

**metals**  
**- 5a -**  
**MATRIX SPIKE SUMMARY**

**client:** JACOBS Engineering Group, Inc.      **level:** low      **sdg no.:** P3467

**contract:** JACO05      **lab code:** CHEM      **case no.:** P3467      **sas no.:** P3467

**matrix:** Water      **sample id:** P3440-01      **client id:** 923-K1-WS-080124MS

**Percent Solids for Sample:** NA      **Spiked ID:** P3440-02      **Percent Solids for Spike Sample:** NA

| Analyte    | Units | Acceptance<br>Limit %R | Spiked<br>Result | C | Sample<br>Result | C | Spike<br>Added | %<br>Recovery | Qual | M  |
|------------|-------|------------------------|------------------|---|------------------|---|----------------|---------------|------|----|
| Aluminum   | ug/L  | 86 - 115               | 1000             |   | 50.9             |   | 1000           | 95            |      | P  |
| Antimony   | ug/L  | 88 - 113               | 378              |   | 25.0             | U | 400            | 94            |      | P  |
| Arsenic    | ug/L  | 87 - 113               | 359              |   | 10.0             | U | 400            | 90            |      | P  |
| Barium     | ug/L  | 88 - 113               | 155              |   | 58.9             |   | 100            | 96            |      | P  |
| Beryllium  | ug/L  | 89 - 112               | 95.3             |   | 3.00             | U | 100            | 95            |      | P  |
| Boron      | ug/L  | 85 - 113               | 178              |   | 47.6             | J | 150            | 87            |      | P  |
| Cadmium    | ug/L  | 88 - 113               | 89.7             |   | 3.00             | U | 100            | 90            |      | P  |
| Calcium    | ug/L  | 87 - 113               | 20200            |   | 19400            |   | 500            | 152           |      | P  |
| Chromium   | ug/L  | 90 - 113               | 196              |   | 0.76             | J | 200            | 98            |      | P  |
| Cobalt     | ug/L  | 89 - 114               | 93.6             |   | 15.0             | U | 100            | 94            |      | P  |
| Copper     | ug/L  | 86 - 114               | 140              |   | 10.0             | U | 150            | 93            |      | P  |
| Iron       | ug/L  | 87 - 115               | 4020             |   | 2490             |   | 1500           | 103           |      | P  |
| Lead       | ug/L  | 86 - 113               | 453              |   | 6.00             | U | 500            | 91            |      | P  |
| Magnesium  | ug/L  | 85 - 113               | 4590             |   | 3680             |   | 1000           | 92            |      | P  |
| Manganese  | ug/L  | 90 - 114               | 887              |   | 777              |   | 100            | 111           |      | P  |
| Mercury    | ug/L  | 75 - 125               | 3.28             |   | 0.20             | U | 4.0            | 82            |      | CV |
| Molybdenum | ug/L  | 89 - 113               | 205              |   | 100              | U | 200            | 102           |      | P  |
| Nickel     | ug/L  | 88 - 113               | 236              |   | 1.18             | J | 250            | 94            |      | P  |
| Potassium  | ug/L  | 86 - 114               | 8060             |   | 3290             |   | 5000           | 95            |      | P  |
| Selenium   | ug/L  | 83 - 114               | 851              |   | 10.0             | U | 1000           | 85            |      | P  |
| Silver     | ug/L  | 84 - 115               | 34.0             |   | 5.00             | U | 37.5           | 91            |      | P  |
| Sodium     | ug/L  | 87 - 115               | 80100            |   | 79700            |   | 1500           | 24            |      | P  |
| Strontium  | ug/L  | 90 - 113               | 229              |   | 129              |   | 500            | 20            | N    | P  |
| Thallium   | ug/L  | 85 - 114               | 884              |   | 20.0             | U | 1000           | 88            |      | P  |
| Tin        | ug/L  | 88 - 115               | 331              |   | 20.0             | U | 350            | 95            |      | P  |
| Titanium   | ug/L  | 91 - 111               | 100              |   | 20.0             | U | 100            | 100           |      | P  |
| Vanadium   | ug/L  | 90 - 111               | 146              |   | 20.0             | U | 150            | 97            |      | P  |
| Zinc       | ug/L  | 87 - 115               | 114              |   | 10.1             | J | 100            | 104           |      | P  |

