

## Supplemental Information for

### **Widespread elevated iridium in Upper Triassic-Lower Jurassic strata of the Newark Supergroup: Implications for use as an extinction marker**

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Supplemental Table 1a. Fundy Basin LFA and RNAA data.

N 45° 23.605', W 64° 14.292'

| Formation   | Member/lithology | ID   | Strat position | Au ng/g (LFA) | Ir pg/g (RNAA) | Pd ng/g (LFA) | Pt ng/g (LFA) |
|-------------|------------------|------|----------------|---------------|----------------|---------------|---------------|
| McCoy Brook | Scots Bay        | SB-1 | NMB + 0.04 m   | 6.3           | 247            | 2.03          | 1.55          |
| McCoy Brook | Scots Bay        | SB-2 | NMB + 0.05 m   | 9.3           | 559            | 2.38          | 2.29          |
| McCoy Brook | Scots Bay        | FB-3 | NMB + 0.10 m   |               | 74             |               |               |
| McCoy Brook | Scots Bay        | FB-4 | NMB + 0.20 m   |               | 56             |               |               |
| McCoy Brook | Eolian           | MBE  | NMB + 28 m     |               | 11             |               |               |

N 45° 23.224', W 64° 15.036'

|             |                 |       |               |  |    |  |  |
|-------------|-----------------|-------|---------------|--|----|--|--|
| McCoy Brook | upper lake beds | MBL-1 | NMB + 30.10 m |  | 25 |  |  |
| McCoy Brook | upper lake beds | MBL-2 | NMB + 30.20 m |  | 21 |  |  |
| McCoy Brook | upper lake beds | MBL-3 | NMB + 30.30 m |  | 33 |  |  |
| McCoy Brook | upper lake beds | MBL-4 | NMB + 30.40 m |  | 43 |  |  |

N 45° 23.838', W 64° 12.199'

|             |            |     |              |  |     |  |  |
|-------------|------------|-----|--------------|--|-----|--|--|
| McCoy Brook | McKay Head | MBH | NMB + 0.10 m |  | 121 |  |  |
|-------------|------------|-----|--------------|--|-----|--|--|

NMB = North Mountain Basalt

Supplemental Table 1b. INAA of Fundy Basin samples in supplemental table 1a.

| Formation   | Lithology       | ID    | Strat position | Sc<br>µg/g | Cr<br>µg/g | Fe<br>mg/g | Co<br>µg/g | Ni<br>µg/g | Zn<br>µg/g | Rb<br>µg/g | Cs<br>µg/g | Ce<br>µg/g | Eu<br>µg/g | Tb<br>µg/g | Yb<br>µg/g | Hf<br>µg/g | Ta<br>µg/g | Th<br>µg/g |
|-------------|-----------------|-------|----------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| McCoy Brook | MB Eolian       | MBE   | NMB + 28 m     | 1.9        | 10.3       | 5.3        | 2.1        | 70.6       | 10.3       | 30.3       | 1.1        | 37.5       | 0.6        | 0.3        | 0.9        | 5.7        | 0.4        | 3.4        |
| McCoy Brook | upper lake beds | MBL-1 | NMB + 30.10 m  | 14.4       | 81.7       | 41.2       | 13.9       | 118.6      | 82.4       | 195.2      | 21.4       | 80.4       | 1.3        | 0.8        | 2.2        | 4.8        | 0.9        | 10.8       |
| McCoy Brook | upper lake beds | MBL-2 | NMB + 30.20 m  | 14.0       | 78.7       | 36.9       | 13.4       | 62.1       | 75.4       | 179.8      | 19.8       | 71.7       | 1.2        | 0.8        | 2.3        | 3.9        | 1.0        | 10.1       |
| McCoy Brook | upper lake beds | MBL-3 | NMB + 30.30 m  | 11.7       | 66.1       | 33.8       | 11.2       | 23.8       | 41.4       | 140.8      | 14.7       | 141.5      | 2.1        | 1.2        | 2.7        | 4.9        | 0.8        | 7.9        |
| McCoy Brook | upper lake beds | MBL-4 | NMB + 30.40 m  | 7.7        | 37.5       | 24.0       | 7.0        | 7.0        | 38.7       | 80.3       | 7.4        | 219.4      | 3.1        | 1.7        | 2.8        | 3.8        | 0.8        | 5.4        |
| McCoy Brook | McKay Head      | MBH   | NMB + 0.10 m   | 12.5       | 33.8       | 21.1       | 19.8       | <87.83     | 36.7       | 68.1       | 2.6        | 107.1      | 1.6        | 1.2        | 3.8        | 3.6        | 0.7        | 13.3       |

Supplemental Table 2a. Deerfield Basin LFA and RNAA data.

