

**metals**  
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**MATRIX SPIKE SUMMARY**

**client:** RU2 Engineering, LLC **level:** low **sdg no.:** Q1215  
**contract:** RUTW01 **lab code:** CHEM **case no.:** Q1215 **sas no.:** Q1215  
**matrix:** Solid **sample id:** Q1221-01 **client id:** CHESTNUT-CONCRETEMS  
**Percent Solids for Sample:** 100 **Spiked ID:** Q1221-01MS **Percent Solids for Spike Sample:** 100

| Analyte   | Units | Acceptance<br>Limit %R | Spiked<br>Result | C | Sample<br>Result | C | Spike<br>Added | %<br>Recovery | Qual | M |
|-----------|-------|------------------------|------------------|---|------------------|---|----------------|---------------|------|---|
| Aluminum  | mg/Kg | 75 - 125               | 6050             |   | 3760             |   | 93.5           | 2448          |      | P |
| Antimony  | mg/Kg | 75 - 125               | 16.5             |   | 2.28             | U | 37.4           | 44            | N    | P |
| Arsenic   | mg/Kg | 75 - 125               | 44.0             |   | 0.84             | J | 37.4           | 116           |      | P |
| Barium    | mg/Kg | 75 - 125               | 38.0             |   | 17.3             |   | 9.3            | 222           | N    | P |
| Beryllium | mg/Kg | 75 - 125               | 8.56             |   | 0.21             | J | 9.3            | 90            |      | P |
| Cadmium   | mg/Kg | 75 - 125               | 9.30             |   | 0.27             | U | 9.3            | 100           |      | P |
| Calcium   | mg/Kg | 75 - 125               | 50100            |   | 39700            |   | 46.7           | 22209         |      | P |
| Chromium  | mg/Kg | 75 - 125               | 44.4             |   | 7.31             |   | 18.7           | 199           | N    | P |
| Cobalt    | mg/Kg | 75 - 125               | 12.6             |   | 0.92             | J | 9.3            | 126           | N    | P |
| Copper    | mg/Kg | 75 - 125               | 19.9             |   | 1.90             |   | 14.0           | 129           | N    | P |
| Iron      | mg/Kg | 75 - 125               | 18000            |   | 3860             |   | 140            | 10106         |      | P |
| Lead      | mg/Kg | 75 - 125               | 52.3             |   | 1.47             |   | 46.7           | 109           |      | P |
| Magnesium | mg/Kg | 75 - 125               | 2180             |   | 1670             |   | 93.5           | 543           |      | P |
| Manganese | mg/Kg | 75 - 125               | 123              |   | 79.4             |   | 9.3            | 466           |      | P |
| Nickel    | mg/Kg | 75 - 125               | 29.0             |   | 2.47             |   | 23.4           | 114           |      | P |
| Potassium | mg/Kg | 75 - 125               | 1270             |   | 380              |   | 470            | 190           | N    | P |
| Selenium  | mg/Kg | 75 - 125               | 85.4             |   | 0.91             | U | 93.5           | 91            |      | P |
| Silver    | mg/Kg | 75 - 125               | 3.45             |   | 0.051            | J | 3.5            | 97            |      | P |
| Sodium    | mg/Kg | 75 - 125               | 401              |   | 76.8             | J | 140            | 232           | N    | P |
| Thallium  | mg/Kg | 75 - 125               | 89.7             |   | 1.83             | U | 93.5           | 96            |      | P |
| Vanadium  | mg/Kg | 75 - 125               | 29.6             |   | 6.31             |   | 14.0           | 166           | N    | P |
| Zinc      | mg/Kg | 75 - 125               | 58.4             |   | 5.90             |   | 9.3            | 565           | N    | P |

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**MATRIX SPIKE DUPLICATE SUMMARY**

**client:** RU2 Engineering, LLC **level:** low **sdg no.:** Q1215  
**contract:** RUTW01 **lab code:** CHEM **case no.:** Q1215 **sas no.:** Q1215  
**matrix:** Solid **sample id:** Q1221-01 **client id:** CHESTNUT-CONCRETEMSD  
**Percent Solids for Sample:** 100 **Spiked ID:** Q1221-01MSD **Percent Solids for Spike Sample:** 100

