUR-04 | Tweed | 373 | 79 | bdl |   | 87 | 1 | 14 | 2 | 10 | 2 |
| MUR-05 | Tweed | 381 | 79 | bdl |   | 82 | 1 | 14 | 2 | 11 | 1 |
| MUR-06 | Tweed | 319 | 118 | bdl |   | 79 | 1 | 8 | 3 | 6 | 2 |
| MUR-07 | Tweed | 311 | 122 | bdl |   | 58 | 1 | 8 | 3 | 5 | 3 |
| MUR-08 | Tweed | 434 | 67 | 3 | 1 | 237 | 2 | 17 | 1 | 25 | 1 |
| MUR-09 | Tweed | 347 | 92 | bdl |   | 74 | 1 | 11 | 2 | 8 | 2 |
| MUR-10 | Tweed | 318 | 49 | bdl | 1 | 46 | 2 | 12 | 1 | 7 | 1 |
| MUR-11 | Tweed | 349 | 66 | bdl | 1 | 101 | 2 | 12 | 1 | 8 | 1 |
| MUR-12 | Tweed | 419 | 113 | bdl |   | 52 | 1 | 16 | 2 | 17 | 2 |
| DR-01 | Northumberland | 650 | 96 | 2 |   | 121 | 1 | 42 | 2 | 37 | 2 |
| DR-02 | Northumberland | 460 | 68 | 5 |   | 227 | 1 | 31 | 2 | 23 | 1 |
| DR-03 | Northumberland | 374 | 78 | bdl |   | 180 | 2 | 13 | 2 | 9 | 2 |
| DR-04 | Northumberland | 424 | 77 | 4 | 1 | 79 | 1 | 22 | 1 | 15 | 1 |
| DR-05 | Northumberland | 445 | 70 | bdl |   | 48 | 1 | 22 | 1 | 18 | 1 |
| DR-06 | Northumberland | 460 | 63 | bdl |   | 65 | 1 | 29 | 1 | 19 | 1 |
| DR-07 | Northumberland | 423 | 72 | bdl |   | 63 | 1 | 23 | 1 | 12 | 1 |
| ST-1309 | Northumberland | 363 | 92 | bdl |   | 46 | 1 | 32 | 1 | 5 | 3 |
| ST-1380 | Northumberland | 348 | 95 | bdl |   | 103 | 2 | 45 | 1 | 6 | 2 |
| ST-1406 | Northumberland | 341 | 93 | bdl |   | 37 | 1 | 20 | 1 | bdl |   |
| ST-1412 | Northumberland | 350 | 87 | bdl |   | 44 | 1 | 28 | 1 | 5 | 3 |
| ST-1420 | Northumberland | 337 | 95 | bdl |   | 39 | 1 | 27 | 1 | bdl |   |
| ST-1434 | Northumberland | 292 | 145 | 3 | 1 | 168 | 2 | 29 | 1 | bdl |   |
| ST-1436 | Northumberland | 342 | 94 | bdl |   | 91 | 1 | 23 | 1 | bdl |   |
| ST-1447 | Northumberland | 356 | 84 | bdl |   | 48 | 1 | 26 | 1 | 5 | 3 |
| ST-1454 | Northumberland | 369 | 82 | 2 | 1 | 68 | 1 | 49 | 1 | bdl |   |
| ST-1461 | Northumberland | 457 | 64 | 4 | 1 | 416 | 3 | 47 | 1 | 14 | 1 |
| ST-1466 | Northumberland | 348 | 89 | bdl |   | 42 | 1 | 25 | 1 | 6 | 2 |
| ST-1525 | Northumberland | 541 | 54 | 4 |   | 293 | 3 | 55 | 1 | 24 | 1 |
| ST-1545 | Northumberland | 345 | 89 |   |   | 37 | 1 | 22 | 1 | bdl |   |
| ST-1553 | Northumberland | 440 | 62 | bdl |   | 56 | 1 | 43 | 1 | 7 | 2 |
| ST-1579 | Northumberland | 383 | 74 | 2 | 1 | 150 | 2 | 23 | 1 | 5 | 2 |
| ST-1719 | Northumberland | 430 | 65 | bdl |   | 136 | 2 | 34 | 1 | 6 | 2 |
| ST-1924 | Northumberland | 5029 | 56 | bdl |   | 36 | 1 | 190 | 2 | 5 | 3 |
| HA-4922 | Alston | 400 | 72 | bdl |   | 66 | 1 | 20 | 1 | 20 | 1 |
| HA-5651 | Alston | 466 | 67 | 2 | 1 | 23 | 1 | 44 | 1 | 7 | 2 |
| HA-5658 | Alston | 404 | 76 | bdl |   | 101 | 2 | 58 | 2 | 13 | 1 |
| HA-5697 | Alston | 457 | 61 | bdl |   | 37 | 1 | 39 | 1 | 21 | 1 |
| HA-5703 | Alston | 686 | 47 | bdl |   | 35 | 1 | 30 | 1 | 29 | 1 |
| HA-5719 | Alston | 407 | 76 | bdl |   | 40 | 1 | 46 | 1 | 14 | 1 |
| HA-5752 | Alston | 368 | 82 | bdl |   | 64 | 1 | 20 | 1 | 11 | 1 |
| HA-5764 | Alston | 432 | 69 | bdl |   | 36 | 1 | 32 | 1 | 29 | 1 |
| HA-5774 | Alston | 284 | 163 | bdl |   | 42 | 1 | 42 | 1 | 13 | 1 |
| HA-5783 | Alston | 474 | 61 | bdl |   | 28 | 1 | 40 | 1 | 20 | 1 |
| HA-5793 | Alston | 370 | 84 | bdl |   | 151 | 2 | 23 | 1 | 11 | 1 |
| HA-5798 | Alston | 401 | 72 | 2 | 1 | 204 | 2 | 40 | 1 | 14 | 1 |

Supplementary data table 2: Concentrations of selected elements in parts per million (ppm) for sandstone samples belonging to the Fell Sandstone Formation across the northern Pennine Basin. Bdl = below limit of detection.