N 42° 37.005', W 72° 33.166' below DB

| Formation    | Member          | Strat position | Au ng/g (LFA) | Ir pg/g (RNAA) | Pd ng/g (LFA) | Pt ng/g (LFA) |
|--------------|-----------------|----------------|---------------|----------------|---------------|---------------|
| Sugarloaf Fm | Fall River Beds | DB-5.0         |               | 16             |               |               |
| Sugarloaf Fm | Fall River Beds | DB-4.0         |               | 28             |               |               |
| Sugarloaf Fm | Fall River Beds | DB-3.0         | 7.4           | 90             | 1.62          | 0.72          |
| Sugarloaf Fm | Fall River Beds | DB-2.5         |               | 54             |               |               |
| Sugarloaf Fm | Fall River Beds | DB-2.0         |               | 37             |               |               |
| Sugarloaf Fm | Fall River Beds | DB-1.5         |               | 31             |               |               |
| Sugarloaf Fm | Fall River Beds | DB-1.0         |               | 38             |               |               |
| Sugarloaf Fm | Fall River Beds | DB-0.9         |               | 36             |               |               |
| Sugarloaf Fm | Fall River Beds | DB-0.8         |               | 37             |               |               |
| Sugarloaf Fm | Fall River Beds | DB-0.7         |               | 35             |               |               |
| Sugarloaf Fm | Fall River Beds | DB-0.6         |               | 30             |               |               |
| Sugarloaf Fm | Fall River Beds | DB-0.5         |               | 31             |               |               |
| Sugarloaf Fm | Fall River Beds | DB-0.4         |               | 36             |               |               |
| Sugarloaf Fm | Fall River Beds | DB-0.3         |               | 44             |               |               |
| Sugarloaf Fm | Fall River Beds | DB-0.2         |               | 49             |               |               |
| Sugarloaf Fm | Fall River Beds | DB-0.1         |               | 34             |               |               |

N 42° 36.879', W 72° 33.084' above DB

|                  |        |    |
|------------------|--------|----|
| Turners Falls Fm | DB+0.1 | 31 |
| Turners Falls Fm | DB+0.5 | 44 |
| Turners Falls Fm | DB+1.5 | 71 |
| Turners Falls Fm | DB+2.0 | 40 |

DB = Deerfield Basalt

Supplemental Table 2b. Deerfield Basin INAA of samples in supplemental table 2a.