**metals**  
**- 5a -**  
**MATRIX SPIKE DUPLICATE SUMMARY**

**client:** JACOBS Engineering Group, Inc.      **level:** low      **sdg no.:** P3467

**contract:** JACO05      **lab code:** CHEM      **case no.:** P3467      **sas no.:** P3467

**matrix:** Water      **sample id:** P3440-01      **client id:** 923-K1-WS-080124MSD

**Percent Solids for Sample:** NA      **Spiked ID:** P3440-03      **Percent Solids for Spike Sample:** NA

| Analyte    | Units | Acceptance<br>Limit %R | MSD<br>Result | C | Sample<br>Result | C | Spike<br>Added | %<br>Recovery | Qual | M  |
|------------|-------|------------------------|---------------|---|------------------|---|----------------|---------------|------|----|
| Aluminum   | ug/L  | 86 - 115               | 1050          |   | 50.9             |   | 1000           | 100           |      | P  |
| Antimony   | ug/L  | 88 - 113               | 391           |   | 25.0             | U | 400            | 98            |      | P  |
| Arsenic    | ug/L  | 87 - 113               | 377           |   | 10.0             | U | 400            | 94            |      | P  |
| Barium     | ug/L  | 88 - 113               | 161           |   | 58.9             |   | 100            | 102           |      | P  |
| Beryllium  | ug/L  | 89 - 112               | 102           |   | 3.00             | U | 100            | 102           |      | P  |
| Boron      | ug/L  | 85 - 113               | 188           |   | 47.6             | J | 150            | 93            |      | P  |
| Cadmium    | ug/L  | 88 - 113               | 94.8          |   | 3.00             | U | 100            | 95            |      | P  |
| Calcium    | ug/L  | 87 - 113               | 20600         |   | 19400            |   | 500            | 244           |      | P  |
| Chromium   | ug/L  | 90 - 113               | 205           |   | 0.76             | J | 200            | 102           |      | P  |
| Cobalt     | ug/L  | 89 - 114               | 99.1          |   | 15.0             | U | 100            | 99            |      | P  |
| Copper     | ug/L  | 86 - 114               | 146           |   | 10.0             | U | 150            | 97            |      | P  |
| Iron       | ug/L  | 87 - 115               | 4110          |   | 2490             |   | 1500           | 108           |      | P  |
| Lead       | ug/L  | 86 - 113               | 477           |   | 6.00             | U | 500            | 95            |      | P  |
| Magnesium  | ug/L  | 85 - 113               | 4730          |   | 3680             |   | 1000           | 105           |      | P  |
| Manganese  | ug/L  | 90 - 114               | 906           |   | 777              |   | 100            | 129           |      | P  |
| Mercury    | ug/L  | 75 - 125               | 3.17          |   | 0.20             | U | 4.0            | 79            |      | CV |
| Molybdenum | ug/L  | 89 - 113               | 213           |   | 100              | U | 200            | 106           |      | P  |
| Nickel     | ug/L  | 88 - 113               | 249           |   | 1.18             | J | 250            | 99            |      | P  |
| Potassium  | ug/L  | 86 - 114               | 8290          |   | 3290             |   | 5000           | 100           |      | P  |
| Selenium   | ug/L  | 83 - 114               | 889           |   | 10.0             | U | 1000           | 89            |      | P  |
| Silver     | ug/L  | 84 - 115               | 35.5          |   | 5.00             | U | 37.5           | 95            |      | P  |
| Sodium     | ug/L  | 87 - 115               | 80100         |   | 79700            |   | 1500           | 27            |      | P  |
| Strontium  | ug/L  | 90 - 113               | 236           |   | 129              |   | 500            | 21            | N    | P  |
| Thallium   | ug/L  | 85 - 114               | 940           |   | 20.0             | U | 1000           | 94            |      | P  |
| Tin        | ug/L  | 88 - 115               | 344           |   | 20.0             | U | 350            | 98            |      | P  |
| Titanium   | ug/L  | 91 - 111               | 103           |   | 20.0             | U | 100            | 103           |      | P  |
| Vanadium   | ug/L  | 90 - 111               | 155           |   | 20.0             | U | 150            | 103           |      | P  |
| Zinc       | ug/L  | 87 - 115               | 119           |   | 10.1             | J | 100            | 109           |      | P  |