| Analyte   | Units | Acceptance<br>Limit %R | MSD<br>Result | C | Sample<br>Result | C | Spike<br>Added | %<br>Recovery | Qual | M |
|-----------|-------|------------------------|---------------|---|------------------|---|----------------|---------------|------|---|
| Aluminum  | mg/Kg | 75 - 125               | 5670          |   | 3760             |   | 86.2           | 2222          |      | P |
| Antimony  | mg/Kg | 75 - 125               | 15.1          |   | 2.28             | U | 34.5           | 44            | N    | P |
| Arsenic   | mg/Kg | 75 - 125               | 40.1          |   | 0.84             | J | 34.5           | 114           |      | P |
| Barium    | mg/Kg | 75 - 125               | 36.6          |   | 17.3             |   | 8.6            | 224           | N    | P |
| Beryllium | mg/Kg | 75 - 125               | 7.94          |   | 0.21             | J | 8.6            | 90            |      | P |
| Cadmium   | mg/Kg | 75 - 125               | 8.40          |   | 0.27             | U | 8.6            | 98            |      | P |
| Calcium   | mg/Kg | 75 - 125               | 47800         |   | 39700            |   | 43.1           | 18807         |      | P |
| Chromium  | mg/Kg | 75 - 125               | 41.0          |   | 7.31             |   | 17.2           | 196           | N    | P |
| Cobalt    | mg/Kg | 75 - 125               | 11.6          |   | 0.92             | J | 8.6            | 124           |      | P |
| Copper    | mg/Kg | 75 - 125               | 17.9          |   | 1.90             |   | 12.9           | 124           |      | P |
| Iron      | mg/Kg | 75 - 125               | 17200         |   | 3860             |   | 130            | 10286         |      | P |
| Lead      | mg/Kg | 75 - 125               | 48.1          |   | 1.47             |   | 43.1           | 108           |      | P |
| Magnesium | mg/Kg | 75 - 125               | 2070          |   | 1670             |   | 86.2           | 468           |      | P |
| Manganese | mg/Kg | 75 - 125               | 118           |   | 79.4             |   | 8.6            | 448           |      | P |
| Nickel    | mg/Kg | 75 - 125               | 26.6          |   | 2.47             |   | 21.6           | 112           |      | P |
| Potassium | mg/Kg | 75 - 125               | 1220          |   | 380              |   | 430            | 195           | N    | P |
| Selenium  | mg/Kg | 75 - 125               | 77.7          |   | 0.91             | U | 86.2           | 90            |      | P |
| Silver    | mg/Kg | 75 - 125               | 3.28          |   | 0.051            | J | 3.2            | 101           |      | P |
| Sodium    | mg/Kg | 75 - 125               | 382           |   | 76.8             | J | 130            | 235           | N    | P |
| Thallium  | mg/Kg | 75 - 125               | 83.2          |   | 1.83             | U | 86.2           | 96            |      | P |
| Vanadium  | mg/Kg | 75 - 125               | 28.1          |   | 6.31             |   | 12.9           | 169           | N    | P |
| Zinc      | mg/Kg | 75 - 125               | 54.0          |   | 5.90             |   | 8.6            | 560           | N    | P |

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**MATRIX SPIKE SUMMARY**

**client:** RU2 Engineering, LLC      **level:** low      **sdg no.:** Q1215  
**contract:** RUTW01      **lab code:** CHEM      **case no.:** Q1215      **sas no.:** Q1215  
**matrix:** Solid      **sample id:** Q1269-01      **client id:** VNJ-231MS  
**Percent Solids for Sample:**      88.9      **Spiked ID:**      Q1269-01MS      **Percent Solids for Spike Sample:**      88.9

| Analyte | Units | Acceptance<br>Limit %R | Spiked<br>Result | C | Sample<br>Result | C | Spike<br>Added | %<br>Recovery | Qual | M  |
|---------|-------|------------------------|------------------|---|------------------|---|----------------|---------------|------|----|
| Mercury | mg/Kg | 80 - 120               | 0.31             |   | 0.019            |   | 0.3            | 97            |      | CV |

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**MATRIX SPIKE DUPLICATE SUMMARY**

**client:** RU2 Engineering, LLC      **level:** low      **sdg no.:** Q1215  
**contract:** RUTW01      **lab code:** CHEM      **case no.:** Q1215      **sas no.:** Q1215  
**matrix:** Solid      **sample id:** Q1269-01      **client id:** VNJ-231MSD  
**Percent Solids for Sample:**      88.9      **Spiked ID:**      Q1269-01MSD      **Percent Solids for Spike Sample:**      88.9

| Analyte | Units | Acceptance<br>Limit %R | MSD<br>Result | C | Sample<br>Result | C | Spike<br>Added | %<br>Recovery | Qual | M  |
|---------|-------|------------------------|---------------|---|------------------|---|----------------|---------------|------|----|
| Mercury | mg/Kg | 80 - 120               | 0.25          |   | 0.019            |   | 0.27           | 84            |      | CV |