| Formation        | Member          | Strat position | Sc<br>μg/g | Cr<br>μg/g | Fe<br>mg/g | Co<br>μg/g | Ni<br>μg/g | Zn<br>μg/g | Rb<br>μg/g | Cs<br>μg/g | Ce<br>μg/g | Eu<br>μg/g | Tb<br>μg/g | Yb<br>μg/g | Hf<br>μg/g | Ta<br>μg/g | Th<br>μg/g |
|------------------|-----------------|----------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Sugarloaf Fm     | Fall River Beds | DB-5.0         | 26.3       | 126        | 48.0       | 18         | 47.1       | 87.0       | 180        | 7.7        | 114.8      | 1.5        | 1.2        | 3.6        | 8.3        | 1.3        | 14.8       |
| Sugarloaf Fm     | Fall River Beds | DB-4.0         | 14.7       | 91         | 48.4       | 18         | 59.1       | 94.6       | 88         | 3.5        | 97.4       | 1.5        | 1.1        | 3.2        | 6.2        | 1.6        | 14.3       |
| Sugarloaf Fm     | Fall River Beds | DB-3.0         | 24.5       | 112        | 46.5       | 22         | 58.9       | 96.0       | 199        | 12.2       | 69.3       | 1.2        | 0.9        | 2.9        | 6.5        | 1.2        | 13.0       |
| Sugarloaf Fm     | Fall River Beds | DB-2.5         | 16.0       | 72         | 33.6       | 13         | 39.5       | 49.4       | 115        | 6.0        | 88.9       | 1.8        | 1.2        | 3.7        | 6.3        | 1.5        | 11.4       |
| Sugarloaf Fm     | Fall River Beds | DB-2.0         | 15.6       | 73         | 37.0       | 13         | 25.8       | 69.7       | 111        | 4.6        | 127.9      | 1.8        | 1.5        | 3.8        | 8.7        | 1.2        | 17.4       |
| Sugarloaf Fm     | Fall River Beds | DB-1.5         | 18.3       | 88         | 38.4       | 22         | 76.2       | 73.0       | 163        | 8.9        | 85.1       | 1.6        | 1.3        | 3.5        | 9.4        | 1.3        | 14.5       |
| Sugarloaf Fm     | Fall River Beds | DB-1.0         | 18.6       | 83         | 43.7       | 18         | 28.1       | 102.2      | 169        | 10.4       | 97.8       | 2.2        | 1.6        | 4.1        | 7.9        | 1.2        | 13.7       |
| Sugarloaf Fm     | Fall River Beds | DB-0.9         | 18.3       | 88         | 48.7       | 17         | 42.5       | 64.0       | 188        | 10.9       | 80.3       | 1.5        | 1.1        | 3.3        | 7.5        | 1.2        | 11.8       |
| Sugarloaf Fm     | Fall River Beds | DB-0.8         | 18.1       | 88         | 49.3       | 19         | 58.8       | 66.4       | 203        | 13.5       | 67.9       | 1.2        | 0.9        | 2.8        | 7.1        | 1.4        | 11.7       |
| Sugarloaf Fm     | Fall River Beds | DB-0.7         | 17.2       | 74         | 31.7       | 11         | 19.4       | 43.8       | 104        | 5.1        | 107.1      | 2.1        | 1.4        | 3.7        | 6.9        | 1.0        | 14.3       |
| Sugarloaf Fm     | Fall River Beds | DB-0.6         | 12.6       | 63         | 28.9       | 10         | 45.0       | 38.9       | 99         | 4.3        | 111.0      | 1.8        | 1.2        | 3.3        | 7.7        | 0.9        | 13.6       |
| Sugarloaf Fm     | Fall River Beds | DB-0.5         | 15.9       | 74         | 43.8       | 13         | 25.2       | 59.0       | 151        | 6.0        | 67.8       | 1.3        | 0.9        | 3.1        | 8.1        | 1.2        | 11.8       |
| Sugarloaf Fm     | Fall River Beds | DB-0.4         | 13.1       | 70         | 37.8       | 15         | 43.0       | 50.6       | 86         | 3.3        | 74.4       | 1.4        | 0.9        | 2.7        | 6.7        | 1.0        | 12.1       |
| Sugarloaf Fm     | Fall River Beds | DB-0.3         | 19.7       | 104        | 60.6       | 22         | 19.2       | 79.0       | 202        | 12.4       | 95.9       | 1.8        | 1.3        | 3.8        | 9.5        | 1.4        | 16.0       |
| Sugarloaf Fm     | Fall River Beds | DB-0.2         | 16.3       | 81         | 57.2       | 23         | 50.9       | 79.0       | 189        | 14.2       | 109.6      | 1.9        | 1.3        | 3.6        | 7.6        | 1.1        | 13.5       |
| Sugarloaf Fm     | Fall River Beds | DB-0.1         | 15.1       | 73         | 40.2       | 22         | 57.9       | 70.3       | 124        | 9.1        | 96.1       | 1.5        | 1.0        | 3.1        | 8.0        | 1.0        | 12.7       |
| Turners Falls Fm |                 | DB+0.1         | 10.7       | 56         | 49.1       | 29         | 54.2       | 93.2       | 55         | 4.8        | 57.2       | 1.4        | 1.0        | 2.8        | 6.8        | 1.0        | 9.9        |
| Turners Falls Fm |                 | DB+0.5         | 15.5       | 95         | 51.4       | 16         | 40.9       | 62.6       | 140        | 9.0        | 96.1       | 1.5        | 1.0        | 3.0        | 5.9        | 1.2        | 13.5       |
| Turners Falls Fm |                 | DB+1.5         | 25.5       | 93         | 52.5       | 20         | <47        | 60.5       | 186        | 12.4       | 147.6      | 1.9        | 1.5        | 3.5        | 8.6        | 1.6        | 21.8       |
| Turners Falls Fm |                 | DB+2.0         | 12.8       | 60         | 28.5       | 11         | 65.5       | 38.6       | 125        | 8.5        | 68.4       | 1.7        | 0.9        | 2.6        | 4.5        | 0.9        | 7.8        |

Supplemental Table 3a. Hartford Basin LFA and RNAA data.

| Formation                                                   | ID     | lithology      | Strat position         | Au ng/g (LFA) | Ir pg/g (RNAA) | Pd ng/g (LFA) | Pt ng/g (LFA) |
|-------------------------------------------------------------|--------|----------------|------------------------|---------------|----------------|---------------|---------------|
| N 42° 13.018', W 72° 39.781' Holyoke Clathropteris locality |        |                |                        |               |                |               |               |
| New Haven Fm (presumed)                                     | HC-F-1 | fine-grained   | 0.01 m from base       | 15.1          | 542            | 1.83          | 0.94          |
| New Haven Fm                                                | HC-F-2 | fine-grained   | 0.02 m                 | 8             | 409            | 0.86          | 0.7           |
| New Haven Fm                                                | HC-F-3 | fine-grained   | 0.03 m                 |               | 386            |               |               |
| New Haven Fm                                                | HC-F-4 | fine-grained   | 0.04 m                 |               | 244            |               |               |
| New Haven Fm                                                | HC-C-1 | coarse-grained | 0.1 m above fine layer |               | 52             |               |               |
| New Haven Fm                                                | HC-C-2 | coarse-grained | 0.1 m below fine layer |               | 36             |               |               |
| N 41° 35.178', W 72° 45.688' Silver Ridge                   |        |                |                        |               |                |               |               |
| New Haven Fm                                                | HB-3   |                | TB - 1.5 m             |               | 51             |               |               |
| New Haven Fm                                                | HB-4   |                | TB - 1.6 m             |               | 61             |               |               |

TB = Talcott Basalt

Supplemental Table 3b. Hartford Basin, Holyoke *Clathropteris* locality INAA for samples in supplemental table 3a.

| Formation | ID     | lithology      | Strat position | Sc   | Cr    | Fe   | Co   | Ni     | Zn   | Rb    | Cs   | Ce    | Eu   | Tb   | Yb   | Hf   | Ta   | Th   |
|-----------|--------|----------------|----------------|------|-------|------|------|--------|------|-------|------|-------|------|------|------|------|------|------|
|           |        |                |                | µg/g | µg/g  | mg/g | µg/g | µg/g   | µg/g | µg/g  | µg/g | µg/g  | µg/g | µg/g | µg/g | µg/g | µg/g | µg/g |
| New Haven | HC-F-1 | fine-grained   | 0.01 m         | 17.9 | 101.9 | 97.1 | 80.4 | 86.1   | 97.3 | 211.3 | 2.8  | 111.9 | 2.2  | 1.3  | 4.5  | 3.0  | 1.5  | 13.7 |
| New Haven | HC-F-2 | fine-grained   | 0.02 m         | 13.5 | 104.3 | 51.0 | 10.0 | <82.83 | 65.2 | 204.6 | 2.1  | 98.6  | 2.0  | 1.2  | 3.1  | 4.7  | 1.6  | 20.9 |
| New Haven | HC-C-1 | coarse-grained | above fine     | 20.3 | 99.0  | 50.1 | 6.2  | 80.6   | 67.3 | 115.2 | 3.1  | 92.0  | 1.1  | 0.9  | 2.5  | 6.1  | 1.3  | 15.0 |
| New Haven | HC-C-2 | coarse-grained | below fine     | 21.5 | 107.3 | 54.2 | 7.8  | <116.6 | 66.0 | 123.1 | 3.0  | 88.2  | 1.1  | 0.8  | 2.5  | 6.6  | 1.3  | 14.6 |

Supplemental Table 4. Newark Basin NSFA data.

N 40° 52.750', W 74° 11.311' Tilcon Quarry

| Formation  | ID   | Strat poition | Au ng/g | Ir pg/g | Pd ng/g | Pt ng/g | Rh ng/g | Ru ng/g |
|------------|------|---------------|---------|---------|---------|---------|---------|---------|
| Passaic Fm | TQ-1 | OMB - 1.80 m  | 9       | 780     | 2.77    | 5.38    | 0.43    | 1.47    |
| Passaic Fm | TQ-2 | OMB - 1.82 m  | 4.3     | 510     | 1.81    | 2.98    | 0.29    | 0.92    |

TQ = Tilcon Quarry, OMB = Orange Mountain Basalt